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**THE EVOLUTION OF THE COASTAL AND MARITIME CULTURAL LANDSCAPE  
OF SOUTH CENTRAL AND SOUTHEAST CRETE (LATE FINAL NEOLITHIC TO  
ROMAN PERIOD).  
A CONTRIBUTION TO THE COMPREHENSION OF A FRAGMENTED  
SEASCAPE.**

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## INTRODUCTION AND ACKNOWLEDGES

The *evolution of coastal and maritime cultural landscape of South central (SC) and Southeast (SE) Crete from Late Final Neolithic to Roman period* is not an intensive major landscape survey project. It can function as the basis for a future one though, since it is composed by a census of the coastal (over and under the water) antiquities, photographic documentation, on-site visits in the purpose of studying the surrounding landscape, multidisciplinary bibliographic data collection along with its critical review, as well as analysis of the settlement patterns and other aspects.

This research covers a wide timespan, which begins in the transitional period that precedes the Bronze Age, the Late Final Neolithic at ca. 3200 BC and finishes with the division of the Roman empire in AD 395. Furthermore it concerns twenty-four study areas comprised in the coastal area between Lassaia and Livari as well as the opposite islands of Chryssi and Lefki. What triggered my interest for this specific area was the unexpected combination of three features: i. a landscape characterised by minor modern human impact, ii. the tectonic submergence of this area of the island, namely two parameters that almost ‘guarantee’ the preservation of large part of a normally sensitive type of landscape, along with the eventual antiquities and iii. a preliminary census of the then newly-founded *Non-Independent Office of Underwater Antiquities* in Crete, according to which in the under discussion area there were only three sites with antiquities (both over and underwater).<sup>1</sup> I can now admit that I took as a personal challenge the relative comment of the head-archaeologist of the aforementioned Office: “the gap in the middle should obviously be considered as a gap of research rather than of archaeological evidence”<sup>2</sup>.

Of course, the extensive and multidisciplinary bibliographic research, the study and the on-site visits that took place in the following years changed, or better, transformed the initial ideas I had on the matter. Although, apart from a few examples, the area indeed lacks in systematic excavations and surveys as well as publications, during the past decades there have been

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<sup>1</sup> Theodoulou 2011: 46. Translation of the author.

<sup>2</sup> Idem.

carried out a lot of rescue excavations by the local Ephorates<sup>3</sup> that are accompanied by the publication of the respective -usually brief- reports. Those in combination with data that derives from multiple scientific fields such as older archaeological surveys, accounts of the early travellers, ancient written sources, historical geography, ethnography and personal observations, have gradually managed to fill in a small part of the aforementioned gap.

It is important to mention here that in the archaeological description of the sites I did not follow the chronological limits of this survey. Instead I included also the existing Early Christian (or Early Byzantine), Byzantine and Venetian antiquities. The reason is that in these areas is frequently encountered not only the overlapping of several occupation levels but also the re-use of earlier materials into later constructions.<sup>4</sup> Therefore, I could not mention, for example, the Roman amphora shreds of the 1<sup>st</sup> century BC without mentioning the masonry of the AD 14<sup>th</sup>-century chapel in which they are embedded. However, this exception concerns only the archaeological description of the sites and not the analysis of the settlement patterns or of the other specific aspects of this study.

In order to understand the evolution of the coastal and maritime cultural landscape of SC and SE Crete, I organised the text in the two usual basic parts: analysis and synthesis of data. To be more specific, in the first part I carried out a multidisciplinary and as extensive as possible critical description of each one of the twenty-four study areas, which consists in the following sections: Main geographic features, Archaeology, Literary evidence and comments, Epigraphic and numismatic evidence, Historical geography (cartography, portolan charts) and commentary, Early modern travel literature, Observations in the perspective of a landscape archaeology approach – Further considerations. Then I proceeded with the second part, which consists in the settlement pattern analysis and four other chapters that derive from various -repeated- observations made on specific subjects in the course of the research, which I considered interesting to analyse. In these chapters I attempted to study some significant, in my opinion, aspects of the evolution of the coastal and maritime landscape of SC and SE Crete, such as the diachronic exploitation of marine resources and the maritime transport, the geoarchaeological indicators for the Sea Level change, a hypothetical interpretative occupation

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<sup>3</sup> We should not forget the extra difficulties that the archaeologists of the -understaffed considering the area under their of control- local Ephorates have to face regarding the SC and SE Cretan coast, such as the inaccessibility of several locations and the systematic looting.

<sup>4</sup> A practice followed at such a level that I decided to dedicate a chapter to it.

model and the practice of the re-used materials.

Previous landscape archaeology research in the area consists in several regional surveys that concern different parts of our research area, such as the *Travels in Crete* by S. Hood, P. Warren and G. Cadogan, the *Archaeological Survey of the South Coast of Crete, between the Ayiofarango and Chrisostomos* by D. Blackman and K. Branigan, the *Urbanistica of Proto-Geometric and Geometric Crete* by N. Xifaras, *The final Neolithic (Late Chalcolithic) to Early Bronze Age transition in Crete and the south-east Aegean islands* by K. Nowicki, *Chryssi Island and the Settlement Patterns of the Ierapetra Area, South-Eastern Crete* by K. Chalikias and the reports from the *South East Crete Archaeological Land Survey* project, by V. Apostolakou and N. Schlager. Two other works that I consider fundamental for this research not only due to the rich archaeological data they contain but also due to their multidisciplinary approach are the monumental study of I. Sanders *Roman Crete* as well as the extensive study of S. Gallimore on the *polis* of Hierapytna (*An island economy: Ierapetra and Crete in the Roman Empire*). The online database *Archaeological Atlas of Crete*<sup>5</sup> was also extremely useful for the collection of a part of the bibliography for the study areas. Finally I should mention that for the geoarchaeological aspect of the research I was based on data from the relative studies by N. Mourtzas.

The present research aims in seeing the bigger picture of the SC and SE Cretan coast by putting all the data that regards its many components-‘fragments’ on a macroscopic level, in evaluating eventual similarities and/or interactions between them, unconditioned as much as possible from chronological and spatial limitations. It also aims in raising the knowledge regarding the settlement history of the coastal and maritime landscape of this understudied area, in being a contribution to the better understanding of its evolution and in reintroducing it to the modern scholarship, providing a comprehensive overview based on a multidisciplinary data collection. Additionally it attempts to ‘see’ this coastal area as a network of minor intermediate maritime stations and insert it as such to the ‘nautical map’ of the antiquity. If all of the above is fulfilled, I may have succeeded in overcoming the major difficulty of this research, which was to avoid a superficial approach to the subject, due to its wide spatial (total length

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<sup>5</sup> Implemented by the Laboratory of Geophysical – Satellite Remote Sensing and Archaeo-environment of the Institute of Mediterranean Studies.

over 160 km) and chronological (3200 BC - end of AD 4<sup>th</sup> century) field of study.<sup>6</sup>

Furthermore, I would like to stress the value of the photographic documentation carried out on these minor archaeological sites and their surrounding landscape (both over and under the water), since it constitutes an important archive for the archaeology of this area. The reason I do this is because it is highly probable that, within the limits of the 3<sup>rd</sup> Memorandum of Understanding, the new spatial planning project for the region of Crete, which aims in large-scale works related to the energy sources exploitation and tourism-related investments in Crete, (that, however, lack in environmental planning) will be approved and consequently carried out during the next years. A lot of these works concern the SC and SE coast of the island, such as: oil-pumping platforms and support infrastructures on the coast (SC), large-scale touristic facilities and installation of wind turbines at the wider areas of Lassaia and Ierapetra.<sup>7</sup> I strongly hope that the photographic documentation for this research will not acquire the value of an unreproducible archive.

Many individuals and institutions are 'responsible' for the accomplishment of this project and followingly I would like to explain in which way. My supervisors PierGiorgio Spanu and Anna Depalmas have offered me encouragement and support throughout the past three years. Angeliki Simosi and Theotokis Theodoulou from the Ephorate of Underwater Antiquities, Danae Kontopodi from the Ephorate of Antiquities of Herakleion, Chryssa Sofianou and Vasso Zografaki from the Ephorate of Antiquities of Lassithi, granted me the permissions I needed for the photographic documentation of the archaeological sites at SC and SE Crete. The Ephorate of Underwater Antiquities, after my request, granted me also with the permission to use information and photos regarding previously unknown underwater sites for the purposes of my dissertation. Furthermore I had several constructive discussions with Theotokis Theodoulou, head archaeologist of the Non-Independent Office of Underwater Antiquities in Crete and with Danae Kontopodi, archaeologist of the Ephorate of Antiquities of Herakleion, who both were very collaborative and interested in this project.

Elias Spondylis faced patiently my initially chaotic ideas on the topic and gave me several both wise and problem-solving advices. Elpida Hadjidaki has generously offered me

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<sup>6</sup> At this point I have to mention that my initial intention was to include i. all of the SC and SE coast in the area of research (namely from Ayiofarango to Ambelos), ii. the chronological periods from Late Final Neolithic to Byzantine. The only reason this did not happen is that I could not handle and elaborate the big quantity of the material.

<sup>7</sup>Region of Crete 2015.

information from unpublished archaeological autopsies on underwater sites, carried out during the period she was the director of the Ephorate of Underwater Antiquities. Apostolos Sarris was very willing to give me his geological point of view on several matters regarding the coastal geoarchaeology of Crete, whenever I was in need of it. Christina Tsigonaki was very responsive every time I asked for her suggestions and advices and we had several constructive discussions on matters related to the coastal antiquities of Crete as well as the process of writing.

My friends and colleagues Panagiotis Zervoudakis, bionic Popi Koukouraki with the then still embryonic Spyros and Christina Papoulia helped me out in accessing the -often-inaccessible SC and SE coast of Crete and carrying out the first part of the photographic documentation. Finally the contribution of Pasquale Valle in this project, in both personal and scientific level, was fundamental; to substitute it I would have had to extend the list of the acknowledges' receivers for at least another page.

I am grateful to each and everyone.

## THE PHYSICAL LANDSCAPE OF THE AREA OF RESEARCH A BRIEF DESCRIPTION

This section does not aim in presenting a detailed physical description of the coastal landscape of SC and SE Crete but an overview of its basic features. The detailed descriptions are included in the individual chapters of every area of study.

The core of the island of Crete are the five main great mountain groups that dominate its hinterland, limiting the communication between the former and the south coast to the numerous gorges (around a hundred) that carve the landscape, from the highest mountain peaks to the coast. Within those mountain ranges there are various plateaus (around twenty-five) that usually concentrate large quantities of water that spills from the nearby mountains. In addition, due to the small width of the island (that varies from sixty to twelve kilometers) and its elongated shape, there are no more than twenty-six rivers most of which are seasonal, while only six have water flow all year round<sup>8</sup>. The Cretan coastline is characterized by a vast geomorphological diversity. However, while the northern coast presents wide coastal plains and various peninsulas that form deep gulfs, the southern one is less hospitable with cliffs and steep slopes that descend directly to the sea.

The central and central-eastern part of the island is characterized by three mountain ranges, six plateaus and three rivers. The SC and SE coast is not only generally inhospitable but also geographically isolated from the northern part of the island due to the mountain ranges of Asterussia (W), Dikti (centre) and Thripti (E) that usually slope down to the shore very steeply, with the exception of the Isthmus of Ierapetra that connects the southern with the northern coast. It is important to note the absence of natural harbors at the SC and SE coast, a 'gap' that was filled in by the various small and relatively protected bays that were used as anchorages.

Geologically the western part of the area of research consists in alternating coastal deposits, black limestones, marine terraces and flysch. The central part consists in alternating grey-white-pink limestones, recent alluvial deposits, conglomerates, marls, gypsum deposits

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<sup>8</sup> Rackham and Moody 2004: 57



and marine terraces. The eastern part consists in alternating conglomerates, fluvial terraces, grey-black limestone and recent alluvial deposits.<sup>9</sup>

This research concerns the coastal zone of SC and SE Crete between Lassaia to the W and Livari to the E, as well as the two islands of Chryssi and Lefki. It covers a range of ca. 600 m, which consists in ca. 300 m towards each side of the coastline. There have been selected and studied totally twenty-four areas of interest (Fig. 230).

## THE “FRAGMENTED SEASCAPE”: DEFINITION

‘Seascape’ is basically an area where any kind of human interaction with the landscape is compromised by the element of the sea. This area is characterized by intervisibility between land and sea and it consists in a coastal and a submerged part, especially in the case it becomes a subject of archaeological study. In other words, it is a term that can describe the effect that the confluence of sea and land has on landscape, as well as the particular characteristics of the human activity within it.

The reason I consider the seascape, that concerns the present research area, fragmented is because of its vast geomorphologic and geologic diversity. The geographic and geologic features we discussed above have formed a seascape of discontinuities, composed by several, small isolated or semi-isolated units,<sup>10</sup> to which were available different natural resources. The most frequent example of the aforementioned ‘unit’ consists in a bay that is formed at the mouth of a gorge and is surrounded by high hills. It is apparent that such a context would have encouraged the formation of small-scale settlements, based in an economy of subsistence. While the interaction between them existed, most probably it was significantly compromised by their limited accessibility.

The fragmentation of the seascape of SC and SE Crete becomes obvious just by looking at a terrain elevation map of the area. However, the close examination of several of its component-areas, which takes place in the next chapter, shows even more how defining this

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<sup>9</sup> Data taken from the Geological map of Greece, sheets N° 321-326.

<sup>10</sup> With the exception of the area of Ierapetra.

characteristic has been for the evolution of the cultural landscape of this area. It needs to be specified that the significance of this fragmentation is not only negative. The abrupt elevations, for example, apart from the inaccessibility offer also natural fortification.

## THE STUDY AREAS

In this chapter there will be presented the twenty-four areas, which have been selected for the present study, through a multi-faceted approach regarding both the data collection and its subsequent analysis. This chapter does not pretend to present all the archaeological sites of the area of research, although that is its intention.

### INITIAL REMARKS

Some initial remarks that should be made for the better comprehension of the maps in relation to the text are the following: i. the site numeration on the topographic maps should be considered together with the numeration of the respective study area (e.g. the site 1 on the map of Lassaia corresponds to S1.1 (S=site)), ii. the description of each site along with its numeration can be found at Fig. 229 and its location in relation to the rest of the island of Crete in Fig. 230, iii. the sites' locations that are marked on the maps are approximate, iv. all the maps are oriented on the N-S axe, v. in a few cases some sites that are described in the text have not been marked on the map or considered in the chapter on the analysis of the settlement patterns, due to the imprecise available data regarding their dating and/or nature, vi. all the maps except for those of study areas 1, 2, 3 and 23 are the topographic maps of the Hellenic Military Geographic Service; for the rest the source was Google Maps, vii. the question marks next to the numbers of some sites indicate the imprecise available data regarding their location, viii. In a few cases there will be encountered repeated numbers of the same site, which attempt to indicate its extension. Finally it should be mentioned that in the cases where there is absence of data (e.g. literary or epigraphic evidence sections), that is indicated with a dash ('-').

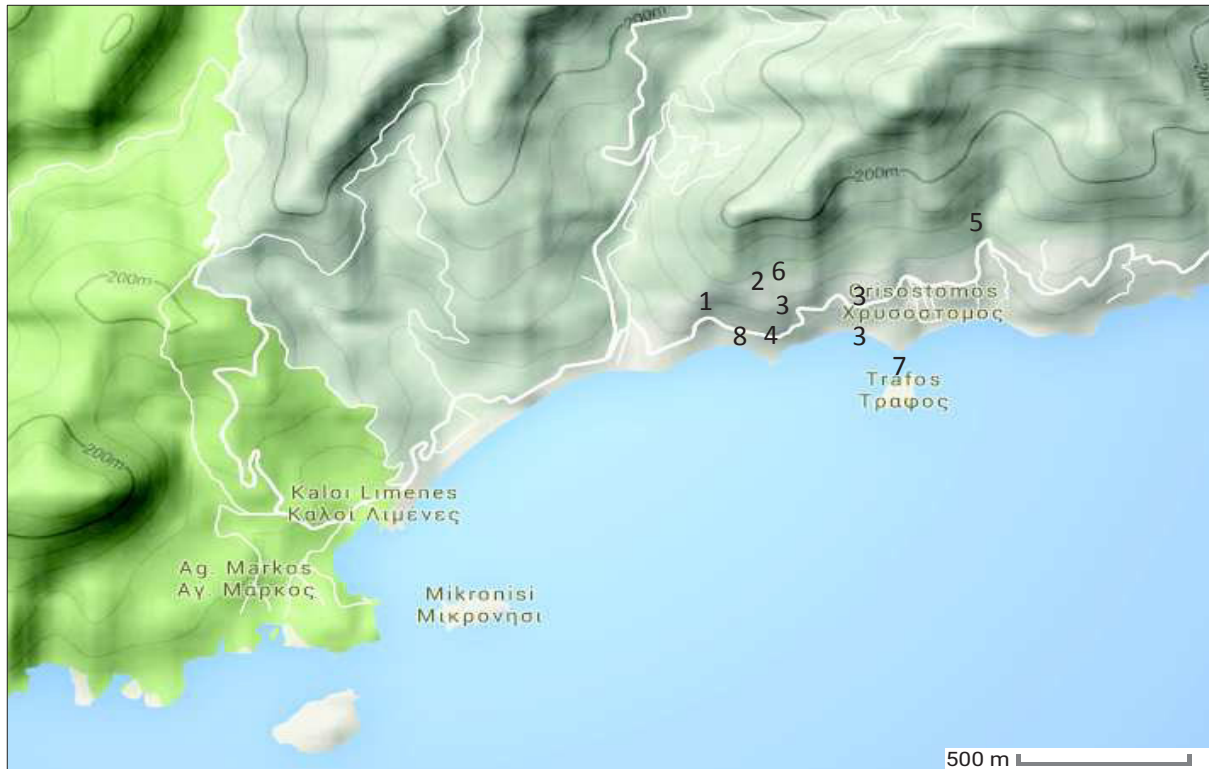
Regarding the matter of the Minoan chronology that will be followed in this text, it is that of Evans'. Its chronological correspondences (that not always coincide with those of Evans) are described in the next chapter and whenever it is considered necessary in this one. However, it should be underlined that the Minoan chronology is indecisive. In fact it is being

continuously revised in order to be up-to-date with the latest pottery and/or carbon dating discoveries. However, since several scholars have proposed different time limits for the various sub-periods, it is almost impossible to follow a uniform chronological system for all the Minoan periods without falling into ambiguities and inconsistencies. For these reasons I decided to use Evans' chronological system (EM, MM, LM) only in a conventional way.<sup>11</sup>

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<sup>11</sup> For those interested in getting a more detailed idea about the several schemes of the Minoan chronology see the Table of Minoan chronology in Wikipedia 2014.

## 1. LASSAIA (CHRISOSTOMOS)



The ancient settlement was extended around and inside the two bays that slope down to the shore quite steeply and are found at 2 km E from Kaloι Limenes modern village and 7 km W from Lebena. However these two bays are part of the larger bay of Kaloι Limenes. There are two big watercourses (currently in the form of dry streams) at the E bay and three smaller at the W bay. At a distance of 1 km towards NE from the E bay there is a spring source. The E bay is relatively sheltered from the SW winds because of Traphos islet that is found at a small distance in front of its western part and also because of the (ancient) artificial breakwater that connects the two of them. However it could offer only a summer anchorage point for small boats.

## Archaeology

The archaeological data we have on ancient Lassaia is owed mostly to the observation of its still visible remains<sup>12</sup> and to some rescue excavations, which, despite the losses from the continuous looting, revealed not only the Early Minoan presence in the area but also the importance and the extension that the settlement had during the Hellenistic, Roman and Late Roman periods.

At the western extremity of the W bay begins the extension of the necropolis's remains that consists of cist tombs and built chamber tombs and continues S and N of the modern road, until the eastern extremity of the W bay. The stratigraphy at the small excavation in the area of the cemetery on the western extremity (conducted by the local Ephorate), confirms the Hellenistic date of the cist tombs (Fig. 1) and the Roman Imperial one of the built tombs-mausoleia (Fig. 2). Overlooking the necropolis, about 40 m above the road, there are two EM tholos tombs<sup>13</sup> and 50 m NNW there are traces of several terrace walls and a Hellenistic or Roman farmhouse<sup>14</sup>. During the survey of 1978 there was discovered the settlement to which the EM tombs belong.<sup>15</sup> Its remains consisted in buildings and a fortification wall that enclosed the acropolis, oriented NE-SW.<sup>16</sup> There were also found MM pottery shreds, which indicate the continuity of the settlement.

On the hill of the eastern extremity of the W bay opposite Traphos islet (S and N of the road) lie the southern remains of the acropolis that consist in the foundations of private houses, a bigger (probably public) building, a temple and an Early Christian basilica (Fig. 3 and Fig. 4).<sup>17</sup> There are also the remains of the aqueduct, which brought the water across the hills on the NE (from the abovementioned spring) to the large cistern at the NE corner of the headland and consisted in a plastered channel carried on a mortared masonry wall.<sup>18</sup>

As far as the coast of the E bay is concerned, on the western part of the beach (Fig. 5) and also inside the western dry stream (Fig. 6) there are the wall remains of several large

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<sup>12</sup> Blackman and Branigan 1975.

<sup>13</sup> Davaras 1968: 405-6.

<sup>14</sup> Blackman and Branigan 1975: 26.

<sup>15</sup> Chatzi-Vallianou 1987 (1979): 382, 383.

<sup>16</sup> Idem.

<sup>17</sup> Blackman and Branigan 1975: 30.

<sup>18</sup> Idem.

buildings that have been generally identified as warehouses<sup>19</sup> and apparently belong to the Hellenistic/Roman settlement on the acropolis.

Between Traphos islet and the coast there is an almost submerged breakwater, a 90 m long pile of large blocks of stones that swings westwards for 25 m leaving a channel of 10 m between it and the islet (Fig. 7a, b). Due to the several geomorphological indications<sup>20</sup> we can safely assume that the breakwater is ancient, although of an uncertain date. However it is very probable that the construction is related with the Sea Level during Hellenistic/Roman period. Furthermore during the survey of 1978 there were discovered the remains of a second, smaller breakwater submerged at -2 m. The breakwater has a W-E orientation and its E end is at the tip of Traphos islet. It consists in large stone blocks with a pyramidal arrangement.<sup>21</sup>

At about 500 m NE from the E bay, near the church of Aghios Chrisostomos, there are also the remains of two other EM tholos tombs, as well as an iron source and a low-grade copper source, which was probably exploited during the Hellenistic and/or Roman period.<sup>22</sup>

Finally, on Traphos islet, which has been interpreted as a refuge site, there are the remains of several small circular stone huts (Fig. 8). The pottery shreds on the surface date the site at the Second Byzantine and Venetian periods<sup>23</sup>. However its Late Roman occupation is not improbable since one AD 5<sup>th</sup>-century shred was also identified.<sup>24</sup>

### Literary evidence and comments

The ancient references that have been associated with Lassaia are those of Homer in *Odyssey* “ἔστι δὲ τις λισσὴ αἰπεῖα τε εἰς ἄλλα πέτρῃ ἐσχατιῇ Γόρτυνος”<sup>25</sup>, *Stadiasmos* “Ἄλαι”<sup>26</sup>, *Stephanus of Byzantium* “Λισσῆς”<sup>27</sup>, *Strabo*<sup>28</sup> “Καὶ ὁ Λισσὴν δὲ τῆς Φαιστίας” and *Acts of*

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<sup>19</sup> *Idem*.

<sup>20</sup> See the analysis at Blackman and Branigan 1975: 28.

<sup>21</sup> Chatzi-Vallianou 1987 (1979): 382.

<sup>22</sup> Faure 1966: 63; Branigan 1968: 51.

<sup>23</sup> Blackman and Branigan 1975: 34.

<sup>24</sup> *Idem*.

<sup>25</sup> *Odysseia* III, 293-296.

<sup>26</sup> 322, 323.

<sup>27</sup> *De Urbibus* 'Festos'.

<sup>28</sup> *Geographica* X, 4, 14 C 479.

Apostles<sup>29</sup> “ὡ ἐγγὺς πόλις ἦν Λασσαία” (or Λασέα, or Ἀλασσα). The Latin translations of the latter vary too between *Thalassa* and *Phalassa*.<sup>30</sup> The confusion regarding the toponymy of the site is apparent and it probably derives from a repeated misconception (by Strabo and Stephanus of Byzantium) of the location of the toponym mentioned in the Homeric text. D’Acunto<sup>31</sup> convincingly identified the Homeric “λίσση” with the cape Lithino, located W of Kaloi Limenes bay. Consequently we should rely only on the evidence from Stadiasmos and the Acts. However those texts, apart from the location and the *polis* attribution, which is not trustworthy due to the fact that the *Acts* cannot be considered a reliable text for the political status of a settlement<sup>32</sup>, do not provide us with any further information about Lassaia.

#### Epigraphic and numismatic evidence

From the wider area of Lassaia<sup>33</sup>, and in particular we should assume from its necropolis, come several -atticizing<sup>34</sup>- funerary, inscriptions<sup>35</sup> dated at the late 5<sup>th</sup> and 4<sup>th</sup> centuries BC. To the *chora* of Lassaia are also attributed some (votive) roof tiles dated at the 2<sup>nd</sup> century BC, some of them inscribed with the names of the devoter and Asclepios and others with the monogram “ΠΥΡ” (possibly)<sup>36</sup> found ca. 3 km to the W of the settlement, at the valley of Aghia Kyriaki, where Branigan and Blackman<sup>37</sup> earlier had correctly suggested the existence of a sanctuary of Asclepios. Lassaia is also mentioned in the Delphic list of *Theorodokoi*<sup>38</sup>, which is dated at the 3<sup>rd</sup> century BC, as “Λασσοία”<sup>39</sup>. Finally Spratt<sup>40</sup> mentions the discovery of a gold ring (that came from a funerary context) inscribed with the name “ΤΡΥΦΗΝΙΑ” (P and N are reversed<sup>41</sup>). As far as the coinage is concerned there is only one coin that brings the inscription

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<sup>29</sup> 27,8.

<sup>30</sup> IC.I.XV.

<sup>31</sup> D’Acunto 2008: 268-271.

<sup>32</sup> Chaniotis 2000: 36.

<sup>33</sup> The artefacts come from handovers to the local Ephorate.

<sup>34</sup> Clairmont 1993: 406; Anzalone 2013: 228, 230.

<sup>35</sup> IC.I.XV; Anzalone 2013: 226.

<sup>36</sup> IC.I.XV; Chatzi-Vallianou 1992: 549 and Pl. 322.

<sup>37</sup> Blackman and Branigan 1977: 56.

<sup>38</sup> The *Theorodokoi* were those that received in their town the sacred envoys of the Delphic sanctuary who announced the Pythian festival (Chaniotis 2000: 56).

<sup>39</sup> SEG XXVI 624 col. IV.9.

<sup>40</sup> Spratt 1865 (vol. II): 8.

<sup>41</sup> In order to have the correct orientation when stamped.



“ΕΠΙ ΝΕΟΚΥΔΟΥ ΘΑ” and has been attributed to Lassaia by Mionet<sup>42</sup> and then by Sestini<sup>43</sup>. However, as Svoronos convincingly demonstrated,<sup>44</sup> that was a wrong attribution because the “ΘΑ” was erroneously considered as the abbreviation of “ΘΑΛΑΣΙΩΝ”, which, at its turn, was erroneously considered as the ethnic of *Thalasa* that was the imprecise Latin translation of the “Ἰαλασσα” from the Greek text of the *Acts*<sup>45</sup>.

### Historical geography (cartography<sup>46</sup>, portolan charts) and commentary

Apart from Peuntiger’s Table, where is mentioned as “Lisia” and its location is inverted with that of Lebena, the toponym of Lassaia seems to be absent from the cartography and the portolan charts. Instead of that, in the cartography of the previous centuries we encounter often the “Paleo Molo” toponym at the location of Lassaia. “Paleo Molo” is the Latin transcription of the Greek words that mean “old pier”. Abraham Ortelius<sup>47</sup> seems to be the first that used this toponym in 1576 and then other cartographers followed him such as Francesco Basilicata<sup>48</sup> (1618/9) and Giorgio Corner<sup>49</sup> (1625). However, most of the historical maps of Crete mention only the Kaloi Limenes bay (with a lot of name-variations), giving us the impression that they considered the area of Lassaia a part of it, reason for which it did not receive any special mention.

### Early Modern Travel Literature

From the few accounts about Lassaia, the most extensive one comes (again) from Spratt, who mentions the ancient mole and observes the double port it creates, several building remains on the cultivated terraces around the bay<sup>50</sup> and “a massive piece of Roman

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<sup>42</sup> Spratt 1865 (vol. II): 9.

<sup>43</sup> Svoronos 1890: 323-325 and Pl. X.22,23.

<sup>44</sup> Idem.

<sup>45</sup> Idem.

<sup>46</sup> The –over 150- maps that have been examined for this research are characterised by the depiction of the island of Crete as their exclusive or, at least, their prominent featured subject. They cover a span of three and a half centuries, from 1477 to 1797. All these maps are included in Zacharakis 2004.

<sup>47</sup> A. Ortelius 1576.

<sup>48</sup> F. Basilicata 1618/9.

<sup>49</sup> G. Corner 1625.

<sup>50</sup> From the description we assume he means the area over the eastern half of the bay.

wall with brickwork”, which he interprets either as an embankment wall, or as a part of a coastal defensive wall.<sup>51</sup> He also witnesses the use of Traphos islet as a refugee site by some local people.<sup>52</sup> Onorio Belli, on the other hand, does not mention almost anything about Lassaia<sup>53</sup> and he characterises it as a small and not important town that preserves, however, its ancient name.<sup>54</sup> Finally the most ancient testimony we possess, that of Buondelmonti, provides us with interesting information about Lassaia. Apart from defining it a small town, he mentions the existence of a “very ancient temple with marble columns” that also had a colossal statue inside.<sup>55</sup>

#### Observations in the perspective of a landscape archaeology approach – Further considerations

Despite the fact that Lassaia has suffered from continuous looting, most of the remains we mentioned above are still visible. However we can assume that a part of the town as well as the aqueduct have been destroyed due to the development of the modern village. As far as the breakwater (the so-called “Paleo molo”) is concerned, we had the opportunity to witness that it is still functional and able to protect the eastern part of the bay from the SW –low- waves (Fig. 9). It also seems that it was higher, since several fallen stone blocks are laying on the sea-bottom on its E side (Fig. 10). At the bottom of the channel that is formed between the breakwater and Traphos islet there is a concentration of Late Roman amphora (and  $\alpha$  spatheion) shreds (Fig. 11 and Fig. 12) that we mention here as indicators of the maritime traffic in the wider sea-area.<sup>56</sup> At the W side of the breakwater, as Branigan and Blackman first observed<sup>57</sup>, there has been formed a beachrock platform that is submerged at ca. - 1.5m (Fig. 13). Apparently the reason for the solidification of this paleocoast was the sand that was coming with the -frequent- SW winds and remained concentrated there, due to the ‘trap’ the

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<sup>51</sup> Spratt 1865: II.8.

<sup>52</sup> Idem.

<sup>53</sup> Although, because of the various misconceptions we explained in the previous page, he seems confused about the actual name and if it is Lassea, Thalassa or Lissea.

<sup>54</sup> Falkener 1854: 20.

<sup>55</sup> Aposkiti 1983: 36.

<sup>56</sup> Personal observation.

<sup>57</sup> Blackman and Branigan 1977: 28, 29.

breakwater formed. Thus the research for incorporated pottery shreds in the beachrock<sup>58</sup> would offer a *terminus post quem* not only for the submerged paleocoast but also for the construction of the breakwater.

As far as the Sea Level variations are concerned, in the relative bibliography archaeologists and geologists seem to agree that the wider Kaloi Limenes bay is characterized by a relative stability from the Hellenistic period to today.<sup>59</sup> However the truth of that assumption is seriously questioned since i. the slight submergence of a part of the coastal buildings, ii. the submergence of the western part of the breakwater at -1 m, iii. the existence of the beachrock platform at ca. -1.5 m and iv. the existence of a submerged paleo-shoreline (in the form of a tidal notch) on some stone-blocks at the eastern side of the breakwater,<sup>60</sup> suggest that the submergence of this area from the Hellenistic period to today has been of ca. 1 m.<sup>61</sup>

Branigan and Blackman<sup>62</sup> identified the coastal structures as warehouses related to the port of the town, an interpretation generally accepted in the relative bibliography. In our opinion, however, the function of the eastern group of these structures, inside the dry stream (that are similar to the others W of the breakwater), is not related to the storage of goods or boats, but to the slope reinforcement of the cliff where the acropolis is located (see Fig. 6). The orientation of these structures<sup>63</sup> seems to “obey” only to the cliff, since it is diagonal to the stream and different in relation to every other structure around there. Moreover, i. given the small space the walls (vertical to those towards the cliff) form between them, we would expect them thinner, ii. a streambed cannot be considered a suitable location for warehouses. Considering also the current conditions of the cliff, thus the apparent consequences of wind and water corrosion, we could assume that in the past it was mandatory for the inhabitants to retain it with embankments.

As far as Spratt’s “massive piece of Roman wall with brickwork”<sup>64</sup> at the eastern side of the bay is concerned, after its examination we assumed that it most likely is a part of the

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<sup>58</sup> Unfortunately Mourtzas does not mention the date of the pottery shreds that he detected. [Mourtzas 1990: 105].

<sup>59</sup> Blackman and Branigan 1975; Dermitzakis 1973; Flemming and Pirazzoli: 1981.

<sup>60</sup> Mourtzas 1990: 106.

<sup>61</sup> Idem.

<sup>62</sup> Branigan and Blackman 1977: 29, 35.

<sup>63</sup> Look also the plan in Branigan and Blackman 1977: 29.

<sup>64</sup> Spratt 1865: II. 8.

Roman aqueduct of the town and not a wall for fortification or embankment (Fig. 14). This assumption is based on i. the traces of the plastered channel that contained the water and are still visible on the upper part of its backside (Fig. 15), ii. the resemblance of the masonry and dimensions with the Roman aqueduct of Lyctos<sup>65</sup> at NE Crete (Fig. 16) iii. the fact that its position at the eastern part of the beach agrees with the course that the rest of the aqueduct followed, namely from NE to SE (in relation to the town-centre).

At the western part of the settlement, where the Roman cemetery with the built vaulted tombs is, according to our opinion, the existence of a road of Hellenistic and/or Roman date is very probable since i. the construction of mausoleums on the two sides of the roads, outside the urban centres, was a Roman standard, ii. Peuntiger's Table road network includes two independent roads that connect Gortyna with "Lisia" as well as "Ledena"<sup>66</sup>. The eastern part of the latter coincides with the area of the Roman cemetery.<sup>67</sup>

Concerning the etymology of the toponym of Lassaia, Paul Faure suggested an interesting theory. According to that 'Lassaia' derives from the ancient Greek word 'λάς' (las) that means 'rock', namely 'the town of rocks'<sup>68</sup>. The reason for this association is the presence of copper and iron deposits at the NE end of the settlement. There are strong indications that those deposits were being exploited during antiquity since EM, MM and LM pottery shreds have been found near them.<sup>69</sup> Moreover, on the acropolis, among the building remains (as Faure first observed) there is still visible mineral waste,<sup>70</sup> which indicates the metallurgical activity during the Hellenistic and/or Roman periods (Fig. 17 and 18).<sup>71</sup> We should add here that the streams at the western part of the settlement might have served as 'natural laundries' for the purification of the ores.

In conclusion, Lassaia's archaeological evidence suggests that during the Hellenistic, Roman Imperial (and probably Late Roman) periods it was a prosperous settlement, while, in contrast to this picture, the literary and epigraphic evidence remain quite silent. This

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<sup>65</sup> Personal observation.

<sup>66</sup> We repeat here that the position of the two bays is inverted.

<sup>67</sup> *Tabula Peutingeriana*.

<sup>68</sup> Faure 1966: 52.

<sup>69</sup> *Idem*.

<sup>70</sup> *Idem* and personal observation.

<sup>71</sup> Also Blackman and Branigan 1975: 27.

contradiction<sup>72</sup> created some discussion about the nature of Lassaia's political status. Firstly Perlman argued that the Cretan towns mentioned in the Delphic list of *theorodokoi*<sup>73</sup> -which included Lassaia- were in fact independent *poleis*<sup>74</sup>. However the arguments of Chaniotis related to the lack of treaties, coinage, evidence of local political authority and of an ethnic name, combined to the presence of the powerful centre of Gortyna as well as the fact that all the harbours to the S of Messara plain (Matala, Lebena) had lost their independence to it by the late 3<sup>rd</sup> century BC,<sup>75</sup> convince us that Lassaia was most likely a dependent community of Gortyna during the Hellenistic (and we may assume also during the Imperial<sup>76</sup>) period. That, of course, does not exclude the possibility of a former political status of independence<sup>77</sup>. On the other hand, according to Anzalone<sup>78</sup>, who relied both on the evidence about the political relations of Lassaia with Gortyna and the maritime importance that Lassaia would have for the latter, Lassaia was neither an independent *polis* nor a *polis hypekoos* but an *epineion* of Gortyna "potentially one of the *epineia* mentioned in an early 4<sup>th</sup> century BC inscription from the *Odeion*"<sup>79</sup>. As a matter of fact we do not see the contradiction between the status of *polis hypekoos* and that of the *epineion*, namely of a dependent community that serves also as a harbour town. However, in our opinion, the case of Lassaia maybe was slightly different due to practical reasons. Thus if we consider the nautical aspect of Lassaia's bay in relation to the western ones of the wider Kaloi Limenes bay, we will easily realise that they are better protected from the SW and from the sudden N winds, they present various natural harbour alternatives (depending on the direction of the wind) and they also have sandy beaches. In a few words, they offer more favourable conditions for the anchoring of boats. So we may assume that the bay of Lassaia should have served only in a local scale and not as a reference point for the passing mariners, as its absence from the historical cartography (apart from the information for the ancient mole) and the portolan charts also suggests. On the contrast to that it seems that Kaloi Limenes bay was a reference point for the mariners, if we judge by its frequent presence in the historical geography.

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<sup>72</sup> (that may well be due to the lack of a systematic excavation at the area).

<sup>73</sup> Those who received in their town the sacred envoys of the Delphic sanctuary who announced the Pythian festival. [Chaniotis 2002: 56].

<sup>74</sup> Perlman 1996.

<sup>75</sup> Chaniotis 2000: 56, 57.

<sup>76</sup> Given the existence of public works and mausoleums of Imperial date there.

<sup>77</sup> Chaniotis 2000: 56.

<sup>78</sup> Anzalone 2013.

<sup>79</sup> Anzalone 2013: 231.

Lassaia was i. Gortyna's dependent community and important to it as it represented not only a sea-gate to the Libyan sea but also a source of mineral deposits<sup>80</sup> and ii. a prosperous coastal town which, from what the relative archaeological surveys have shown, had no parallel in the wider area of Kaloi Limenes<sup>81</sup>. Thus we suggest that Lassaia used the western bays as its *epineion* since Kaloi Limenes area was simply in its territory. This maybe is implied also in the text of the *Acts* (AD 1<sup>st</sup> century) where Lassaia is characterised as a *polis* and Kaloi Limenes ("Fair Havens") as a simple locality. Moreover the maritime traffic at Kaloi Limenes bay (at least that of Roman and Late Roman periods) has been attested several times through the various discoveries of amphoras by the local fishermen<sup>82</sup>. Another indication to support our assumption is offered by the later historical cartography, where the Kaloi Limenes toponym survives in contrast to that of Lassaia. That absence could be explained in the following way; Kaloi Limenes continued to be useful for the mariners, while Lassaia had never been and since the coastal town lost its prosperity, it became "invisible" to them.

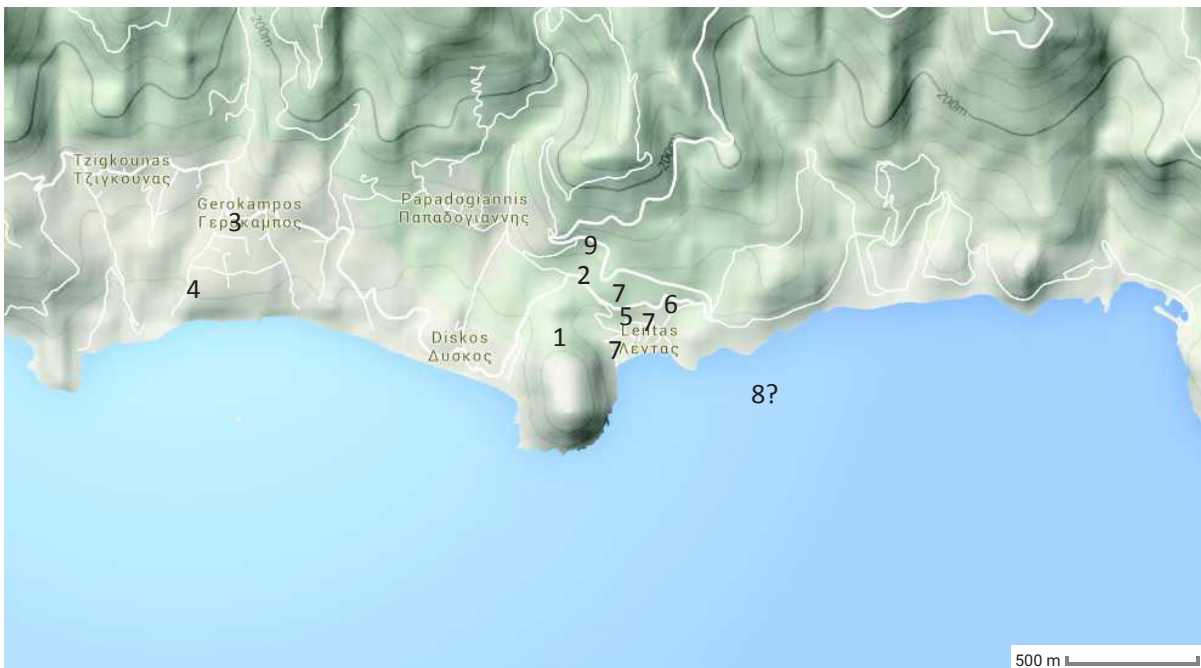
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<sup>80</sup> Besides, the absence of arable land at the wider area of Lassaia maybe suggests exactly that: the land productivity was not the asset of this town.

<sup>81</sup> Near the coast there are only minor sites (EM tholos tombs, scatter of Hellenistic, Roman and Late Roman shreds, Hellenistic farmstead) that attest the earlier occupation of the area.

<sup>82</sup> Alexiou 1967: 488.

## 2. LEBENA (LENDAS)



### Main geographic features

The bay of Levena slopes down quite steeply towards the sea, delimited by the Asteroussia mountains on the N and by the two promontories, cape Liondas (or Kefala) on the W and Psamidomouri on the E side. It has three seasonal streams from which the eastern, as Taramelli had noticed<sup>83</sup>, appears to be more recent (namely formed after the abandonment of the settlement during the AD 8<sup>th</sup>-9<sup>th</sup> century), as well as a thermal spring<sup>84</sup>. That spring has been characterised as “the most important mineral source of Crete”<sup>85</sup>.

The bay of Levena is a partially protected anchorage point, as cape Liondas limits its exposal to the -prevailing at the S coast- SW winds. Concerning the current geomorphology of the bay, thus without attributing any continuity in it, the most suitable area for anchorage is the one used nowadays by the inhabitants, at the W end of the beach. Cape Liondas is also a nautical landmark due to the fact that it looks like a resting lion, a feature that makes this bay always distinguishable from the sea.

<sup>83</sup> Taramelli 1900: 1.

<sup>84</sup> Makris 1958.

<sup>85</sup> Christoforakis 1961: 89.

## Archaeology

The most ancient material evidence in the area are the remains of a defensible small settlement<sup>86</sup> that dates back in the Late FN period (3200-3000 BC) and is located on cape Liondas, at the western surroundings of the bay. On Aginaropapouro hill, N of cape Liondas, lie the remains of an EM I fortified settlement<sup>87</sup> (2600-2000 BC), while at the surroundings of the bay, at the locations Papoura (900 m NW of the bay), Yerokambos (3 km W of the bay) and Zervou (1 km NE of the bay) there have been found complexes of EM I tholos communal tombs, (Fig. 19) which were in use until the MM IB<sup>88</sup> (ca. 1800 BC).<sup>89</sup> A Hellenistic farmhouse has been also attested on Yerokambos hill<sup>90</sup>.

The bay of Lebena, seat of the renowned sanctuary of Asclepius, reached its peak as a 'health centre' during the Hellenistic and Roman periods. As a consequence the whole area is scattered with remains of various buildings from those two periods such as; the *cella* of Asclepeion (Fig. 20) with the stoas, the pilgrim's rooms, water cisterns, the residential area, (Fig. 21) aqueducts, bath complexes, structures related to the Asclepeion sanctuary (Fig. 22) a coastal building of unknown use at the W end of the beach, (Fig. 23) some rock-cut cisterns at the foot of Psamidomouri,<sup>91</sup> a 'bridge' (Fig. 24) (part of an aqueduct?) and a coastal structure (fortification wall? port structure?) along the beach (Fig. 25).<sup>92</sup> Vassilakis, who conducted several rescue excavations in the modern settlement, revealed yet other parts of large public buildings, cisterns and aqueducts that are dated from the AD 2<sup>nd</sup> to the 6<sup>th</sup> century.<sup>93</sup> Furthermore in the newspaper 'Minos',<sup>94</sup> there had been reported the discovery -by a local farmer- of what apparently was the colossal statue of god Asclepius.

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<sup>86</sup> Vasilakis 2000b: *page*; Nowicki 2008: 13.

<sup>87</sup> Vasilakis 1989-90: 286.

<sup>88</sup> Alexiou 1992: 164.

<sup>89</sup> Alexiou and Warren 2004.

<sup>90</sup> Chatzi-Vallianou 1989: 9.

<sup>91</sup> Melfi 2006: 440; Taramelli 1900: 20.

<sup>92</sup> Melfi 2006; Taramelli 1900; Chatzi-Vallianou 1989.

<sup>93</sup> Vassilakis 1989-90: 286.

<sup>94</sup> Issue 12, published in 7/3/1881 and issue 15, published in 28/3/1881.



With regard to cape Psamidomouri, Taramelli reports the existence of an aqueduct, a rock-cut cistern, a temple and several other buildings.<sup>95</sup> We should add here the report on the discovery of seven cist tombs of Roman date<sup>96</sup> located N from the cape Psamidomouri,<sup>97</sup> as well as the comment of Chatzi-Vallianou regarding the submerged breakwater at the S side of the same cape<sup>98</sup>. Furthermore there is an Early Christian Basilica of the AD 9<sup>th</sup> century, on –a part of- which a AD 14-15<sup>th</sup> century church has been built. In its masonry the latter preserves columns, marble bases of statues, fragments of marble columns and other architectural parts that initially belonged to the Early Christian Basilica, as well as material from the Roman and Late Roman settlement such as tombstones, used in this case as building material (Fig. 26). According to Chatzi-Vallianou on cape Psamidomouri there was also an Early Christian settlement.<sup>99</sup>

In addition, thanks to Evans we know of the existence of a Roman road that connected Lebena to Aghios Kyrillos, a small village 5 km N from it and the neighbouring quarries of Dichali.<sup>100</sup> Finally, it has been reported that a AD 2<sup>nd</sup> century shipwreck was discovered at the area of Lendas<sup>101</sup>, although, apart from this mention, there is no further information.

#### Literature sources and comments

Lebena, according to Strabo, was the *emporion* of Gortyna (along with that of Matala).<sup>102</sup> Pausanias<sup>103</sup> attests that the cult of Asclepios at Lebena derives from the Epidauric Asclepeion, through the Cyrenaic one. He then adds that the only difference between the rituals followed by the two sanctuaries (of Epidaurus and Cyrene) is the sacrifice of goats that is practised at the latter. The testimony of Flavius Philostratus<sup>104</sup> is particularly useful not only because it further confirms the importance of the sanctuary for the entire island of Crete, its

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<sup>95</sup> Taramelli 1900: 17, 18.

<sup>96</sup> in one of them that was also two-floored, there was discovered a gold ring with a sard seal that depicted Zeus-Serapis.

<sup>97</sup> Orlandos 1971: 261.

<sup>98</sup> Chatzi-Vallianou 1989: 9.

<sup>99</sup> Chatzi-Vallianou 1989: 6.

<sup>100</sup> Evans 1964 II: 84.

<sup>101</sup> Blackman 1999: 117.

<sup>102</sup> *Geographica* X, 4.11.

<sup>103</sup> *Graeciae Descriptio* II, 26.9.

<sup>104</sup> *Vita Apollonii* Δ, XXXIV.

strong external relations with Libya (*πολλοὶ δὲ καὶ Λιβύων ἐς αὐτό περαιοῦνται*) and the recognisability of cape Liondas as a mariners' landmark, but mostly because it provides us with information about the tectonic history of the area. Specifically an earthquake<sup>105</sup> that caused the waters to recede seven *στάδια* (this equals to a distance of 1295 m) is attested in the text. Despite the fact that this kind of receding of the waters indicates the formation of a seismic sea wave (or tsunami) soon after, we have no such confirmation from the text of Flavius Philostratus. However we cannot exclude the possibility of a destruction caused by a tsunami wave at Lebena. We cannot exclude either the possibility that the 'receding of the waters' was a personal interpretation of a coastal uplift. Lebena is also mentioned in Hippolitus<sup>106</sup>, Suida<sup>107</sup> and Pliny<sup>108</sup>.

As we have seen until now no ancient written source defines Lebena as a *polis*. Instead it is mentioned mostly because of the importance of its Asclepeion.

#### Epigraphic and numismatic evidence

As far as the epigraphic record is concerned, from Lebena derive numerous votive and cure inscriptions from the sanctuary of Asclepios<sup>109</sup>, related to the cures obtained there, as well as an archaic one in which is attested a treaty between Gortynians and Lebenians<sup>110</sup>. According to some scholars Lebena "should perhaps be regarded as one of the dependent *poleis* of Gortyn during the Classical and Hellenistic periods".<sup>111</sup> Besides, the frequent use (both the collective and individual one<sup>112</sup>) of the city ethnic is a good indication of *polis* status in Crete.<sup>113</sup>

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<sup>105</sup> It is dated either in AD 53 or in AD 66 AD. For details on this debate and the relative bibliography see Papadopoulos 2011: 81-88.

<sup>106</sup> *Chronica* 579-580.

<sup>107</sup> *Lexicon* II.422: "Λεβηναίων ἱερὸν".

<sup>108</sup> *Historia Naturalis* IV.12.59.

<sup>109</sup> IC I.XVII.

<sup>110</sup> IC IV 63; Perlman 2004: 1174.

<sup>111</sup> Perlman 2004: 1174.

<sup>112</sup> The latter occurs in three cure inscriptions. See also Perlman 2004: 1174.

<sup>113</sup> Perlman 1996: 250-2.

## Historical geography (cartography, portolan charts) and commentary

According to Peuntiger's Table, where Lebena is marked as *Ledena*, there was a road that connected it to Gortyna. However, its location has been mistakenly inverted with that of Lassaia (*Lisia*), since Lebena it is depicted W from it. Lebena is mentioned very often in the maps of the cartographers, usually as *C. Lionda*<sup>114</sup>, *C° Lionda*<sup>115</sup>, *C. Lion*<sup>116</sup> or *Cap Leon*<sup>117</sup>, less frequently as *Lebena*<sup>118</sup>, *Lionda*<sup>119</sup>, or *Lenda*<sup>120</sup>. In other cases the cartographers distinguish the cape from the promontory; *Capo Lionda / Leon Prom*<sup>121</sup>, *C° Lionda / Pota di Lenda*,<sup>122</sup> *Ponta di Lenda / C. Lionda*,<sup>123</sup> *Pta de Lenda / Cap. Lionda*<sup>124</sup>. We noticed that the position of the cape changes frequently towards both W and E, sometimes at a big distance from its actual one<sup>125</sup>. A similar distinction occurs also between the sanctuary and the cape of Lebena in the maps of A. Ortelius 1584 (*Leon Prom/Lebeneum templum*) and of R. Feraios Velestinlis 1797 (*Λεβήνος –ιερό-/Λέων Λιόντας Ακ.*). We do not know which is the cause of the general confusion regarding the wrong attributions of the location of the cape Liondas, although we assume that it regards the reproduction of a mistake in an older map (for example Peuntiger's Table).

Lebena is mentioned in Ptolemy<sup>126</sup>, *Stadiasmus*<sup>127</sup> and in two Greek portolans (*Lendas*)<sup>128</sup>. However, it is worthy of note the fact that in those cases *Lendas* is described as a cape and not as a bay or a port, something that may indicate the nature of its nautical importance. Judging by the abovementioned data –and only- we could deduce that it was more renowned as a landmark and less as a point of anchorage. According to Peuntiger's Table, where Lebena is marked as *Ledena*, there was a road that connected it to Gortyna. However,

<sup>114</sup> G.S. Calapoda 1562, Mercator 1630, J. Janssonius 1638.

<sup>115</sup> F.Basilicata 1618/9, F.Basilicata 1636/8, G. Corner 1625, G. Corner 1630, M.Merian 1629, M. Boschini 1654.

<sup>116</sup> G. Mercator 1590, M. Merian 1718, N. Visscher 1638, M. Merian 1642-1688, P. Schenk and G. Valck 1709.

<sup>117</sup> J.N. Bellin 1764.

<sup>118</sup> A. Ortelius 1584, P. Cluverius 1659.

<sup>119</sup> Anonymous year..

<sup>120</sup> F. Basilicata 1636/8.

<sup>121</sup> N. Visscher 1638, V.M. Coronelli 1689, J.B. Homann 1702, G.M. Seutter 1725.

<sup>122</sup> M. Merian 1629, G. Bouttats 1674.

<sup>123</sup> N. Sanson d'Abbeville 1665.

<sup>124</sup> J. Chiquet 1719

<sup>125</sup> J. Matal 1602, G. Mercator 1590, M. Merian 1629.

<sup>126</sup> *Geografla* 3.15.3

<sup>127</sup> 321, 322.

<sup>128</sup> Tselikas & Koromila 2003: 93, 247.

its location has been mistakenly inverted with that of Lassaia (*Lisia*), since Lebena it is depicted W from it.

Coronelli in his *isolario* writes about Lebena an awkward theory regarding its name that, according to him, derives from the Greek word 'Levena', which is related to hand-washing, because it was the place where the basins for hand-washing were firstly constructed. He then mentions the existence of the remains of various buildings such as a large bridge, numerous water channels "that went to Gortyna", exploiting the big quantity of natural springs.<sup>129</sup>

### Early Modern Travel Literature

Judging by the texts of Spratt<sup>130</sup> and Mariani<sup>131</sup> about Lendas it is apparent that they were absorbed with the Asclepeion and as a consequence they mostly investigate and describe its remains as well as the traces of Asclepios cult in general (votive inscriptions, colossal statue of Asclepios). The ruins that Spratt saw and described belonged to vaulted buildings, cisterns, foundations of Early Christian churches, terrace walls as well as the foot of a colossal statue, standing near the shore.<sup>132</sup> He notices also the re-use of parts of ancient structures as building material to newer ones.<sup>133</sup> Finally he reports the existence of a vaulted building next to the hill of cape Psamidomouri that he interprets as a granary, as well as the remains of a Byzantine church on the S part of the hill, near to which there were several columns and other fragments that were used for its construction.<sup>134</sup>

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<sup>129</sup> P. Coronelli 1697: p.201.

<sup>130</sup> Spratt 1865 I: 349-353.

<sup>131</sup> Mariani 1897: 210.

<sup>132</sup> Spratt also mentions that, as the inhabitants informed him, there had been found an entire statue at the same area.

<sup>133</sup> Spratt 1865 I: 351.

<sup>134</sup> Spratt 1865 I: 353.

The sea bottom at Lebena bay is shallow if we compare it to the usual standards of the S coast (at ca. 60 m from the shoreline the depth is ca. 3 m). For the first ca. 30 m from the shoreline, the bottom is covered by fluvial deposits (as it was mentioned before there are three streams at the bay), which consist in pebbles of all sizes. However, at bigger depths, the bottom is sandy.

As far as the abovementioned 'breakwater' at the E cape (Psamidomouri) is concerned, we believe that the accumulation of the big blocks of rock is not artificial but natural, caused by the various landslides from Psamidomouri hill. We may also argue that the existence of a breakwater would have been pointless, not only because it would be distant from the bay that it should protect, but also because the prevailing wind comes from the opposite direction.

Furthermore at the centre of the bay and at a distance of ca. 5 m and 8 m respectively from the shoreline there are two submerged columns at -1.5 m and -2 m,<sup>135</sup> as was also the rumour from some local fishermen. The columns are plain and of white marble, a characteristic feature mostly of the Late Roman period. The western column (Fig. 27) preserves also its base, which is inherent, while the eastern one (Fig. 28) is semi-buried by the fluvial deposits of the bottom. Given i. the big distance that separates them from the nearest coastal structure (ca. 12 m), ii. the altitude difference between the latter and the columns, iii. their good state of preservation, we may exclude that the reason they are found there is that they fell off from some coastal cliff. In addition, the fact that the one column preserves its inherent base suggests that they were not a ship's merchandise either. In fact we believe that the two columns are *in situ*. This hypothesis is further strengthened by the architectural remains<sup>136</sup> that we detected at ca. 5 m W from the western column, at the same depth (Fig. 29 and Fig. 30). Apart from that, at various points of the western part of the bay and at the same depth (-1.5 to -2 m) there are conglomerates of the sea bottom deposits' material, which can be identified as beach-rock formations, thus as markers of a previous Sea Level. Moreover a tidal notch was identified on a vertical rock, almost at the centre of the bay, at ca. -0.50 m. (see Fig. 169). To sum up, it seems safe enough to assume that two of the former paleoshorelines of Lebena bay coincide with the depths of -1.5 to -2 m and -0,50 m respectively (the latter being the newest). At this point we should certainly quote Mourtzas and Fytrolakis, and their study on the

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<sup>135</sup> Personal observation.

<sup>136</sup> I am referring to the foundations of a circular building, which, however, should be further investigated.

neotectonic movements at the bay next to Lebena towards E, who affirm the existence of submerged paleoshorelines “of the historic periods”<sup>137</sup>. The same authors mention also that the aforementioned Sea Level variation was caused by the subsidence of the earth.

As far as the coastal buildings are concerned, the only reliable testimony we have is that of Taramelli (text and topographic plan).<sup>138</sup> Going from E to W, on the cape Psamidomouri he attests the remains of an aqueduct (N-S) and “an impressive group of buildings” from which the one (E) was a temple.<sup>139</sup> Parts of columns that probably belonged to it are still visible (Fig. 31).<sup>140</sup> Here it should be noted that the group of buildings on the hill of cape Psamidomouri is still impressive.<sup>141</sup> The bigger part of its surface is covered by the remains of numerous walls, (Fig. 32 and Fig. 33) the southern of which is probably a fortification wall, supported by smaller ones vertical to it (retaining walls), that arrive almost to the sea surface (Fig. 34). Our assumption, judging by the position, the spatial arrangement of the remains, the construction technique used for the walls and the dating scattered pottery, is that the remains belong to Lebena’s Hellenistic and Roman acropolis.<sup>142</sup> The hill was probably occupied also during the Early Christian and/or Byzantine period for an unknown period of time, as is indicated by the testimony of Spratt about the church and as argued by Chatzi-Vallianou, but that does not exclude an earlier occupation of the site.

Taramelli also noticed the presence of a rock-cut cistern at the S part of the cape, which he interpreted as a cistern for the storage of fresh water destined to supply the passing boats. However, according to Melfi, that is a fishtank.<sup>143</sup> In our opinion it is undoubtedly a stone quarry (Fig. 35).<sup>144</sup> The building ‘NN’ (Fig. 36) at the eastern part of the coast has been interpreted as a structure related to the port of Lebena and destined either for the mooring of boats or for storing the merchandise.<sup>145</sup> It was probably the same structure that was described as a vaulted building and identified as a granary by Spratt. At the western part of the coast Taramelli reports another building (OO), which is very similar to NN thus he attributes to it the

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<sup>137</sup> Mourtzas and Fytrolakis 1988: 249.

<sup>138</sup> Taramelli 1900: 23, 24.

<sup>139</sup> Taramelli 1900: 17, 18.

<sup>140</sup> Personal observation.

<sup>141</sup> Idem.

<sup>142</sup> Personal observation and evaluation.

<sup>143</sup> Melfi 2007: 22.

<sup>144</sup> Personal observation.

<sup>145</sup> Taramelli 1900: 18.

same function (Fig. 5). The remains of the building W of OO are not labelled in the plan, but the scholar supposes they served as an embankment and a retaining wall. He also assumes that the building C, which is of circular plan, was a cistern (Fig. 37?). On the W side of cape Liondas there are remains of other buildings that again in Taramelli's plan are indicated but not labelled, and which the latter identified as warehouses with supplies for the passing boats. Today, along the beach, we can still see the remains of the abovementioned buildings in the form of blocks of agglomerations, usually carefully incorporated in the modern structures (Fig. 38)! However, in our opinion, the fact the Taramelli and Melfi (to whom we owe the most concise study made until now on the Asclepeion of Lebena) take as granted the coincidence of the Hellenistic-Roman shoreline with the current one, limits their interpretation regarding the function of those coastal buildings, which could very well be unrelated to the port of Lebena, assuming there had been one. In fact the strong geoarchaeological indications we presented above about the existence of submerged shorelines at the bay of Lebena question seriously those interpretations and indicate that the coastal geomorphology during the Hellenistic-Roman period was very different. In our opinion this massive coastal structure (to which both the remains depicted in the figures 35 and 37 belong to) could be related to a fortification wall (Hellenistic or Roman). If that is true, then the vertical walls that Taramelli mentions could be the retaining walls.<sup>146</sup> Moreover, if we accept as correct our assumptions regarding the paleoshoreline (at least 2 m lower in relation to the present Sea Level) and we apply them on the bathymetries as documented on the map by the Greek Hydrographical Service, we realise that the bay should be considerably less protected. Consequently we should not rule out the possibility that the bay of Lebena was not the main anchorage of the area and that the latter was located maybe E of it, near Loutra. Belli's testimony from 1586, in a way encourages that opinion "the harbour is destroyed and no traces of it are remaining [...] the place now serves only as a beacon station to warn the inhabitants on the approach of corsairs".<sup>147</sup> The AD 2<sup>nd</sup> century shipwreck that was discovered at Lendas,<sup>148</sup> could probably expand our knowledge regarding the nautical aspects of the wider area, but unfortunately no further information about it has been published yet. Another element that suggests how important sea was for the

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<sup>146</sup> Personal observation.

<sup>147</sup> Falkener 1854: 19.

<sup>148</sup> Blackman 1999: 117.

settlement of Lebena is a stone anchor (used probably as a votive offering) that we noticed at the archaeological site of the Asclepeion (Fig. 39).<sup>149</sup>

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<sup>149</sup> Personal observation.



### 3. TRIPITI



#### Main geographic features

Tripiti is a small bay with a sandy beach and a prolonged and high W promontory that provides shelter from the W winds. There are –at least- four known water springs and a stream, which is currently dry during summer that stems from the gorge of Tripiti. The mouth of the gorge is found ca. 100 m N from the shore at the central part of the bay. The gorge is steep-sided and the mountains that surround the bay barren and arid. Assuming that the river is seasonal, the gorge connects Tripiti with Messara valley. The cultivable land is very limited, but the bay makes a good anchorage for small vessels.

#### Archaeology

Tripiti bay has four main sites. The first is the EM hilltop settlement at the location *Adami Korfali*, 135 m high and ca. 800 m inland (Fig. 40).<sup>150</sup> The site has been excavated

<sup>150</sup> This site is out of the limits of our survey area and it is included exceptionally in it. The reason for that is we consider it to be crucial for the comprehension of the wider archaeological context, including the coastal zone.

systematically<sup>151</sup> and its full publication is expected soon. The settlement is divided into two sections by a 1.5 m wide central road. There have been individuated two main building phases (EM II and EM III-MM IA). The settlement is constituted by seven houses with two to four rooms each. All the rooms, which are stone-built, display a square ground plan and the central rooms of each house have stone-built central pillars. The others were equipped with pit hearth, benches and, in some cases, wardrobe-like storage spaces. An interesting feature are the double walls that occur when one house abuts on its neighbor (Fig. 41).<sup>152</sup> Apart from the architectural remains, the findings were, fortunately, extremely interesting for the comprehension of the every day life. There were discovered a few bronze tools and a rich series of stone tools including polishers, axes, pounders, hammers, corn rubbers and grinders. In addition there was found much chipped stone (obsidian and flint).<sup>153</sup> The food refuse includes remains of grain and legumes, the animal remains consist in cattle, pigs, sheeps, birds and hares, while there are also fish remains and shells. The big assemblage of purple shells that was found should be associated to the diet of the inhabitants<sup>154</sup> (food remains) and not to the purple dye production as it was initially<sup>155</sup> assumed. Finally there were also found a clay sealing and two steatite seals.<sup>156</sup> It is important to mention that there was available water near the settlement. Vasilakis reports the existence of three wells.<sup>157</sup>

The second site is a communal EM I tholos tomb that was in continuous use until 2000 BC and is of course associated to the abovementioned settlement. It is located at a distance of 200 m S of the settlement. The tomb's diameter is 5.30 to 5.80 m, its wall is 1.50 m thick and its entrance is built of three large slabs.<sup>158</sup> Inside the tomb, apart from the pottery there were also found several silver and steatite beads.<sup>159</sup> We have to add here that as far as all of the lowcliff area that surrounds Tripiti bay from E and includes the two sites we mentioned above

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<sup>151</sup> Vasilakis 1989.

<sup>152</sup> Vasilakis 1989: 53.

<sup>153</sup> Vasilakis 1989: 54-5.

<sup>154</sup> Veropoulidou and Vasilakis 2010.

<sup>155</sup> Vasilakis 1989: 55.

<sup>156</sup> Vasilakis 2000: 125.

<sup>157</sup> Vasilakis 1989: 55.

<sup>158</sup> Vasilakis 1989: 56.

<sup>159</sup> Vasilakis 1989-1990: 287.

is concerned, it presents a wide network of minor sites of synchronous as well as diachronic usage.<sup>160</sup>

The third site is a small coastal settlement dated to the Hellenistic period. It is located ca. 100 m from the shore, at the W side of the mouth of Tripiti gorge (Fig. 42). The small part of it that survived the illegal destruction of the settlement, which took place in 1983 and 1989<sup>161</sup>, was excavated and it revealed a three-roomed house associated with 2<sup>nd</sup> and 1<sup>st</sup> century BC pottery, pieces from iron nails as well as animal bones and marine shells.<sup>162</sup> The central room was lined with stone benches and had four wooden pillars to support the upper floor and a buried pithos that was not excavated.<sup>163</sup> The little information we have regarding the destroyed settlement comes from Evans<sup>164</sup> who reported not only the existence of the “Roman”<sup>165</sup> settlement, but also of a Minoan one. In particular he mentioned the existence of MM II and LM I foundations (including a terrace wall) buried under the sand at the W part of the beach “with some Greek and Roman work superposed”.<sup>166</sup> We may assume here that the antiquities that Faure mentioned to be found near the cave,<sup>167</sup> which is located on the ‘corner’ that is formed by the shoreline and the W promontory, were related to the Hellenistic-Roman settlement. Indeed the water-channel, the cisterns and the shreds of Roman date that he reported coincide both as location and chronology with the Hellenistic-Roman settlement of the W part of the beach. According to Evans Minoan shreds were visible also on the slope and until the top of the W cliff. In addition he noted a spring at ca. 100 m from the shore on the W side of the beach and near it he discovered a fragment of a larnax which beared an inscription in Linear A.<sup>168</sup>

The fourth main site is on the W promontory of Phylakas and it is a relatively extended MM II settlement located on the flat surface of the rock (Fig. 43). There have been excavated

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<sup>160</sup> The preliminary results of the survey that took place in the under discussion area (as well as the N and E slopes that surround the bay) are yet to be published. Sbonias and Farinetti 2011.

<sup>161</sup> Vasilakis 1994-1996: 341.

<sup>162</sup> Blackman 2001-2002: 110.

<sup>163</sup> Vasilakis 1994-1996: 341.

<sup>164</sup> Evans 1964 II: 82-83.

<sup>165</sup> Probably the settlement was Hellenistic and Roman too, not only Hellenistic or only Roman.

<sup>166</sup> Evans 1964 II: 83.

<sup>167</sup> Faure 1956: 100.

<sup>168</sup> Idem.

only two rooms of it that provided us with typical MM II pottery vases, stone tools and food remains (animal bones, marine shells).<sup>169</sup>

#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

The toponym of Tripiti is modern. However we were not able to retrace neither an older version of it used in the historic maps of Crete and in the texts of the portolans, nor another toponym(s) that was/were attributed to the wider area. However there is the toponym *Apothichies*, that in Greek means 'storehouses', and is repeated in three different maps.<sup>170</sup> Moreover it is always located next to Lebena towards E. So, there is a good probability that it referred to Tripiti bay. As far as the word 'storehouses' is considered, it is probable that some of the Hellenistic (?) buildings on the shore were used much later (probably during the Venetian period) in order to store goods (granaries?).

#### Early Modern Travel Literature

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<sup>169</sup> Vasilakis 1991-1993: 295-296.

<sup>170</sup> F. Basilicata 1636/8, M. Merian 1629, G. Bouttats 1674.

Observations in the perspective of a landscape archaeology approach – Further considerations

The naturally fortified position of the hilltops around Tripiti bay, the existence of the small and sandy beach that offers both anchorage and access to the sea and to the related activities as well as the privilege regarding the control of the gorge, (Fig. 44) which constitutes also a way towards the inland and in particular towards the big and fertile valley of Messara, (Fig. 45) are significant features that justify the occupation of this area.

The beach as well as the sea bottom are sandy and there cannot be retraced any remaining architectural remains –if there are.

Regarding the destruction of the coastal settlements, during our visit to Tripiti we noticed that a part of the Hellenistic/Roman marble structures (such as parts of columns, bases of columns, blocks etc) ‘survives’ as a decoration in a local house at the mouth of the gorge (Fig. 46).

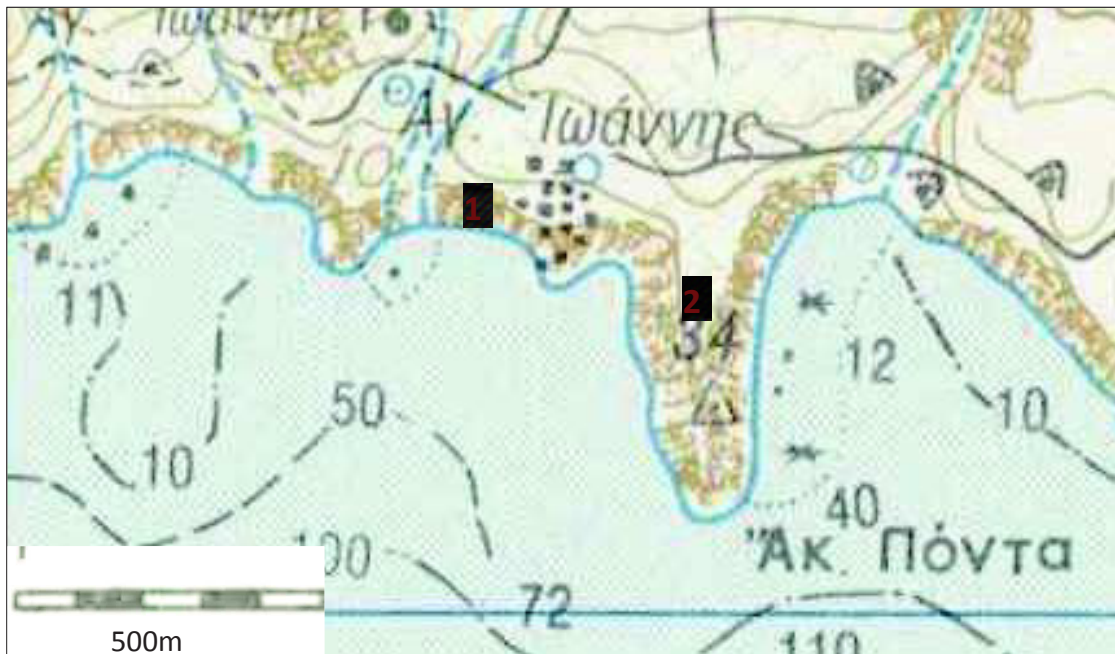
By putting all the available data together it becomes apparent that the bay of Tripiti as well as the surrounding cliffs present a picture of several minor and bigger sites that constitute a kind of network. That network in its entirety is characterised by continuous occupation regarding the EM I to the MM II periods, although only some of the sites present diachronic usage, while the others seem to be interconnected to them for shorter periods of time.<sup>171</sup> A similar pattern maybe characterises the Hellenistic/Roman period too. However at this moment we do not possess yet the valuable survey data that will be published soon<sup>172</sup>, therefore we should not jump into further conclusions.

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<sup>171</sup> Sbonias and Farinetti 2011.

<sup>172</sup> Either in the full publication of the EM settlement of Tripiti by Vasilakis, or in the proceedings of the 11<sup>th</sup> Cretological Congress (Sbonias and Farinetti 2011).

## 4. AI GHIANNIS - KAPETANIANA



## Main geographic features

Ai Ghiannis is delimited by Volakas stream (that stems from the gorge) on the E and a small plateau on the W, after Elygia stream. The small bays, where the two streams end, have sandy beaches. There is a third one between them, which is rocky. The area, apart from the streams, has also three wells. In addition, on the E there is the cape Ponta that has the form of a small peninsula and on the W the much smaller cape Plaka. Following the standard coastal landscape of S Asteroussia mountains, the bay is surrounded by high and abrupt cliffs (Fig. 47).

## Archaeology

On the peninsula of cape Ponta (Fig. 48), the rescue excavations that have been conducted by the local Ephorate revealed a part of a Minoan settlement<sup>173</sup> (houses). Traces of sparse smaller settlements have been also found N and NE of Ponta.<sup>174</sup> An older coastal and underwater survey<sup>175</sup> at the area N and NE of the smaller cape of Plaka revealed another neighbouring Minoan settlement, (it extends ca. 500 m W-E and ca. 600 m N-S) as well as a partially submerged breakwater that was associated with the aforementioned settlement.<sup>176</sup> The breakwater consists in a natural reef, which is connected to the land by means of stone blocks (Fig. 49). The surface pottery shreds dated the occupation of the site from EM II to MM III period.<sup>177</sup> There were documented the foundations of twenty-one buildings, (probably the half of what could still be underground) most of which have walls 8 m long and 0.60 m wide.<sup>178</sup> It is mentioned also a building with a stone-paved floor. The settlement was characterised as a probable harbour site of the Minoan period.<sup>179</sup> At the eastern small bay there is a cave that has been transformed into a 14<sup>th</sup> century monastery of Aghios Antonios, as well as a well with rock cut steps of uncertain dating.

## Early Modern Travel Literature

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## Literary evidence

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<sup>173</sup> With no further details regarding the chronology.

<sup>174</sup> Kanta and Galanaki 2011.

<sup>175</sup> Hadjidaki 2004.

<sup>176</sup> Hadjidaki 2004: 55.

<sup>177</sup> Idem.

<sup>178</sup> Idem.

<sup>179</sup> Idem.

## Epigraphic and numismatic evidence

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## Historical geography (cartography, portolan charts) and commentary

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Observations in the perspective of a landscape archaeology approach – Further considerations

The archaeological evidence indicates the significance of this isolated bay during the Minoan period. Given the very limited accessibility, since the gorge of Volakas represented probably the only passage towards the inland (its beginning is near the largest neighbouring Minoan settlement of Kapetaniana, 800 m a.s.l.), we may presume that the sea was its basic means of communication with other settlements.

The element that makes the Ai Ghiannis' settlement history unique is the expansion and the permanent character of the establishment, in contrast to the settlement pattern with the seasonal characteristics we have encountered in geographically similar locations.<sup>180</sup> We cannot know if this is owed either i. to the recent 'discovery' of the bay by the inhabitants of the modern settlement (Fig. 50), something that probably has delayed the alteration of its landscape and the elimination of its archaeological evidence,<sup>181</sup> or ii. to the particular tectonic history of the coast at the specific area, which 'permitted' to the land –along with the antiquities- and to the Sea Level to maintain almost the same relation that they had during the Minoan periods. About the latter, an in-depth study concerning the paleo-shorelines of the area is needed.

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<sup>180</sup> Except for Tripiti.

<sup>181</sup> Indeed the dirt road that connects Ai Ghiannis to Kapetaniana did not exist fifteen years ago [Hadjidaki 2004: 53].

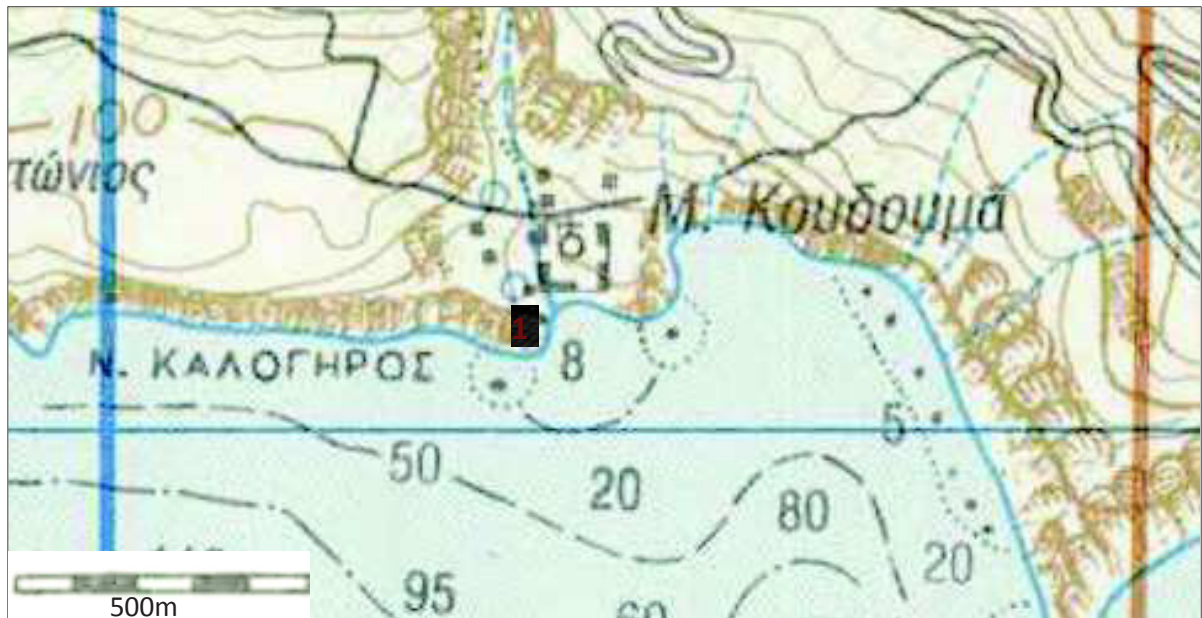


The dating of the breakwater was based on i. the association with the settlement and ii. the beachrock platform at the bay of Plaka with the incorporated Minoan shreds at a depth of - 1 m. However, we should point out that the pottery can offer a *terminus post quem* regarding the formation of the beachrock, not a precise dating. Since, according to the existing information, on the bay of Ai Ghiannis there is only Minoan material evidence, it could have been embedded anytime in the beachrock formation. Until the “small fragments of embedded pottery” that were found in concretions in between the stones of the breakwater<sup>182</sup> are analysed, we cannot be sure for the dating of this structure.

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<sup>182</sup> Hadjidaki 2004: 56.

## 5. MONI KOUDOUMA



### Main geographic features

At the bay of Moni Koudouma is repeated the 'standard' coastal landscape of the S side of Asteroussia mountains. Namely the bay is surrounded by high cliffs, slightly sheltered from SW and the beach consists in fluvial pebbles (Fig. 51, 52). The bay is located at the mouth of Koudoumas gorge, in which there is a forest of pine trees and several caves and it is formed by the fluvial deposits of the stream that descends from the gorge. On the rocky cliff that delimits the bay from W there are several caves too. At a distance of ca. 1 km towards W and on the coast, there is the large cave of Abakospilio.

### Archaeology

The bay of Koudouma is one of the important centres of the movement of Asceticism, which flourished for several centuries at the mountains of Asteroussia. It is rumoured that the first ascetists arrived there during the Early Christian period and that they occupied the small

caves/rock shelters that are located on the W side of the bay (Fig. 53). The same thing is also rumoured for the larger cave of Abakospilio (Fig. 54). Although both of the assumptions are highly likely there is no material evidence to prove it. An ancient material evidence comes from the –reconstructed in 1915- monastery of Koudouma, which has a fresco in its sanctuary that dates in the AD 14<sup>th</sup> century.<sup>183</sup> In addition we should mention the existence of a few pottery shreds and fragmented tiles of Medieval dating that are located near in the area of the caves.<sup>184</sup> However, the older material evidence of this area is an inscription of Sanationes<sup>185</sup> where is described the cure of a health problem that should follow a certain ‘Poplius Granius Rufus’. The inscription was found in the monastery of Koudouma and the name of the patient dates it in the 1<sup>st</sup> century BC.<sup>186</sup> Unfortunately we do not have other information regarding the origin of this inscription and consequently we are not able to confirm if it was *in situ* or not.

#### Early Modern Travel Literature

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#### Literary evidence

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#### Epigraphic and numismatic evidence

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<sup>183</sup> imkoudouma.gr 2015.

<sup>184</sup> Personal observation.

<sup>185</sup> Votive inscriptions with the accounts of various Asclepeios’ cures.

<sup>186</sup> Detorakis 2000: 416, 418.

## Historical geography (cartography, portolan charts) and commentary

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Observations in the perspective of a landscape archaeology approach – Further considerations

Another local rumour that regards the Abakospilio cave and we did not mention before because there is no evidence for it is the one about the “cave where pregnant women gave birth to their children”. During our visit there we realised that it is very likely it has functioned as another<sup>187</sup> diachronic cave sanctuary of Eileithyia, the divinity of labour, since it has common features such as the spacious interior, the presence of big stalactites and the vicinity to the sea (Fig. 55, 56, 57). Furthermore, if we consider the extended use of rock shelters and caves in Neolithic Crete, its occupation (of Abakospilio as well as of the small caves at the bay) during the Neolithic period, would not surprise us at all.

The fluvial deposits that are visible on the coast continue also underwater for the first ca. 15 m. At the sea bottom we retraced a beachrock platform in two different depths (ca. 5 m and ca. 3 m<sup>188</sup>) that bear testimony to the previous state of the shoreline (Fig. 58, 59).

On the top of the small rocky promontory on the W we retraced a very coherent – chronologically- scatter of pottery shreds that most probably date to the EM period.<sup>189</sup> The shreds were scattered on the surface of the hill with no visible trace of architectural remains (Fig. 60, 61, 62). This new element about the settlement history of the area during the EM period, in combination to the existence of several caves (and Abakospilio) offers good indication to presume a seasonal type of occupation.<sup>190</sup> However we have a huge chronological gap until the ‘next’ material evidence that dates in the 1<sup>st</sup> century BC<sup>191</sup>. At this

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<sup>187</sup> Like the ones at Inatos and Amnissos.

<sup>188</sup> The depths are approximate.

<sup>189</sup> Personal evaluation. It should be confirmed by the local Ephorate.

<sup>190</sup> The site is not included in the numeration of the sites because it should be first confirmed by the local Ephorate.

<sup>191</sup> If we accept that the inscription was *in situ*.

point we should mention the existence of a few pottery shreds and fragmented tiles of Medieval dating that are located near in the area of the caves (Fig. 63).<sup>192</sup>

That gap either could be 'filled' by the foundation of other neighbouring small settlements that have not been detected yet or it could also mean that the continuous occupation of the small caves and of Abakospilio by the ascetists maybe eliminated any existing evidence of the past periods (Fig. 64). As far as the Hellenistic and the Early Christian periods are regarded, we could propose again the possibility of piracy activities, given also the fact that the isolated bays like Koudouma are always good candidates for either being subject to attacks or even become pirate bases.

Finally we would like to mention one of the 'miracles' that are attributed to Osios Parthenios and Eumenios, who were the founders of the 19<sup>th</sup> century monastery. So, according to that 'miracle' when the two founders decided to rebuilt the monastery, there was not building material at the area. The 'miracle' consisted in the god-sent appearance of carved stone blocks on the beach. If this narration echoes a true fact, then we could propose that those carved stone blocks belonged to the cargo of a boat that had sunk nearby.

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<sup>192</sup> Personal observation.

## 6. TREIS EKLISIES



### Main geographic features

Treis Eklisies is a small bay with a sandy beach at the S side of Asteroussia. It is located on the mouth of Abas gorge and it is surrounded by the high and very abrupt coastal cliffs of the Asteroussia mountains (Fig. 65). The gorge has a length of 4 km and it starts 1 km S from the nearest settlement, which is called Paranimfi. From the gorge stems a seasonal stream (at the beginning of the gorge there is a 130 m tall waterfall) that ends also at the bay of Treis Eklisies. The small promontory on the W shelters slightly the bay from the SW winds, reason for which the modern anchorage for small vessels is located at the W side of the bay.

### Archaeology

The known antiquities of Treis Eklisies regard the Byzantine and the Venetian period. There are three 14<sup>th</sup>-century chapels (Treis Eklisies means ‘three chapels’) and recently, under the chapel of Evangelismos, which is located at the W side of the bay and at a small distance from the shoreline, there were discovered the foundations of an Early Christian basilica (Fig. 66). It is three-aisled and its dimensions are 16.30 x 11.50 m. During the rescue excavation carried out by the local Ephorate<sup>193</sup> there were also found several marble fragments from the superstructure and the columns of the temple. Due to the existence of modern buildings

<sup>193</sup> Personal communication with Mavritsaki Maria (archaeologist of the Herakleion Ephorate).

nearby only a part of the basilica's foundations was unearthed. The masonry of Evangelismos chapel as well as of Aghios Georgios that is located at ca. 80 m E from the Evangelismos chapel<sup>194</sup> at the same distance (ca. 50 m) from the shoreline, bear testimony to the existence of ancient buildings related to the Early Christian period, because they preserve pottery shreds, fragments of columns and marble decoration (Fig. 67, 68).<sup>195</sup>

#### Early Modern Travel Literature

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#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

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#### Observations in the perspective of a landscape archaeology approach – Further considerations

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<sup>194</sup> We cannot confirm this for the third chapel (Panaghia), since we did not visit it, although we suppose it follows the same pattern.

<sup>195</sup> Personal observation.

As we mentioned briefly before, during our visit to Treis Eklisies we realized that the masonry of the chapels of Evangelismos and Aghios Georgios bears testimony to the existence of more ancient buildings at the area. In particular, as far as Aghios Georgios is regarded, we noted several fragmented tiles, bricks, amphora shreds, as well as limestone and marble blocks (Fig. 69, 70, 71). At the yard there are also a fragment of a marble column with its marble base (Fig. 72) and the base of a marble basin (that probably maintains its original position (Fig. 73). The abovementioned material evidence indicates strongly the previous existence of an Early Christian basilica. In the masonry of Evangelismos chapel as well as of the surrounding constructions (oven and benches, also of Venetian dating) there are numerous tiles, bricks, amphora shreds, limestone blocks and marble fragments, that bear witness not only to the former Early Christian basilica, but also to the Imperial Roman (diagnostic pottery: numerous shreds of Cretan and African amphoras with a date range from AD 1<sup>st</sup> to 5<sup>th</sup> century Fig. 74, 75) and to the Hellenistic periods (amphora's pointed bottom Fig. 76).<sup>196</sup>

As it has been described above, the accessibility of the bay by land is limited due to the isolation that is caused by the high mountains around it (Fig. 77). In addition, the gorge of Abas does not represent a passage towards the inland because it also has limited accessibility due to the several and high waterfalls that are formed inside it. As a matter of fact, nowadays it can be crossed only with rappel equipment. Therefore, in our opinion, the communication between Treis Eklissies and other coastal areas was possible mostly by sea and much less by land. So we consider this discovery to be very important regarding the settlement history of the area, since it is a good indication for the occupation and, consequently, the maritime connection of the bay with other coastal settlements of the S coast during the Hellenistic and Roman period.

Unfortunately it is impossible to put in context this evidence, or find more of it, since the landscape of the bay is altered as a result of the big quantities of cement that covered it during the construction of the modern settlement.

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<sup>196</sup> Personal observations.



TRIPITI, AI GHIANNIS-KAPETANIANA, MONI KOUDOUMA, TREIS EKLISIES:  
AN INLINE NOTE

After the individual area-analysis of the previous pages, the geographical and geomorphological similarities between these locations should have become more than evident. Despite their, even today, limited accessibility from land they all present human occupation since the Minoan period<sup>197</sup>. That combination became even more remarkable for me after the on site visits and the personal experience they provided me regarding the low level of accessibility from land. In addition to that, the abrupt and unhospitable coastal morphology should have been even more discouraging for the access and occupation of these areas. So is it possible that the 5 to 2 meters of elevation of the relative SLR<sup>198</sup> since the MM period (or Pre-Palatial 2300 BC to Neopalatial period 1450 BC) have covered a part of a paleocoast that was less inclined and abrupt and, as such, formed a kind of a 'coastal corridor', which facilitated the access to these locations? I include this reasoning, which is obviously an issue beyond my scientific skills, here as a future food for thought and nothing more.

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<sup>197</sup> With the exception of Treis Eklisies, that, however, cannot be excluded, given that the area has not been explored.

<sup>198</sup> According to Mourtzas et al. 2015, fig. 12.

## 7. INATOS (TSOUTSOUROS)



## Main geographic features

The bay is found near the E end of Asteroussia Mountains. It is well protected from the prevailing SW wind and delimited by the cape Kerkellos on its W side. In the bay there were five streams and one river (Mindris). Currently the streams are dry and Mindris river is seasonal. The latter passes through the homonym gorge which continues for about 7 km towards NW, to Kastelliana settlement, where the ancient Priansos probably was. In addition, on the W side of the bay, at a small distance from cape Kerkellos, there is a waterfall, which is a constant and a rich source of fresh water for the wider area, all year round. The N side of the bay slopes down quite gradually towards the sea, while the W side descends rapidly. The modern port of the settlement is artificial and it is situated at the centre of it. However, judging by the coastal geomorphology and the prevailing winds, the most suitable areas for anchorage were in front of the W end of the beach and at the bay of the modern Maridaki, before cape Kerkellos. Finally we should mention the cave of Eileithyia, situated at the centre of the bay, at a distance of 50 m from the shore.

## Archaeology

The most ancient material evidence of the area of Inatos comes from the site Aliori, which is located at the eastern extremity of the modern settlement. There have been discovered pottery and architectural remains that belong to a MMIIA to LMIB settlement. Among the findings there are mentioned also serpentine vessels.<sup>199</sup>

The most renowned archaeological site of Inatos is the sacred cave of Eileithyia (the divinity of labour), where the excavations of the local Ephorate attested a continuous use from the MM period (1900-1700)<sup>200</sup> to the AD 4<sup>th</sup> century (Fig. 78). The findings are related to the cultic activities that were carried out at the site (clay figurines, lamps, golden rings and cult vases) and they indicate that the sanctuary flourished mostly during the Geometric and Orientalising periods. They also indicate strong external relationships with Egypt and the Levantine coast during the Orientalising-Early Archaic period (7<sup>th</sup>- 6<sup>th</sup> century BC).<sup>201</sup> At Kafas, located 500 m E from the modern settlement as well as at the W limit of the modern settlement there have been discovered remains of two amphora production sites of the AD 2<sup>nd</sup> century<sup>202</sup>. At the eastern and the western part of the modern settlement the rescue excavations of the local Ephorate revealed parts of the Roman and Late Roman cemeteries of Inatos<sup>203</sup> (mostly the types of tile graves, rock-cut and hut-shaped<sup>204</sup>). In addition, at the western 'cemetery area' there was discovered a group of tombs enclosed by a three square and one round *periboloi*. The quality and the quantity of the respective tomb offerings suggest that the cemetery was associated with the upper classes of ancient Inatos.<sup>205</sup> At the central part of the modern settlement the rescue excavations revealed traces of various building remains dated at the AD 2<sup>nd</sup>-3<sup>rd</sup> century with Late Roman additions (AD 4<sup>th</sup> century), among which a bath complex<sup>206</sup>,

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<sup>199</sup> Kanta and Davaras 2011: 12.

<sup>200</sup> We should point out here that the identification of the prehistoric divinity is problematic, although the cult function of the site is certain (Kanta and Davaras 2011: 29).

<sup>201</sup> Kanta and Davaras 2011: 168-187.

<sup>202</sup> Empereur et al 1991: 499; Marangou-Lerat 1995: 57.

<sup>203</sup> Kanta and Davaras 2011: 14.

<sup>204</sup> Whitley 2003-4: 80.

<sup>205</sup> idem.

<sup>206</sup> Galanaki 2006; in press.

that were often re-used as cemeteries during the Early Christian period.<sup>207</sup> As far as the core of the ancient city of Inatos is concerned, it seems that it was located at the entrance and in the Mindris gorge, where plenty of Roman, Late Roman and Early Christian building and pottery remains have been attested. The relative information is owed mainly to the observations of Spratt<sup>208</sup> and to inspections and rescue excavations carried out by the local Ephorate<sup>209</sup> that confirmed most of them. Thus in the Mindris gorge there have been identified i. an arched bridge, ii. a Roman house dated in the AD 2<sup>nd</sup> century with columns *in situ*, iii. an Early Christian basilica of the AD 6<sup>th</sup> century, (Fig. 79) iv. the remains of various unidentified private and public buildings, v. a Roman aqueduct, (Fig. 80) vi. a Roman vaulted cistern, vii. tile graves, viii. the remains of a terraced road. We should mention here that Spratt firstly observed the road in 1865<sup>210</sup> and Marinatos<sup>211</sup> as well as Xanthoudidis<sup>212</sup>, almost ninety years later, confirmed its existence. Xanthoudidis, apart from the road, reports also the existence of a bridge. In addition he mentions that the whole area (on the beach at the entrance of the gorge and in it Fig. 81) is full of building remains (among which numerous columns) and pottery shreds (without decoration, as he details) of the Roman period exclusively.<sup>213</sup> Moreover Sanders reports that he saw the remains of a theatre at the W side of the mouth of Mindris, which was partially rock cut and partially built “of stone-faced concrete”<sup>214</sup> and he estimated the external diameter of the *cavea* at ca. 32 m. The same scholar observed remains of concrete walls at the W end of the bay that “formed no intelligible plan except one possible small cistern”.<sup>215</sup> However, since no other scholar after him confirmed this information, we should assume that they are lost due to the –often uncontrollable and illegal- expansion of the modern settlement.

It is impossible to form a complete picture of the ancient Inatos if we do not make a reference to its relation with the Hellenistic city of Priansos. According to the description in the text of the treaty inscription between Priansos, Hierapytna and Gortyn, Priansos’s borders

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<sup>207</sup> Kanta, Davaras 2011: 14; Mandalaki 1996; 1997; 1999; Vasilakis 1998.

<sup>208</sup> Spratt 1865: 340-341.

<sup>209</sup> Kanta and Davaras 2011: 14; Lembesi 1970: 297.

<sup>210</sup> Spratt 1865: 340-341.

<sup>211</sup> Marinatos 1933-35: 1.

<sup>212</sup> Xanthoudidis 1948: 532.

<sup>213</sup> *idem*.

<sup>214</sup> Sanders 1982: 151.

<sup>215</sup> *Idem*.

begin at the S coast, so it is likely that Inatos was located within her territory.<sup>216</sup> Moreover some of the coins of Priansos depict symbols such as Poseidon, dolphins, trident and palm trees<sup>217</sup> that suggest it was oriented to the sea. Given also the topographic characteristics of Inatos and the importance of the site, as the archaeological remains indicate, the safest conclusion seems to be that Inatos was the seaport of Priansos and a dependent city as well. Another indication that enforces this theory is the abovementioned road that, through the Mindris gorge, linked the two cities.

#### Literary evidence and comments

Considering the quantity as well as the vast chronological range that the under discussion antiquities cover, it is interesting to ascertain that the ancient authors who mention Inatos (or slight variations of this toponym) do not add much, given that their information is usually limited to those related to the worship of Eileithyia. Specifically i. Ptolemy defines it as a *polis*<sup>218</sup>, ii. Hesychius of Alexandria<sup>219</sup> mentions the existence of Einatos both at Lykia and Crete, iii. Stephanus of Byzantium<sup>220</sup> uses the toponym *Einatos*, defines it too as a *polis* and most importantly identifies it as the place where ‘Είλειθυσίαν Είνατιήν’ was worshipped<sup>221</sup>, iv. Callimachus<sup>222</sup> mentions the (female) ethnic *Είνατιήν* and explains it as the sister of Eileithyia who saw her when she gave labour (possibly a reference to a lost mythological narration), v. Hierocles<sup>223</sup> in his catalogue mentions it as Vinatos and vi. *Etymologicum Magnum*<sup>224</sup> as Einatos. The two interesting elements we can extract from all the above are the definition of Inatos as a *polis*, which occurs often as well as the definition of Eileithyia as an Egyptian polis,

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<sup>216</sup> Perlman 2004: 1184.

<sup>217</sup> Svoronos 1890: 295-298.

<sup>218</sup> *Geografia* 3.17.2.

<sup>219</sup> *Lexicon* ε 971.

<sup>220</sup> *Ethnica* E 21.

<sup>221</sup> He also defines Eileithyia as an Egyptian polis. *Ethnica* 22.

<sup>222</sup> *Fragmenta* 168

<sup>223</sup> *Synecdemus* 649.5.

<sup>224</sup> 302.14.

that, given the attested<sup>225</sup> relations between Inatos and Egypt, could be an indication about the expansion of Eileithyia's cult.<sup>226</sup>

### Epigraphic and numismatic evidence

We have only a few inscriptions from ancient Inatos<sup>227</sup>: an honorary inscription on a Herm<sup>228</sup>, a tombstone inscription, and a votive inscription to Eileithyia, to which we owe the identification of the cult site and consequently of the modern settlement of Tsoutsouros with the ancient Inatos. Furthermore, according to Christidis, there is an Arab inscription that suggests that Tsoutsouros served as the landing place of the Saracens just before they begun the conquest of the island.<sup>229</sup>

As far as the numismatic evidence is concerned, there is no published data yet, therefore we cannot know if Inatos minted its own coin (considering the *polis* characterization). However we do know that there have been discovered various bronze coins during three of the rescue excavations at the cemeteries<sup>230</sup>.

### Historical geography (cartography, portolan charts) and commentary

Inatos appears on the maps of Basilicata (*Spiaggia di Zuzzuro*), Boschini (*Spiaggia di Zuzzuro*) and on the Peuntiger's table (*Inata*). Apart from the fact that we get informed about the nautical usefulness of the bay (anchorage, fresh water<sup>231</sup>), we can also distinguish the position of the Venetian guards (*fryktorie*) as well as a few buildings at the mouth of Mindris (two in Basilicata's and three in Boschini's map) from which one is a church that today is not

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<sup>225</sup> See previous page.

<sup>226</sup> Besides that we know that the goddess Nechabejet (also a divinity of labor) was worshipped at the Egyptian city of Eileithyia. [Papyros :1981]

<sup>227</sup> IC I, XIII.

<sup>228</sup> It was found without the head at Mindris river, thus we may assume it was re-used during –probably- the Early Christian period as building material.

<sup>229</sup> Psilakis and Psilaki 2007: 434.

<sup>230</sup> Mandalaki 1997: 996; Vasilakis 1998: 848; Mandalaki 1996:639

<sup>231</sup> In fact the oral tradition of the area has preserved several stories about boats that approached Tsoutsouros and Maridaki in order to get fresh water supplies. [Psilakis and Psilaki 2007: 445].

visible<sup>232</sup>. In addition, the hinterland location of Inatos on Peuntiger's Table is wrong and we should probably consider it either as the location of Priansos instead with the wrong attribution of the city name due to the confusion owed to the connection of the two, or as the result of a prosperity period of Inatos during which it overshadowed Priansos<sup>233</sup>.

Several variations of Inatos's toponym are mentioned in many other maps; *Cucuro*,<sup>234</sup> *Cuccuro*,<sup>235</sup> *Zuzzuro*,<sup>236</sup> *Hinatus*,<sup>237</sup> *Zuzzore*,<sup>238</sup> *Zuziore*,<sup>239</sup> *Zuzzure*<sup>240</sup> and *Ἰναθος*<sup>241</sup>. Other cartographers highlight the river (*Zuzzuro fiume*<sup>242</sup>), the cape (*Ponta di Zuzzuro*<sup>243</sup>, *P<sup>ta</sup> de Zuezzuro*<sup>244</sup>), or nearby localities and geographic characteristics together (*S. Maridachi/Alazzomuri/Spiaggia di Zuzzuro*,<sup>245</sup> *S. Maridachi/Zuzzuro/Alazzomuri*,<sup>246</sup> *R. de Sudsuro/Golfe de Sudsuro*<sup>247</sup>).

### Early Modern Travel Literature

Inatos (or Tsoutsouros) is mentioned, in a chronological order, by Belli, Buondelmonti, Pashley, Captain Spratt and Mariani.<sup>248</sup> Most of them investigate the issue of the identification of Tsoutsouros with the ancient Inatos and its relation to Priansos. Spratt makes an extensive description of the ancient remains he sees. He also offers information on the nautical aspect since he considers the bay as "the most sheltered along the whole of the south coast to the eastward of Fair Havens, and it affords a good summer anchorage for all classes of

<sup>232</sup> Danesi-Lambrinou 1994: 71. (Although it could be the same that Spratt describes here "There is a small relic of a Cyclopean platform or wall also near the modern chapel, which stands on the east side of the Sudsuro, near its mouth, indicating probably that the chapel was on the site occupied by a temple at some early period." [Spratt 1865: 340].

<sup>233</sup> We should add here that the Peuntiger's Table is thought to be a distant descendant of an original map dated at the 1<sup>st</sup> century BC – AD 1<sup>st</sup> century.

<sup>234</sup> G.S. Calapoda 1562.

<sup>235</sup> F. Basilicata 1618/9.

<sup>236</sup> Anonymous *year*, M. Merian 1718, N. Visscher 1638

<sup>237</sup> A. Ortelius 1584,

<sup>238</sup> G. Mercator 1718.

<sup>239</sup> G. Mercator 1473.

<sup>240</sup> J. Chiquet 1719

<sup>241</sup> R. Pheraios-Velestinlis 1797

<sup>242</sup> N. Visscher 1638, V.M. Coronelli 1689, G.M. Seutter 1725.

<sup>243</sup> N. Sansson d'Abbeville 1665.

<sup>244</sup> J. Chiquet 1719.

<sup>245</sup> Basilicata 1636/8.

<sup>246</sup> Boschini 1645.

<sup>247</sup> J.N. Bellin 1764.

<sup>248</sup> Tsiknakis 1989-90: 220; Aposkiti 1983: 29; Pashley 1837: 289-290; Spratt 1865: 338-342; Mariani 1897: 210.

vessels”<sup>249</sup>. On the other hand, Belli provides us with an interesting detail about the evolution of the coastal geomorphology of the area since he attests that “where the river Anapodaris exits in sea, you can see the submerged city of Inatos, and when the sea is calm you can even see entire walls”<sup>250</sup>. However the river Anapodaris is not at Inatos bay but at Dermatos bay (E from Inatos). Given that Belli seems convinced about the identification of the city of Inatos and that we do not know of the existence of any city at the mouth of Anapodaris river, we could assume that maybe, because of the vicinity of the two rivers, Belli mistook Mindris for Anapodaris.

Observations in the perspective of a landscape archaeology approach – Further considerations

In our opinion the slightly distant Maridaki (about 2 km from Inatos), the bay before the W cape (Kerkellos) of Inatos bay, during the antiquity belonged to the territory of Inatos because of its natural assets such as the fresh water (Lichnistis waterfall waterfall has large quantities of water even nowadays) and the well protected natural anchorages (at Maridaki bay and mostly at Kerkellos bay, just before the cape). In support of that the path that connects modern Tsoutsouro with Maridaki is spread with Roman pottery of the 1<sup>st</sup> and 2<sup>nd</sup> centuries and probably the dry-stoned walls of the sheperds are built with much earlier stone bricks (Fig. 82).<sup>251</sup> Moreover, even if it does not come from an archaeologically trustworthy source we will mention it here since it has the value of any unconfirmed information taken by local people: on a online touristic guide about the island of Crete at the description of Tsoutsouros bay we read “At Kerkellos the ancient inhabitants of Inatos docked their boats. At that area there have been individuated the traces of the ancient Inatos, in and out of the water”<sup>252</sup>. For the moment it is not possible to confirm or not the above affirmation. As far as Maridaki bay is concerned, although the encouraging topographic indications and the general archaeological context, no scholar has ever reported the existence of any material evidence. Even if there was though it

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<sup>249</sup> Spratt 1865 I: 339.

<sup>250</sup> [Author’s translation from original text , verse 9r 570]. Tsiknakis 1989-90: 220.

<sup>251</sup> Personal observation.

<sup>252</sup> Roniotis 2015.



could not be retraced due to the uncontrollable expansion of the modern village that literally cemented the entire bay, as well as the river deposits that have covered any submerged archaeological evidence (Fig. 83).

Modern Tsoutsouros does not resemble much to its ancient predecessor. The uncontrollable expansion of the village, (Fig. 84) the –unsuccessful if we judge from the frequent dredging<sup>253</sup>- construction of an artificial port and the numerous illegal excavations (Fig. 85) and trafficking of the antiquities have caused noticeable changes to its natural and cultural landscape. As far as the latter is concerned, Nowicki defined Tsoutsouros as the “capital of *archaiokapileia*<sup>254</sup>”.<sup>255</sup> Traces of the Roman city can now be found at some plots among the modern houses at the central and western part of the village, where the local Ephorate excavated (Fig. 86).

At the eastern part of the beach we noticed the formation of beachrock in which there were embedded Roman and Late Roman shreds (Fig. 87). At the mouth of Mindris (on the beach and underwater) the area is scattered with building material and some pottery that probably came from the various buildings at the entrance of the gorge. The sea bottom is mostly sandy,<sup>256</sup> something that did not permit us to confirm the local rumour about “a part of the ancient remains is under the sea”<sup>257</sup>. In the Mindris gorge, apart from the remains of most of the abovementioned antiquities, we also noticed the existence of a stone quarry, which, as far as we know, has not been mentioned in the relative bibliography (Fig. 88 and Fig. 89).

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<sup>253</sup> Personal observation.

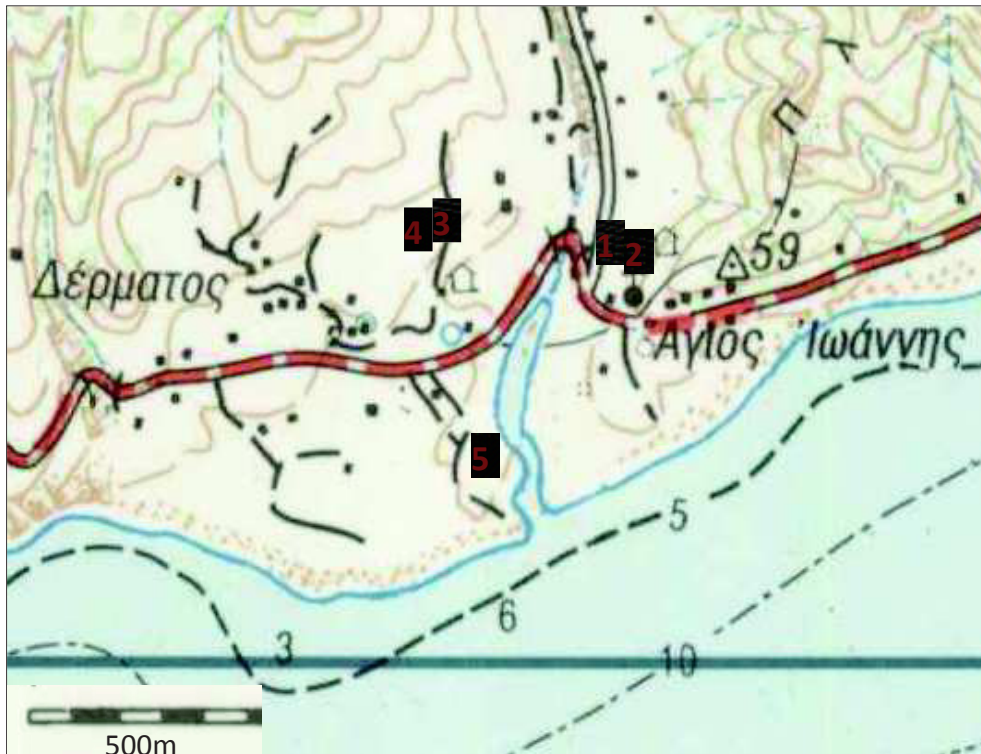
<sup>254</sup> The Greek word for looting.

<sup>255</sup> Nowicki 2011: 85.

<sup>256</sup> something that could also be temporary, depending on the currents.

<sup>257</sup> Personal communication with local residents.

## 8. DERMATOS-RIVER DELTA OF ANAPODARIS



## Main geographic features

The bay and the rest of the coastal region are formed due to the alluvial deposits of the river Anapodaris, which is the largest river of Crete (Fig. 90). The bay does not provide a shelter for any type of vessel since it is not protected from the winds. Due to Anapodaris there has also been formed a small coastal fertile valley that is delimited by low ridges on its N side, except for its central part where it follows the course of the river towards N and enters more than 600 m inland.

## Archaeology

The site of Mitatoulia, which was established in the Old Palace period and continued to exist in the Postpalatial period, is located on a low hill at the W bank of the Anapodaris river.<sup>258</sup> The site has not been excavated yet, but the eye inspection revealed that the remains are of domestic architectural character and connected to LMIIIA-B pottery. In particular the remains consist in medium-sized walls of rubble masonry, hundreds of pottery shreds, grinders and mortars.<sup>259</sup> As the pottery shreds indicate the hill was inhabited also during the Hellenistic period. On the opposite side of Anapodaris there is the site of Aghios Ioanis-Plaka, (Fig. 91) which bears a lot of topographic, typological and chronological similarities with Mitatoulia as it is located on a hill at the E bank of the river and it is a settlement dated at the MMIII-LMIIIA period.<sup>260</sup> Two LMIIIA tombs were also found at the same site.<sup>261</sup>

Finally there has been attested an amphora production site, dated to the AD 1<sup>st</sup> to the 3<sup>rd</sup> century.<sup>262</sup>

## Literary evidence

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## Epigraphic and numismatic evidence

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## Historical geography (cartography, portolan charts) and commentary

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<sup>258</sup> Banou 2005: 153.

<sup>259</sup> Idem.

<sup>260</sup> Rethemiotakis 1983: 390.

<sup>261</sup> Banou 2004: 187-189.

<sup>262</sup> Marangou-Lerat 1995: 53-55.

Basilicata depicts the *Spiaggia di Dermato*<sup>263</sup> with two guard posts on the beach and two other buildings near it, (probably houses) a small settlement located ca. 500 m inland on one of the ridges at the end of the gorge of Anapodaris and the small valley cultivated. The toponyms of Anapodaris (*Anapodari F.*<sup>264</sup>) and Dermatos (*Dermato*<sup>265</sup>) are common in the relative cartography. In fact we encountered them several times with very slight name-variations. In five cases we encountered the toponym of Dermatos (in a version that could be an antecedent to the current one) associated to that of Ceraton<sup>266</sup>: *Deranto al's Ceraton* (N.Visscher 1638), *Deranto als Ceraton* (Jan Janssonius 1638), *Deranto at's Ceraton* (A.F. Lucini ?), *Deranto Ceratà* (F. Collignon 1669) and *Deranto at's Ceraton* (P.S.-G. Valok 1709). In one case we encountered the toponym *Pointe de Vermato*<sup>267</sup>.

### Early Modern Travel Literature

Buondelmonti makes a reference to the river Anapodaris, describing the rush of its waters<sup>268</sup> and Onorio Belli simply mentions it as a geographic point of reference while he describes Inatos.<sup>269</sup> Pendlebury refers only to the name of the river Anapodaris, which he identifies with “the ancient Katarrhaktes”.<sup>270</sup>

Observations in the perspective of a landscape archaeology approach – Further considerations

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<sup>263</sup> Basilicata 1618: Spiaggia di Dermato.

<sup>264</sup> Basilicata 1618/9, Idem 1636/8, G. Corner 1630, M. Merian 1670, Boschini 1645, Idem 1651, G. Bouttats 1674.

<sup>265</sup> Basilicata 1618/9, Idem 1636/8, G. Corner 1625 (*Dhermas*), Idem 1630 (*VANNI DERMATO*), Anonymous year, Boschini 1645, Idem 1651, Coronelli 1689, J. Peeters 1664, J.B. Homann 1702, G.M. Seutter 1725, J.N. Bellin 1764 (*Pointe de Vermato*).

<sup>266</sup> See the relative analysis in p. 63.

<sup>267</sup> See n. 265.

<sup>268</sup> Aposkiti 1983: 34.

<sup>269</sup> Tsiknakis 1989-90: 220.

<sup>270</sup> Pendlebury 1939: 7, 387, 393.

As far as Mitatoulia and Aghios Ioanis-Plaka are concerned, as Banou also says, “the settlements hold a strategic position. Assuming that the river had much more water in the antiquity than it has today, it must have created a much wider delta area than the present. In fact, the hill in question as well as its counterpart on the E bank of the river are the only spurs of land in the area (Fig. 92). Their inhabitants undoubtedly controlled the delta region and the nearby shore throughout antiquity and exploited the fertile arable land along the river” (Fig. 93). As we mentioned before, the similarities between the two sites are remarkable, something that strengthens further the above theory. We should add here that during the on site observation we carried out we noticed also Hellenistic and Roman pottery shreds scattered on the hill, a fact that suggests the re-occupation of the site exactly as it happened at Mitatoulia (Fig. 94).

The landscape of the under discussion area is absolutely defined by the river of Anapodaris. In fact, as we noticed earlier, the toponyms both of Anapodaris and Dermatos served as landmarks for the passing mariners, since the bay itself was probably of no use to them (Fig. 95). In addition, if it were not for the river, the area probably would not have received any visit from the early travellers, who did not explore further the place and indeed limit their references to it (to Anapodaris). This area seems to be absent also from any type of ancient documentation.

## 9. KERATOKAMBOS



### Main geographic features

Keratokambos bay presents ca. five water courses (four streams and one seasonal river), two of which flow from the two gorges (Portela and Kavoussi) that are located at the N side of the central part of the bay. The width of the bay varies between 300 and 600 m and it is surrounded by abrupt low and high cliffs (100 to 200 m.). At about 1 km inland, towards NE in relation to the centre of the bay, there is the Keraton ridge, (617 m.) which, because of its particular formation, is a recognisable geographic point of reference for the mariners (nautical landmark).<sup>271</sup> The bay can offer a spacious anchorage, though it is not well protected from the W winds.<sup>272</sup> Today it has an artificial small port.

### Archaeology

Keratokambos bay and its surroundings present a very interesting and variable (chronologically and typologically) archaeological landscape. Unfortunately the material evidence, mostly at the coastal zone, was once again the victim of illicit excavations and construction violations. However we know that at the centre of the bay, where today is a hotel

<sup>271</sup> Pilot chart of Eastern Crete 2011 1:154.000.

<sup>272</sup> US Hydrographic Office 1916: 436.

named Komis, there was a sanctuary (judging by the findings) that was in use from the MMIIIB to the Archaic period. The findings include zoomorphic and anthropomorphic clay figurines, double axes and horns of consecration.<sup>273</sup> Furthermore at the location 'Marina', near the modern port, (Fig. 96) there were individuated two amphora production sites, one dated in the Hellenistic period and the other in the Roman Imperial.<sup>274</sup> Those sites maybe coincide with the one that Hood *et al* mention "about 50 m E of the stream bed and some 250 m away from Kastri, we saw a thick deposit of pottery, mostly amphora fragments, which continued for about 30 m eastwards. This may indicate the position of ancient warehouses on the shore".<sup>275</sup> Towards W, at the coastal headland location of 'Skourocharako', there is an EM settlement and W of it at 'Listis' (another headland at the sea) there has been reported a MMIII-LMI farm site or small settlement.<sup>276</sup> The two sites that, due to their less accessible location, are better conserved and for which we have more information are 'Trapeza' and 'Kastri'. Trapeza is a small, low plateau on a hill less than 70m from the shore. On its N slope, during a rescue excavation, there were discovered two LMIII rock-cut chamber tombs with a plethora of pottery and jewellery finds.<sup>277</sup> It is assumed that the rest of the LMIII cemetery is still underground.<sup>278</sup> Furthermore the N and NE slopes of the hill are scattered with MMIII-LM shreds and some wall remains, while it is supposed that the actual settlement of the Hellenistic/Roman period was on the top of the hill.<sup>279</sup> At Kastri instead, another low coastal hill (200m from the shore) at the W side of the bay, there are remains of a fortification wall, a rock-cut cistern of rectangular plan on the top of the hill as well as remains of houses, one of which has been associated with a Geometric/Orientalising pithos.<sup>280</sup> All of the above justifies the site-description as an acropolis. In addition there was documented MM and LM pottery at the W end of the low part of the ridge, along with Classical and Hellenistic one.<sup>281</sup> Finally, during a rescue excavation at its N slope there was discovered a wall associated to an open space which provided the excavators with

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<sup>273</sup>Rethemiotakis 1996: 644.

<sup>274</sup>Empereur et al. 1991: 499-507.

<sup>275</sup>Hood et al. 1964: 83.

<sup>276</sup>Rethemiotakis 1983: 390; Banou 2005: 151.

<sup>277</sup>Whitley 2003: 81; Banou 2002: 331-2.

<sup>278</sup>Banou 2004: 187.

<sup>279</sup>Idem.

<sup>280</sup>Rethemiotakis 1957: 382.

<sup>281</sup>Hood et al. 1964: 83.

abundant Late Classical/Hellenistic pottery, as well as bronze vases and tiles stamped with the symbol of phoenix (maybe an indication of Hierapytna's influence).<sup>282</sup>

### Literary evidence

The ancient authors do not mention the toponyms of Keratokambos and Keraton. However there is the ambivalent toponym of the 'Holy Mountain' that Ptolemy reports,<sup>283</sup> (located somewhere between Inatos and Ierapytna) which, according to some scholars<sup>284</sup>, could indicate the Keraton mountain instead of the Arbion one (the bay W of Keratokambos), given the fact that they bear a lot of similarities. In addition there is the city name "Cere" to which Polybios makes a reference in *Histories*<sup>285</sup> and lists it as one of Pollyrhenia's allies in the war versus Knossos. We mention it here because of its potential etymological relation to the toponym *Keraton* (and consequently that of *Keratokambos*), which, however, seems quite impossible to establish since Faure attributed it (the toponym *Cere* or *Keraia*) convincingly enough to a small settlement in the region of Kydonia (W Crete).<sup>286</sup>

### Epigraphic and numismatic evidence

The only epigraphic evidence associated etymologically (and maybe not geographically) with the toponyms Keratokambos and Keraton derives from the list of *Theorodokoi* "ἐν Κ[ε]ραίαις Ὀρύας Ῥιάνου Λεύκος"<sup>287</sup> As far as the numismatic one is regarded there is a series of six coins that are inscribed with the ethnic KEPAEITA (Keraeita) or KEPAITAN (Keraitan), that also bear great etymological resemblance with Keratokambos or Keraton. However both of the abovementioned epigraphic and numismatic evidence have been

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<sup>282</sup> Banou 2002: 332.

<sup>283</sup> *Geografia* III.15.3.

<sup>284</sup> IC.I.V.

<sup>285</sup> *Historiae* 4.53.

<sup>286</sup> Faure 1959: 196, Faure 1965: 442, Faure 1966: 183.

<sup>287</sup> SEG 26.624.III, line 111.



attributed to the polis of Keraia that, as we saw above, has been identified with a settlement at the region of Kydonia.<sup>288</sup>

### Historical geography (cartography, portolan charts) and commentary

To our knowledge Keratokambos or Keraton mountain are not mentioned in the portolan charts. In the historical cartography, however, the wider region of Keratokambos is highlighted several times through either the Keraton mountain<sup>289</sup> (we encountered it in the following variations: *Ceraton*, *Deranto Als Ceraton*, *Deranto al Ceratea*, *Deranto al's Ceraton*, *Dermato Ceratà*, *Cerato*, *Ceratus*) or Chondros river<sup>290</sup>, (indicated as *Condro F.*, *Condros F.* *Condre Fiume*) which, we may assume, in those centuries had a continuous flow.<sup>291</sup> Apparently the fact that a river and a mountain with a particular form (horn-like) are mentioned is related to the nautical usage of the bay, which could serve as a point of supply in fresh water and as a geographic point of reference.

However we thought that the abovementioned association between the toponyms of *Ceraton* and *Deranto* (encountered five times in the review of the cartography, *Deranto al's Ceraton*, *Deranto als Ceraton*, *Deranto at's Ceraton*, *Deranto Ceratà* and *Deranto at's Ceraton*) deserved a more in-depth analysis. First of all the *als*, *al* or *al's* is an abbreviation of the Latin word *alias* that means 'otherwise' or 'known also as'. Thus the two toponyms are used by the cartographers as alternative names for the same place. However the toponym *Deranto* probably derives from the Latin word 'denariata', which in French became 'denrèe' and later in Italian 'derrata'. The literal meaning 'derrata' is 'what you can acquire with one denaro (coin)' and the general one 'agricultural products'/ 'commodities'.<sup>292</sup> If this etymologic analysis is correct then the toponym *Deranto* maybe described a cultivable land in that region, which supplied the Venetian people with specific commodities. If that is the case the

<sup>288</sup> Svoronos 1890: 45-47.

<sup>289</sup> C. Ptolemaeus 1535, G.F. Camocio 1564, N. Nelli 1573, A. Ortelius 1570, D. Bertelli 1574, Belleforest 1575, Ortelius 1576, J. Matal 1602, G. Mercator 1607, Idem 1628, M. Merian 1642-1688, J. Janssonius 1638, Visscher 1638, J. Boisseau 1645, N.S. D'Abbeville 1665, F. Collignon ?, P.C. Balthasar Han ?,

<sup>290</sup> M. Merian 1629, N. Visscher 1638, M. Boschini 1645, Idem 1651, P. Du Val 1662, F.G. Bouttats 1674, I. Francus 1668, S. De Beaulieu 1674, G. Mercator 1676, F. de Wit 1680, J. Von Sandrark 1682, F.V. Coronelli 1689, G.M. Seutter 1725.

<sup>291</sup> We may add here that Chondros is the river that flows from the Kavoussi gorge to the center of Keratokambos bay and nowadays is called Keratokambitis.

<sup>292</sup> 'deranto' 2015.

association with the toponym of Keraton must have been due to their geographic proximity and not because they described the same area. In fact 5 km towards SW from Keratokambos bay there is the coastal location that today is called ‘Dermatos’ and its name could be a descendent of the toponym *Deranto*. To strengthen the previous argumentation we should also mention that in the three maps where the association between Ceraton and Deranto is encountered there is no mention of the *Dermatos* toponym, although several other cartographers had used it.<sup>293</sup>

### Early Modern Travel Literature

Pashley makes a brief reference to Keratokambos region that consists in observations of geological character as far as the coastal zone between Arvi and Keratokambos bay is concerned (imbedded shells above Sea Level, masses of gypsum and selenite). He also describes the internal part of the bay, towards N, as “an uncultivated plain” and simply names the “Kastel Keraton of the Venetians”<sup>294</sup> as he passes by it.<sup>295</sup> Spratt recalls the text of the 19<sup>th</sup>-century geographer and historian Dr. Cramer, who apparently was the first to associate the town of *Ceritae* (mentioned by Polybius) with Keraton mountain and its surroundings<sup>296</sup>, adding that he agrees with his theory, given the peculiar form of the mountain which could justify the fact that it named the wider region.<sup>297</sup> Spratt describes the bay as a fine and open one and informs us that the plain “was covered with young olives..” (in contradiction to the testimony of Pashley) and also well-watered “..through which flows a stream that descends from a small cliff or gorge like that of Arvi”.<sup>298</sup>

Observations in the perspective of a landscape archaeology approach – Further considerations

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<sup>293</sup> See also the relative discussion in pp. 57-8.

<sup>294</sup> Due to the fortress that the Venetians had raised on Keraton mountain.

<sup>295</sup> Pashley 1837: 276.

<sup>296</sup> See also the previous chapters for the relative discussion.

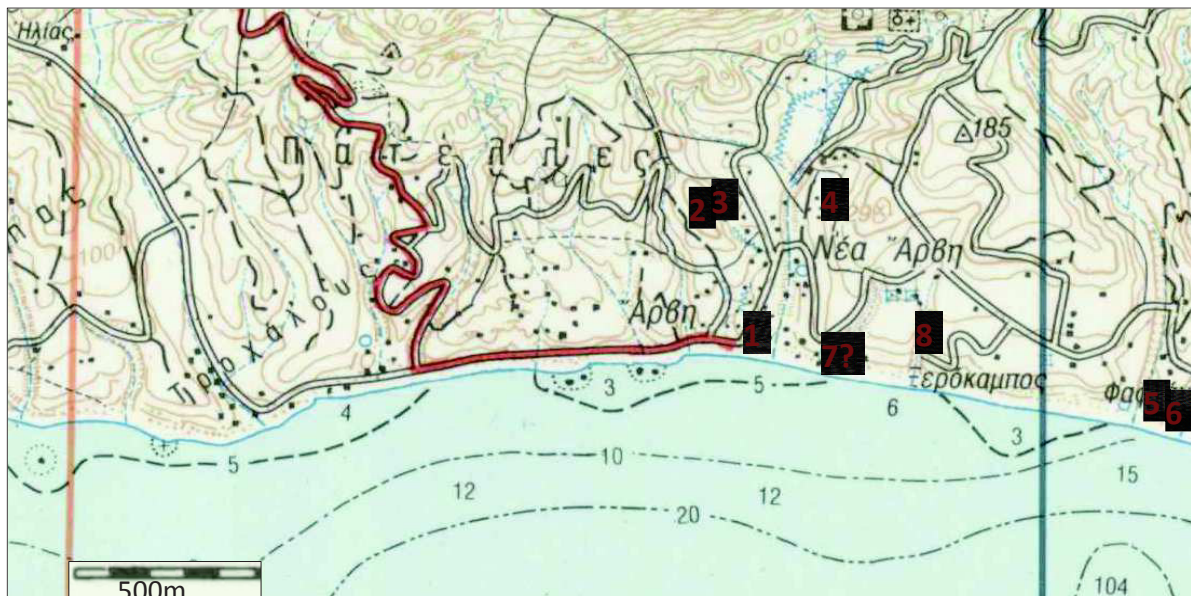
<sup>297</sup> Spratt I 1865: 296-297.

<sup>298</sup> Idem.

The fragmental character of all the available types of evidence on Keratokambos bay does not permit us to add much to the knowledge about this area.

Apparently the element that dominates the entire coastal landscape of Keratokambos is Keraton mountain, if we judge by the references we found about it. The nautical usage of the bay, instead, does not seem to have played a crucial role to the evolution of the settlement history of the area.

## 10. ARVI



## Main geographic features

The bay of Arvi is one of the larger at the SC and SE coast of Crete. It consists in a large and fertile valley (of approximately 20 km<sup>2</sup>), rich in water since there are ca. ten seasonal streams and an all year-round river. The valley of Arvi is surrounded by very steep cliffs (100-150 m), one of which, towards NW, is literally 'broken' by the imposing gorge of Arvi (Fig. 97). The gorge has vertical walls and a narrow base and its river varies from 1 to 2 m in depth, something does not make it a possible route towards the hinterland. In addition, this bay is the only anchorage of the SC coast that is well sheltered from the strong N winds.

## Archaeology

The location of the Hellenistic/Roman harbour town of Arvi was the same with that of the modern settlement. In fact, before the expansion of the latter, there were documented some visible remains, such as the numerous pottery vases of Roman date, columns, large stone

blocks<sup>299</sup>, walls, shreds and coins at the E side of the river<sup>300</sup>. In addition, under the 17<sup>th</sup>-century church<sup>301</sup> of Panaghia (or Aghios Pandleimon) at the eastern side of the village, there is an ancient building,<sup>302</sup> maybe a temple<sup>303</sup>, which was indicated by a large Ionic capital and a fragment of another that were nearby.<sup>304</sup> Another indication is the building material (limestone blocks, tiles, marble fragments) that is conserved in the masonry of the church (Fig. 98, 99, 100) and may come from the abovementioned ancient building, which is under it (or other buildings of the Hellenistic/Roman settlement<sup>305</sup>). Those information is further confirmed since, during an archaeological inspection by the local Ephorate, there were found three Ionic capitals (0.50 x 0.50 m) and two smaller ones and building material that indicate the existence of an Early Christian Basilica.<sup>306</sup> Information coming from the same inspection attests that “a lot of ancient buildings were destroyed due to the cultivation of bananas” without further details and that a tile pavement was found at the coastal area of the bay.<sup>307</sup> A rescue excavation of the local Ephorate, carried out in 2007, revealed a part of a Roman bath complex in the vicinity of the church<sup>308</sup> (Fig. 101).

At the location ‘Xenotafi’, on a cliff at the NE side of the bay, there were excavated seventeen LR cist tombs that contained, among other objects, bronze and gold rings, and lekythos vases.<sup>309</sup> According to Hood et. al.<sup>310</sup> the Early Christian Basilica (Aghia Eirini) S from the cliff of Xenotafi, could be associated with the Late Roman cemetery.<sup>311</sup> The remains of the basilica are ca. 50m distant from the current shoreline (currently found in a private banana cultivation field) and consist in fragments of monolithic columns, a capital with its abacus and four column bases (Fig. 102, 103, 104).<sup>312</sup> The dimensions of the basilica were 21 x 14.5 m

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<sup>299</sup> Xanthoudidis 1948: 532.

<sup>300</sup> Pendlebury 1939: 374.

<sup>301</sup> Spanakis year: 140.

<sup>302</sup> Hood et al. 1964: 89.

<sup>303</sup> Spratt 1865: I.291.

<sup>304</sup> Hood et al. 1964: 89.

<sup>305</sup> Personal observations.

<sup>306</sup> Platon 1958: 481.

<sup>307</sup> Idem.

<sup>308</sup> Personal communication.

<sup>309</sup> Alexiou 1963a: 399; Alexiou 1963b: 313.

<sup>310</sup> Hood et al. 1964: 89.

<sup>311</sup> Which, we may add, was maybe still in use during the Early Christian period. It is also important to point out that the LR cemetery has not been entirely excavated; several tombs were most probably destroyed by cultivation and greenhouse construction, depriving us of any information that could confirm the above suggestion.

<sup>312</sup> Personal observation.

and it is dated in the period of emperor Justinian (527-565 AD).<sup>313</sup> We may assume that at the coastal area of Xenotafi location was found also the white-marble sarcophagus that is mentioned by Pashley.<sup>314</sup> That sarcophagus was decorated with a relief on all of its sides that depicts the triumphal return of Dionysus and it is –stylistically- dated at the AD 2<sup>nd</sup> century.

At the location ‘Tartari’ (N end) and ‘Komitas’ (S end), which are the ridges at the W side of the valley, Evans found a steatite libation table<sup>315</sup> that was similar to others discovered at Knossos and cist graves that probably were located somewhere in that area<sup>316</sup> while, some years later, Pendlebury<sup>317</sup> noted MM III and LM I shreds as well as building remains of Roman age. The latter noted also “walls, shreds, and coins E of the river”.<sup>318</sup> The abovementioned Roman ruins, probably, were noted also from Hood et. al.<sup>319</sup> who found Roman shreds and tiles at the SE side of Komitas hill. In addition, Hood et. al. attest the existence of a single Minoan house as well as architectural remains that probably belonged to a Minoan villa on the S side of Komitas hill.<sup>320</sup>

At the area of Arvi there was also a MM-LM settlement, situated on the hill of Kamini, which now is bulldozed, at ca. 130 m a.s.l., at a distance of ca. 600 m from the sea. According to Nowicki “the site was comparable in size and importance to Myrtos Pyrgos..”<sup>321</sup>

About 1 km E from Xenotafi, at the coastal location of ‘Faflago’, near the E end of the bay of Arvi, there were reported traces of occupation (namely numerous pottery shreds) on an extended area of the coastal zone, E and W of the small valley of Faflagos and mostly at the location of Trapeza, a high plateau rising above the sea on the W side of the valley. At Trapeza there was found pottery of the MMIB to LMI periods.<sup>322</sup> At the E side of the bay, near the church of Aghia Paraskevi there were discovered two –looted- rock-cut ‘cave’ tombs that contained a small burial pithos, a LMIIIA kylix and a MMIII kernos. Information, coming from inhabitants, about other pithoi that contained bone remains has been also reported.<sup>323</sup>

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<sup>313</sup> Volanakis 1987: 250.

<sup>314</sup> Pashley 1837: 275-276.

<sup>315</sup> Evans 1921: 630.

<sup>316</sup> Hood et al. 1964: 92.

<sup>317</sup> Pendlebury 1939: 374.

<sup>318</sup> Idem.

<sup>319</sup> Hood et al. 1964: 92.

<sup>320</sup> Idem.

<sup>321</sup> Nowicki 2011b: 76.

<sup>322</sup> Alexiou 1967: 487.

<sup>323</sup> Idem.

At Arvi there has also been attested an amphora production site of the 2<sup>nd</sup>-3<sup>rd</sup> centuries.<sup>324</sup>

### Literary evidence

Arvi is mentioned by Stephanus of Byzantium, who refers to its mountain where “Zeus Arvios” is worshiped<sup>325</sup>. He further explains the ethnic (?) Arvios, defining it as the adjective for “he who inhabits the mountain”.<sup>326</sup> The same mountain is also –thought to be- mentioned by Ptolemy,<sup>327</sup> who defines it as a sacred one (“Monte Sacro”), although he does not name it. Furthermore, according to some scholars, it is possible that the toponym “Ἄλβη” (Alvi)<sup>328</sup> that Stephanus of Byzantium mentions and defines as a town of Crete, is referred to Arvi.<sup>329</sup>

### Epigraphic and numismatic evidence

In the bibliography we encountered one funerary inscription of Roman date related with Arvi.<sup>330</sup> As far as the monetary findings are concerned, as long as we accept the association of the toponym ‘Aria’ with Arvi<sup>331</sup>, there is a series of five coins<sup>332</sup> that have incised on them the ethnic name ‘ΑΡΙΑΙ [ΟΝ or ΩΝ]’.

### Historical geography (cartography, portolan charts) and commentary

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<sup>324</sup> Marangou-Lerat 1995: 50.

<sup>325</sup> *Ethnica* 111.

<sup>326</sup> *Idem*.

<sup>327</sup> *Geografia* III.15.3.

<sup>328</sup> *Ethnica* 69.

<sup>329</sup> Pharaklas et al. 1998: 154.

<sup>330</sup> IC I.IV.

<sup>331</sup> Kitchell 1983.

<sup>332</sup> Le Rider 1966: 227-229, Pl. XXXV.9-12.

In the review that was carried out concerning the historical cartography, we found that ‘Xerocamo’<sup>333</sup> and ‘Valle di Vianes’<sup>334</sup> are the two most frequent toponyms associated with the bay of Arvi. We encountered the toponym ‘Arvi’ only twice (‘La Mal? Val? di Arvi), in Basilicata’s map and another one of an anonymous cartographer<sup>335</sup>. To our knowledge Arvi bay is not mentioned in any portolan, something that was expected instead, given the good anchorage-quality that the bay could offer. The only explanation we could think of is that Arvi bay was not on the usual sea route that the Medieval mariners used. Indeed the portolans of *Grazia Pauli* and *Il Compasso da Navigare* both describe a route from Kaloi Limenes bay to the unidentified location of *(I)scharichatoro* or *Descargadore*<sup>336</sup> and then directly to *Gaderonese* (Chryssi island).<sup>337</sup> The reason for that direction (namely the navigation at a safe distance from the shore) probably was the dangerous N winds that blow at the S coast of Crete. In fact also in the current pilot chart of East Crete there is an analogous direction.<sup>338</sup>

### Early Modern Travel Literature

Buondelmonti stopped at Arvi with his boat in order to get supplies (which is a valuable information regarding the nautical usage of the bay), where he noticed the huts of the modern village and the fertile valley.<sup>339</sup> Pashley, during his visit at Arvi, (before 1837) found the fragmented marble sarcophagus we also mentioned above, that was previously broken apart by some inhabitants who thought it contained gold.<sup>340</sup> His mention about Arvi is mostly dedicated to that discovery. However he refers also to the valuable testimony of some inhabitants of a neighbouring village (Aghios Vasilios), who remembered the period when there still were visible traces of walls and other structures at Arvi, a part of which was later used as a

<sup>333</sup> Mercator 1590, Mercator 1628-51, Janssonius 1638-61, Visscher 1638, Lucini 1645, D’Abbeville 1665, Colignon 1669, De Beaulieu 1674, De Wit 1680.

<sup>334</sup> Merian 1629-1718, Visscher 1638, Boschini 1645 and 1651, Franco-Memnius 1668-9, Bouttats 1674, Coronelli 1689, Homann 1702.

<sup>335</sup> Basilicata 1618/9; Anonymous *year b*.

<sup>336</sup> These words could be older versions of the Italian words ‘di scarico’ that mean unloading. If that is true, the text of the portolans refer to a harbour (Arvi?) where they usually stopped in order to unload merchandise.

<sup>337</sup> Terrosu Asole 1987: 5-10; Motzo 1947: par. 241-242.

<sup>338</sup> Pilot chart of Eastern Crete 2011 1:154.000.

<sup>339</sup> Aposkiti 1983: 34.

<sup>340</sup> Pashley 1837: 275-277.



building material for the church of Aghios Pandleimonas. He also describes briefly the valley, where corn was cultivated, the river and the “picturesque” gorge of Arvi. Spratt<sup>341</sup> mainly repeats the observations of Pashley. In addition, he expresses his admiration for the gorge formation and makes an interesting association between the Temple of Zeus (the “God of Thunder”) and the choice of this location with the specific geologic formation. Finally, in 1913, there is another reference to the gorge of Arvi from Trevor-Battye, who narrates the story he was told by the inhabitants about “the hammer of Zeus” that opened the earth and created the gorge, associating it again with the temple of Zeus Arbios.

Observations in the perspective of a landscape archaeology approach – Further considerations

Judging from the submerged beachrock platforms, the coastal area of Arvi has undergone a subsidence. In particular at the central and eastern part of the bay of Arvi the subsidence has been calculated at a maximum of 3.8 m, at the western part 6.1 m and at Faflago E from Arvi 4 m.<sup>342</sup> The width of the abovementioned beachrock platforms, which is ca. 70 m, 200 m and 67 m respectively,<sup>343</sup> can give us an idea about the former expansion of the land territory of Arvi. In addition, since Arvi is a tectonically stable area, the subsidence is owed to the rise of the Sea Level.<sup>344</sup> After personal observation at the eastern part of Arvi bay we can attest the identification of several pottery concentrations that in general belong to the Hellenistic, Roman and Late Roman periods and are incorporated in the beachrock formations at various depths (Fig. 105, 106). However, i. at a distance of ca. 50 m from the shore and a depth of 1.5 – 2 m, there was identified diagnostic pottery of the 1<sup>st</sup> century BC - AD 1<sup>st</sup> century (a North African amphora) (Fig. 107), as well as a probable amphora from Chios that is dated at the 2<sup>nd</sup> century BC (Fig. 108), ii. in the beachrock that is formed on the shoreline there was probably identified a fragment of an Eastern Sigillata B vase (Fig. 109, 110)<sup>345</sup>.

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<sup>341</sup> Spratt 1865: 294-296.

<sup>342</sup> Mourtzas 1990: 152, 154-155.

<sup>343</sup> Mourtzas 1990: 152.

<sup>344</sup> Idem.

<sup>345</sup> Judging by its distinctive purple colour and the thickness of the shred.

After the above observations it becomes apparent that the diagnostic pottery that is incorporated in the beachrock can offer only a *terminus post quem* for the date of the beachrock itself. The only safe conclusion at which we can get to, given the date of the diagnostic findings in relation to the depths, is that the beachrock (both at -1.5m and at the shoreline) was formed sometime after the Hellenistic period. We also noticed that the area where the most of the incorporated pottery concentrations are is at the mouth of a stream, something that could explain the chronologically mixed findings. In addition the area is also near to the Xenotafi location.<sup>346</sup>

A walk at the centre of the village revealed that the 'recycling practice' of the ancient building material in the masonry of the modern buildings was not followed only at the church of Aghios Pandleimonas, but also in -at least- three other structures (dated probably at the beginnings of the 20<sup>th</sup> century) and, we may assume, in a lot more that are not visible now (Fig. 111, 112, 113). Furthermore, as Sanders had also stated,<sup>347</sup> traces showing the earlier inland expansion of Arvi settlement towards the gorge,<sup>348</sup> and especially at the area that surrounds its mouth, can still be retraced (Fig. 114)<sup>349</sup>. The previously mentioned area during the last decades is dedicated to the cultivation.

In the matter of the political status of Arvi during the Hellenistic and Roman period and as we saw in the previous chapters, there is no solid evidence regarding its importance as a community. The questionable relation of Arvi with the city of 'Alvi' and the ethnic 'Ariaion'<sup>350</sup> is not sufficient to establish a city-state definition for the former<sup>351</sup>. Additionally, after having carried out a review of the existing archaeological evidence, we admit that it remains inconclusive regarding the fact whether it can imply or not the political significance of Arvi. That, however, does not exclude that it may have been a dependent community from a larger hinterland settlement, a common scheme across the Cretan coast<sup>352</sup>. The most probable candidate is the city-state of Viannos (or Biannos, or Biennos)<sup>353</sup>, which is also the less distant. Additionally there are elements that indicate that the wider coastal region of Arvi had

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<sup>346</sup> See previous chapter.

<sup>347</sup> Sanders 1982: 143.

<sup>348</sup> mixed Minoan and Hellenistic/Roman pottery shreds

<sup>349</sup> Personal observations.

<sup>350</sup> See previous chapter for details.

<sup>351</sup> Perlman classifies it in the 'unidentified settlements'. Perlman 2004: 1146.

<sup>352</sup> See also Mariani 1895: 163.

<sup>353</sup> Perlman 2004: 1154.

commercial relations with the city-state of Ierapytna,<sup>354</sup> or even, according to some scholars, that it was under its economic influence<sup>355</sup>.

In regards to the matter of the location of Arbios Zeus temple and consequently of the Mountain Arbios, it has been suggested that it should be identified either with one of the hills at the N of Arvi valley, or with Keraton hill at the E side of Keratokambos bay (the bay next to Arvi, towards W).<sup>356</sup>

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<sup>354</sup> Gallimore 2011: 329.

<sup>355</sup> Mandalaki 2005: 6.

<sup>356</sup> Idem. Also Mariani seems to agree with the second option [Mariani 1895: 325].

## 11. TERTSA, (12.) SIDONIA



## Main geographic features

Tertsia and Sidonia are two small and not well-sheltered bays in the area between Arvi and Myrtos. The bays are surrounded by low cliffs and each one has one main water course (today in the form of seasonal streams) that has formed small and fertile valleys. The stream of Sidonia bay stems from a gorge that is located ca. 1 km inland.

## Archaeology

At Tertsia, at the site of Panoklissia, a chamber tomb was discovered during a rescue excavation. Although the tomb was already looted there were collected 17 vases and a larnax that are dated in the LMIIIA2.<sup>357</sup> The tomb produced excellent Knossian pottery.

Regarding the coastal settlement of Sidonia there were reported traces of occupation associated to MMI-LMIII pottery shreds.<sup>358</sup> Recent small-scale excavations to the still visible traces of the Minoan walls confirmed that information.<sup>359</sup> Most of those wall-remains were found under and around the modern sea road at the E side of the bay. According to the excavator the i. settlement was established in the MMII period and continued until the LMIIIA,

<sup>357</sup> Rethemiotakis 1988 (1981): 389; Banou 2004: 187.

<sup>358</sup> Alexiou 1968: 403.

<sup>359</sup> Banou 2005: 155.

ii. the buildings of the settlement consisted in two different types of masonry (small stones and large limestone blocks), iii. the settlement was situated at the area where the modern road can be found today.<sup>360</sup> From the bay of Sidonia comes also a singular finding of a LMI pithos burial<sup>361</sup>. However, given that it was handed in to the local Archaeological Ephorate, we ignore the exact context in which it belonged.

#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

Tertsa and Sidonia bay seem that they were invisible to most of the cartographers and to the authors of the portolans, given that we have no mention of their current toponyms, or of variations of them. The mariners, apparently, were not very familiar with the coastal area between Myrtos and Arvi. The few cartographers who mention some toponyms regarding this area are Basilicata<sup>362</sup> (*Sarachinoviglia, Flavos, Sto stavru ti blaca*), Boschini<sup>363</sup> (*Flavos F.*), Homman<sup>364</sup> (*Flavos fiume, Caccores, Afpes*) and Seutter<sup>365</sup> (*Flavos fiume, Cacores, Aspes*). The information we can trace from the abovementioned toponyms is that there was a river (*Flavos F.*), a coastal location with Venetian guards for the fear of Saracen pirates

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<sup>360</sup> Idem.

<sup>361</sup> Alexiou 1977 (1972): 622.

<sup>362</sup> 1618-9.

<sup>363</sup> 1645 and also in a (later) map of 1651.

<sup>364</sup> 1702.

<sup>365</sup> 1725.

(*Sarachinovia*<sup>366</sup>) and another location with an abrupt aspect (*Aspes*). The problem is that we cannot identify with certainty those toponyms with the current settlements. However we think that *Sarachinovia* and *Flavos F.* refer to the modern settlement of Tertsas that still has two seasonal water courses (currently a big and a smaller stream), due to which in the past should have represented a coastal area of a certain 'maritime exposure' that could justify the necessity of a Venetian guard there.

### Early Modern Travel Literature

The coastal zone that includes the two sites under discussion has been visited by Spratt who passed by, although without observing any ancient remains at the coastal area between Myrtos and Arvi. According to Spratt, a certain Commander Mansell and Pashley had also passed from the same places, but the latter walked in the hinterland and not along the coast "On crossing the river at Myrtos, we entered the eparkhia of Rhizò-kastron, bounded to the north by Lassithi and Pedhiada, and to the west by Mesarà. It is chiefly mountainous, abounding in springs and rivulets: most of its villages are surrounded by the fine groves of olive-trees."<sup>367</sup> As for Mansell he had navigated coast to coast in order to examine the sea area off the coast (from Myrtos to Arvi) and to perform the soundings.<sup>368</sup> Consequently only Spratt passed from the coastal zone between Myrtos and Arvi. His observations concern the physical characteristics of the under discussion landscape, in particular its geology and botanology.<sup>369</sup> As far as the ancient remains are concerned, his statement was the following "The (Commander Mansell) was not more fortunate than Mr. Pashley in the discovery of any ancient city of importance between Girapetra and Arvi."<sup>370</sup>

### Observations in the perspective of a landscape archaeology approach – Further considerations

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<sup>366</sup> 'vigla' derives from 'vigilia' that means surveillance (guard) and 'Sarachino-' derives from the word Saracen.

<sup>367</sup> Pashley 1837: 272.

<sup>368</sup> Spratt 1865 I: 293.

<sup>369</sup> Spratt 1865 I: 294.

<sup>370</sup> Spratt 1865 I: 293.

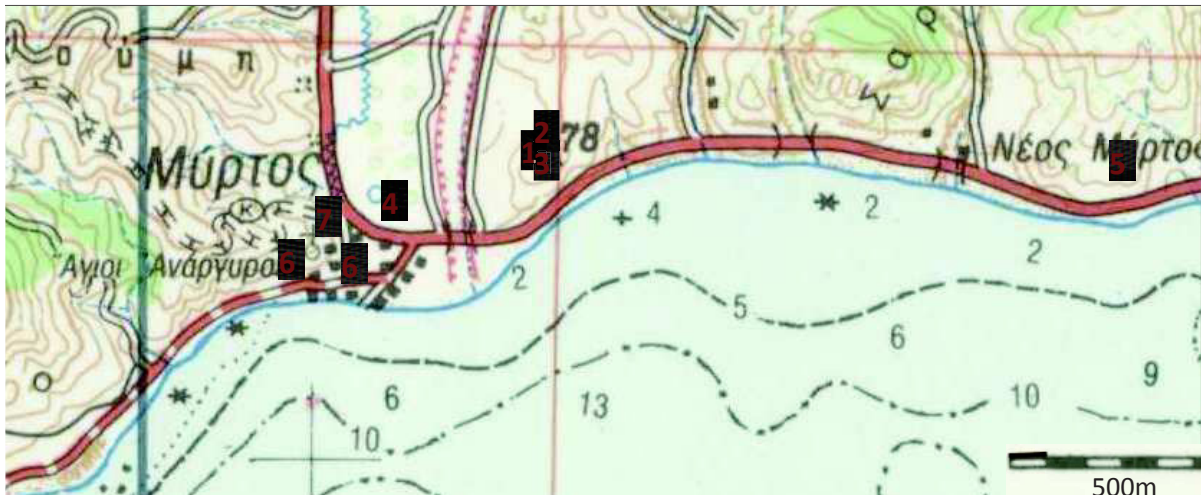
Tertsa and Sidonia were analysed together due to their topographic similarities, their vicinity as well as the very fragmentary nature of their antiquities. Although the modern settlements are very recent (they are documented for the first time in the census of 1961<sup>371</sup>), we have no testimonies from early travellers or inhabitants regarding already existing material remains there. We may assume, judging also from the evidence<sup>372</sup>, that those (namely the ancient remains) were to be found mostly on the low cliffs around the bays, areas that during the past decades are used for green houses cultivation, which has probably destroyed a part of them. Of course the evidence from Tertsa and Sidonia is too fragmentary to deduce any detailed features about the settlement pattern, however it serves since it offers a little bit of insight for this unknown coastal area between Myrtos and Arvi.

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<sup>371</sup> Spanakis 1993: 758, 844.

<sup>372</sup> Banou 2005: 155.

## 13. MYRTOS



## Main geographic features

Myrtos bay is a fertile and water-rich location. In the wider area there are three seasonal streams to the W and other three to the E. On the E side of the modern village there is the river of Kryopotamos, which has formed a fertile valley on its western side that continues towards N for several kilometers. On the W and NW side of the bay there is a mountainous area of coastal cliffs of white malts about 300 m high. Similarly, towards the E and NE side lies another area of lower sea cliffs (ca. 100m). In contrast to that at the area of the modern settlement the coastal cliffs slope down gently towards the sea. Due to the existence of the river and of the valley (a rare geographic element regarding the usual landscape of the S-SE coast<sup>373</sup>), the bay of Myrtos is exposed to the strong and abrupt northern winds. In fact there is the relative note in the Admiralty Pilot. Myrtos bay is not well protected either by the frequent SW winds.

<sup>373</sup> The other exceptions are Arvi and Hierapytna.



## Archaeology

At the summit of a high, conical hill that overlooks from E the bay of Myrtos, there are the remains of a long-lived and prosperous small Minoan settlement. Regarding its Minoan occupation, the village of 'Pyrgos' was settled in the EM period (EMIIA), destroyed by fire, then re-settled during the MM period (MMIA) and used until the LM one. The principal features of the MM phase are a house-tomb of continuous use, a paved road, a gypsum staircase and a courtyard. In a successive phase there were added two cisterns (Fig. 115) and a tower.<sup>374</sup> The most significant building of the LM period was the 'country house' located on the top of the hill that has been defined as the ruling building of the wider area,<sup>375</sup> the center of administration and management based on regional model of agricultural economy close to the type of the 'Minoan villa'. At this point we should point out the "surprising number of foreign imports"<sup>376</sup> that have been attested. On the top of the 'country house' during the Hellenistic period there was built a shrine of Hermes and Aphrodite as indicated by an inscription found there (Fig. 116).<sup>377</sup> That, according to the excavator, could also suggest that Pyrgos at the time was a part of the territory of Hierapytna, where the cult of Aphrodite is attested, or, more probably, that there was some kind of link to the shrine of Hermes and Aphrodite at the near Syme.<sup>378</sup> The last occupational phase was during the Venetian period (17<sup>th</sup> century) when a beacon tower was put at the top of the hill as a lookout against pirates.<sup>379</sup>

We should also mention here that apparently the Minoan presence at the area of Myrtos was not limited only on Pyrgos summit. A small rescue excavation on the N edge of modern Myrtos village produced –unexpectedly- LMIIIA pottery.<sup>380</sup>

About 2 km E from the bay of Myrtos on a summit that overlooks the present shoreline, there is another EM settlement, the so-called 'Phournou Korifi', which we will include in the sites of the wider area of Myrtos (Fig. 117, 118, 119). The type of the settlement (small village), the period of occupation (EMII), the type of destruction (fire) and the geological setting (low hill

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<sup>374</sup> Cadogan 1992.

<sup>375</sup> Cadogan 1977-8: 77, Cadogan 1992: 202.

<sup>376</sup> Cadogan 1977-8: 84.

<sup>377</sup> Cadogan 1977-8: 82.

<sup>378</sup> Idem.

<sup>379</sup> Cadogan 1992: 202.

<sup>380</sup> Cadogan 1977-8: 82.

located above the shore, overlooking a fertile valley, bedrock of gypsum and white and gray marls<sup>381</sup>) of Phournou Korifi settlement, bear more than noticeable resemblances with that of Pyrgos. However, on the contrary of Pyrgos, the settlement of Phournou Korifi was abandoned after its destruction. The settlement consists in ninety small rooms and passages joined to each other in a cellular structure, (Fig. 120) the shrine rooms, where there was found a terracotta cult statuette on a bench and a probably defensive circuit wall.<sup>382</sup> There is also a post-EMII occupational phase that is represented by a substantial arc-shaped building of unknown function.<sup>383</sup>

The Roman settlement of Myrtos occupied the same area as the modern one and it also extended towards W. For that reason the visible Roman remains are concentrated on the W side of the village, while several rescue excavations in the latter have revealed other parts of the Roman settlement. In particular the building remains on the W side of Myrtos probably belonged to a bath complex, given that we can identify a cistern (Fig. 121) and maybe also a second one NE of it, extensive traces of a building with hypocaust heated rooms (Fig. 122) and at least two polychrome geometric mosaics.<sup>384</sup> Remains of fragmentary brick walls and pottery surface finds can be traced S, W and NW of the aforementioned buildings,<sup>385</sup> giving us an idea of the settlement's extension towards that direction. Within the area of the modern settlement there are remains of mosaic pavements<sup>386</sup> and brick-walls, some of them associated to a house of the Early Roman Imperial period<sup>387</sup> (Fig. 123, 124). Xanthoudidis, who visited the site when much more building remains were still visible, reports also an underground room of Roman date that was used as a storehouse as well as hypocausts (according to his description) and the hand of a marble statue that maybe depicted Demeter or Kore, which were found in a three-meter-deep well.<sup>388</sup>

The Roman cemetery was also located somewhere in the same area (probably near the chapel of S. Antonios) as indicated by the numerous fragments of votive inscriptions that

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<sup>381</sup> Warren 1992: 198, 200.

<sup>382</sup> Warren 1992: 198.

<sup>383</sup> The structure is not dated by the pottery (which is also EM) but by the stratigraphy. The excavator suggests a date soon after the EMII destruction. [Warren 1992: 198].

<sup>384</sup> Branigan 1976: 604.

<sup>385</sup> Idem; personal observation.

<sup>386</sup> Sanders 1982: 138.

<sup>387</sup> Apostolakou 1985: 301; Alexiou 1965: 556.

<sup>388</sup> Xanthoudidis 1948: 532-533.

Mariani attested during his visit.<sup>389</sup> The same scholar informs us also for the existence of remains probably attributable to a Roman villa (columns, building material) at the area near the river.<sup>390</sup> At this point it would be useful to mention the existence of a marble column base that was washed ashore at the centre of the beach of Myrtos and stood there until some years ago (Fig. 125). We do not know whether the column base was in situ where it was submerged or whether its initial location was near the river, as Mariani describes, and it was 'transported' at the sea bottom by the water of the river. However the existence of submerged architectural remains at the western part of the bay is highly probable.<sup>391</sup>

Traces of substantial walls at the area NE from the chapel of Aghios Antonios (that is a 18<sup>th</sup>-century reconstruction of the 14<sup>th</sup>-century Byzantine or Venetian church that is indicated in the maps of two cartographers<sup>392</sup>), which have been attributed to a Venetian fortress, as well as traces of a Medieval cemetery have been also reported.<sup>393</sup> We should also refer here that the masonry of the W wall of Aghios Antonios's chapel preserves fragments of marble blocks, columns' bases and fragments of marble statues that apparently belonged to the structures of the Roman settlement. In addition the altar is made of bases of columns.<sup>394</sup> Furthermore, in a rescue excavation in the center of the modern settlement there was revealed part of a building (walls and mosaic) of the Roman period at a depth of 2m.<sup>395</sup> Finally, in two other rescue excavations that were conducted in plots near the modern road that connects Myrtos to Ierapetra, there were revealed parts of two Roman roads<sup>396</sup>, along with clay water pipes and Roman houses (with Late Roman additions).<sup>397</sup> One of them had a storage room, where there were discovered pithoid jars filled with smashed marine shells,<sup>398</sup> which, we assume, were destined to be mixed with the other standard ingredients (lime, sand water) of concrete.

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<sup>389</sup> Mariani 1895: 321.

<sup>390</sup> Idem.

<sup>391</sup> Elpida Hadjidaki 2015, personal communication. The testimonies of two residents of Myrtos (Evi Christaki and Nikos Lambrinos) also agree.

<sup>392</sup> See below at 'Historical geography' section.

<sup>393</sup> Hood et al. 1964: 93.

<sup>394</sup> Iasithitour.bpis.teicrete.gr 2015 and personal observation.

<sup>395</sup> Orlandos 1967: 127.

<sup>396</sup> Although we cannot be certain about it since in the report there is no mention to its orientation, maybe the one of them served for the same route.

<sup>397</sup> Apostolakou 1989 (1982): 390.

<sup>398</sup> Idem.

## Literary evidence and comments

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## Epigraphic and numismatic evidence

Mariani<sup>399</sup> reports the existence of four votive inscriptions dated at the Late Roman Imperial period, from the settlement's cemetery. He also informs us that there were several other fragments of Roman Imperial votive inscriptions (both in Latin and Greek) scattered around at the area of the modern village, of which he gives no further details.

Regarding the numismatic record, in the rescue excavations W of Myrtos, there were found some Late Roman coins (AD 4<sup>th</sup> century).<sup>400</sup>

## Historical geography (cartography, portolan charts) and commentary

To our knowledge Myrtos is not mentioned in the portolan charts. However in the cartography of the previous centuries we often encounter it as "Mirtos F." (in particular: Basilicata 1618-9, Corner 1625, Boschini 1645, Sanson d'Abbeville 1665, Chiquet 1719). On the contrary, two important cartographers (Ortelius and Mercator) do not depict it in their maps of Crete. In the maps of Merian (1670) and Bouttats (1690) it is referred only the toponym of the river "Cripotamos", which other cartographers such as Coronelli (1707) and Seutter (1778) seem to confuse with the river "Flavos". Those two cartographers indicate also the church of S. Antonio, today still in place. In addition, Coronelli and Boschini place "Sarachinovia", a toponym that implies the presence of Saracen pirates, at the E of Myrtos. The gorge at the N of Myrtos, where the river Kriopotamos springs, is called "Sarakina". The existence of those two toponyms at the area of Myrtos is a strong indication about its past inhabitants, who probably used the area as one of their pirate bases. The fact that Boschini depicts three Venetian guards at Myrtos bay and other two at Sarachinovia (modern Tertsa) is also

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<sup>399</sup> Mariani 1895: 321, IC.III.39, 53, 54.

<sup>400</sup> Apostolakou 1989 (1982): 390.

indicative of the 'maritime exposure' of this coastal area. Finally we should notice that Myrtos is usually mentioned because of its river. Apparently the lack of a sheltered bay and of an easily recognisable geographic element made the river the only useful (and recognisable we may add) element for the passing boats.

### Early Modern Travel Literature

Myrtos did not catch the attention of the early travellers that passed nearby. Pashley made only a geographic description of the road from Ierapetra to Myrtos' river and noticed some gypsum deposits along the shore.<sup>401</sup> When Spratt visited the area, he probably did not set foot near the bay either, since he notices only the valley of Myrtos with its botanical diversity and he mentions the existence of three villages at the upper part of the valley.<sup>402</sup> However Mariani's<sup>403</sup> description of Myrtos is quite different since he did visit the coastal area, where the antiquities were. He attests that at the valley, near the mouth of the river, there were remains of building material and columns that probably belonged to a Roman villa. He also attests the presence of several fragments of votive inscriptions (both in Greek and Latin) at the area of the modern village and he documents four of them that he found at the museum of Ierapetra and came from the necropolis of Myrtos. In the light of all that he argues that during the Roman period Myrtos was probably a small settlement that belonged to the Hierapytnians.

Observations in the perspective of a landscape archaeology approach – Further considerations

The paleogeography of Myrtos bay was notably different, as the geological markers indicate. At the western part of the bay there is a submerged beach-rock platform that extends at a distance of about 70m of the present shoreline and arrives at a maximum depth of 5m

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<sup>401</sup> Pashley 1837: 271, 272.

<sup>402</sup> Spratt 1865: 290.

<sup>403</sup> Mariani 1895: 321, 322.

(Fig. 126).<sup>404</sup> That is to say since the formation of that beachrock took place there has been a gradual subsidence of the earth at the area of Myrtos of at least 5m. If we accept a Sea Level Rise of 2.8m since the 5<sup>th</sup>-4<sup>th</sup> century BC, the rest of the variation (2.2m) is due to tectonic movements.<sup>405</sup> This beachrock platform, in various parts covered by alluvial deposits and/or landslide material, continues at least until the cape Theofilos, about 5km to the W of Myrtos (Fig. 127). There is also a more recent type of beachrock (it probably dates at the beginnings of 20<sup>th</sup> century) that is located at the shoreline (W part of Myrtos bay) and extends to the depth of 0.50m (Fig. 128).<sup>406</sup> The central and eastern part of Myrtos sea bottom is covered from the alluvial deposits of Kriopotamos river. A part of them, near the mouth of the river, could very well be the building material (stone bricks) of the various structures that were located at that part of the coast<sup>407</sup>. We could say that the previous geological data explains and further sustains the aforementioned information about the existence of submerged architectural remains, but the depths do not coincide. We assume that there must be an older submerged paleo-shoreline at a higher depth, because all of the testimonies we have agree on the fact that the architectural remains are submerged at a depth of ca. -10 to -15 m.

The coastal territory of Myrtos bay before and during the Classical and Hellenistic period (5<sup>th</sup>-4<sup>th</sup> century BC)<sup>408</sup> was much more extended towards S and SW (the paleo-shoreline was located at least 70m towards S in relation to the present one).

From the relative information found in the texts of the early travellers we may assume that in the 19<sup>th</sup> century Myrtos was a deserted land, maybe because of the long presence of pirates there during the previous centuries, something that probably 'cancelled' its Roman past from the memory of the local people, who, consequently, did not mention Myrtos as a worthy-of-visit place to the early travellers. Only in this way we can explain the fact that explorers such as Spratt and Pashley did not mention anything about the extended, visible and easily approachable ancient remains at the bay of Myrtos. That is further confirmed by the fact that Myrtos is not mentioned in the Turkish censuses of 1671 and 1834.<sup>408</sup>

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<sup>404</sup> Fytrolakis and Mourtzas 1988: 40.

<sup>405</sup> Fytrolakis and Mourtzas 1988: 47.

<sup>406</sup> Fytrolakis and Mourtzas 1988: 47 and personal observation.

<sup>407</sup> Personal observation.

<sup>408</sup> Spanakis year: 411.

Myrtos bay was and still is privileged due to the fact that it is easily approachable by land, its fertile valley, its water-rich land and its multiple settlement-choices in the vicinity (the several other small settlements located up on the hills that surround it) and not because of its nautical usage. We can be certain that Myrtos bay could not have served in the past as a 'principal' small port or anchorage<sup>409</sup> of the wider area, especially if its land was extended 70m towards S, therefore it was even less protected<sup>410</sup>. We can safely assume that Myrtos, as far as its involvement in the maritime trade and communication was concerned,<sup>411</sup> relied either at the harbor of Ierapetra (towards E) or at the bay of Arvi (towards W).

Unfortunately we have very limited information regarding the Roman -and the Hellenistic too we assume- past of Myrtos. The combination of i. the 5-meter earth submergence, ii. the scarce information about the ancient remains of the area (probably due to the presence of pirates), iii. the recent (since the 1950's) increased building activity that took place as well as iv. the absence of any systematic excavation at the W part of the settlement, have 'buried', hopefully only for the time being, most part of the material remains of that period.

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<sup>409</sup> Today the modern small artificial port of Myrtos is 'closed' and communicates with the sea through a small channel.

<sup>410</sup> We should not forget the sudden N winds to which this bay is subject and that they can be very dangerous for any anchored vessel.

<sup>411</sup> That of course does not include the local needs that involved small vessels and limited risk operations (such as fishing).

## 14. HIERAPYTNA (IERAPETRA)<sup>412</sup>



### Main geographic features

Hierapytna lies on the S side of the isthmus of Ierapetra, a valley that connects the S with the N coast at the narrowest point of the island of Crete. The 15 km-long valley is formed between the Dikte and W Siteia mountain ranges to the W and E respectively. Its southern end expands at ca. 8 km of the coast, creating a large and uninterrupted plain area out of fluvial sand deposits. The abovementioned coastal valley is very rich in water (at least eight water streams and numerous wells are marked on the HMGS topographic map of the area) and it offers a large amount of cultivable land to its inhabitants. The bay of Hierapytna is located where the current city is and it is also the only one of the entire area since the rest of the coast towards W and E is a sandy long beach. The bay offers an anchorage that is partially protected from the SW winds and subject to the S and SE ones. In fact the current harbor is an artificial one.

### Archaeology<sup>413</sup>

The first thing that becomes apparent at modern Ierapetra is the absence of ancient traces, in relation to what we would expect from a Hellenistic and Roman city that once was

<sup>412</sup> The study area comprises the coastal area between the –current- eastern end of the city and Stomio, a location ca. 8 km W from the city centre.

<sup>413</sup> Unfortunately, given also the limitations of the current study, it is impossible to make a comprehensive description of all the known mobile and immobile antiquities that come from the area of Ierapetra; the following section will contain the most ‘important’ ones. The ‘absent’ antiquities can be found in the valuable and comprehensive works on Ierapetra by Zois 2002, Gallimore 2011 and Guizzi 2001.



populated by thousands. A lot of factors contributed to the disappearance of those traces. Some of them were the destruction by the Saracen pirates in 828 AD,<sup>414</sup> the earthquake of 1508<sup>415</sup> and maybe also of 1780<sup>416</sup>, the occasional looting<sup>417</sup> of numerous visible artefacts,<sup>418</sup> the destruction or the paving over of remains of architectural structures due to the modern expansion of the city, the recent coastal landscape transformation due to the extensive use of modern agricultural practises (greenhouses)<sup>419</sup> (Fig. 129), as well as the absence of rescue excavations until the 1970s. Furthermore, according to Gallimore, “during World War II, German soldiers stationed in Ierapetra and demolished all standing remains of ancient buildings to accommodate their machine gun emplacements and to prevent any allied landing force from having possible defensive positions”.<sup>420</sup> Finally, another reason for the ‘disappearance’ of the ancient traces of Hierapytna is that the current center of the city (‘Palia Poli’) became the main focus of the settlement only after antiquity (and is also home to a Venetian fortress constructed in the 13<sup>th</sup> century), because when the modern town expanded it did so towards N and E.<sup>421</sup> In fact, the Viglia district towards W is the location where the largest concentration of ancient remains has been detected and probably also the nucleus of ancient Hierapytna. The knowledge regarding the material evidence of the past occupational periods of Hierapytna proceeds slowly but steadily during the past four decades, by means of the several rescue excavations across the modern town.

To our knowledge, the most ancient evidence to date regarding the area of Hierapytna are two MM IIIB-LM IA pithos burials that were found at Gra Lyghia district, W of modern town center.<sup>422</sup>

The large theatre of Hierapytna was located at Viglia district (Fig. 130). Until the 2<sup>nd</sup> World War there were still standing several remains (more than 5 m high) of the *koilon* and its support walls as well as of its arched entrances.<sup>423</sup> Thanks to a small rescue excavation in

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<sup>414</sup> Spanakis year: 278.

<sup>415</sup> Raulin 1858: 165.

<sup>416</sup> Gallimore 2011: 95.

<sup>417</sup> Although we do not use the term with its exact modern meaning here, since during the period we discuss there was neither a law for the protection of the antiquities nor –most importantly– a Greek state.

<sup>418</sup> For example: Falkener 1854: 12 and Spratt I 1865: 274-288.

<sup>419</sup> Chalikias and Cantoro 2015.

<sup>420</sup> Gallimore 2011: 96-7.

<sup>421</sup> Gallimore 2011: 90.

<sup>422</sup> Davaras 1987 (1979): 405.

<sup>423</sup> Spanakis year: 278.

1980 that revealed statues and walls dated in the Roman Imperial period<sup>424</sup> and a geophysical survey that confirmed the underground existence of an architectural structure of elliptical plan, other structures and roads,<sup>425</sup> there was individuated the area of the –probably large- theatre of Hierapytna. In 2014 it was decided the (first in Ierapetra) systematic excavation in that area in order to reveal the remaining parts of the theatre.<sup>426</sup>

During several rescue excavations at the area of Viglia and Gra Lyghia, there have been revealed parts of a road, an aqueduct line, a sewer line, houses<sup>427</sup> and numerous cist tombs (part of a necropolis), all dated in the Imperial Roman period. According to the information that Zois provides us with, that part of the town was something similar to a wealthy suburb, because of all the ruins of the luxurious private villas.<sup>428</sup> Furthermore, W of the centre of the town (near ‘naumachia’) there have been excavated a built well that was re-used as a disposal pit, a part of a Roman Imperial building, decorated with a mosaic and a part of a stone-built water line.<sup>429</sup>

There is no trace left from the several temples, which are repeatedly mentioned in the texts of the early travellers, apart from the occasional discoveries of colossal statues that represent deities.<sup>430</sup> As far as the ‘naumachia’ is regarded, mentioned by Spratt and Cyriacus of Ancona,<sup>431</sup> namely an artificial basin filled in with water where mimic sea battles took place for the entertainment of the spectators, there is no trace either although, thanks to Spratt’s map, we do know its exact position. A small part of the basin, that in the meantime became a salt pan and then got silted up, is still visible today W from the Venetian fortress. However it is more probable that that basin functioned as the inner port of the (Hellenistic?) town, since not only the ‘naumachia’ was a very rare feature among the Roman towns, but also it is difficult to be securely identified as a structure.<sup>432</sup> Furthermore, the lack of complete natural protection in Hierapytna’s coastline,<sup>433</sup> could have made the construction of a secondary (?), well-protected harbour necessary. We absolutely agree with the interpretation of this structure as an artificial

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<sup>424</sup>Greek Ministry of Culture and Municipality of Ierapetra 2013.

<sup>425</sup>Sarris et al. 2010.

<sup>426</sup>Greek Ministry of Culture and Municipality of Ierapetra 2014.

<sup>427</sup>Apostolakou 1996: 655.

<sup>428</sup>Zois 2002: 29.

<sup>429</sup>Apostolakou 2002.

<sup>430</sup>Spanakis year: 275.

<sup>431</sup>Spratt 1865: I, 253-4; Bodnar 2003: 189, diary IV.5.

<sup>432</sup>Gallimore 2011: 107.

<sup>433</sup>Gallimore 2011: 127.

closed harbour. Let us also mention here the testimony of Barozzi<sup>434</sup>, who describes it as a “bellissimo porto di catena fatto tutto a mano”<sup>435</sup>. Moreover Mariani in 1896 mentions that “the drying up of the inner port” improved the hygienic conditions for the inhabitants.<sup>436</sup>

Spratt<sup>437</sup> (in his map of Hierapytna) and Belli<sup>438</sup> mention the existence of two different moles at the outer port of the town. The plan of Sanders<sup>439</sup> puts these information into perspective since he marks both of the abovementioned moles at the outer port, of which the western is submerged because of the rise of the Sea Level, while the eastern one is -still today- slightly over the water surface (Fig. 131). He also depicts a coastal fortification wall, W of the harbour, a small part of which is still visible today (Fig. 132).<sup>440</sup> There is also a testimony regarding the -relatively recent- illegal destruction of it as well as the big bronze rings that were adjusted on some of the remains and probably used for the mooring of ships.<sup>441</sup> Finally, Sanders argues that the amphitheatre was located at Viglia district, near the large theatre and the smaller theatre (Fig. 133) near the church of Timios Stavros, NE from the centre (Fig. 134).<sup>442</sup>

At the district of Stomio, 9 km W from the centre of the town, there are preserved more traces of the Roman Imperial period. There have been collected four to five marble column capitals<sup>443</sup> and there is also a partially submerged building complex (Fig. 135).<sup>444</sup> The latter is constituted by at least eight distinct rectangular rooms of probably two different sizes (arranged in two rows from E to W), the lower part of which is found at -1.20 m below the water surface (Fig. 136). The interior surface of the smaller ‘rooms’ that constitute the S row, according to Mourtzas<sup>445</sup>, is covered with waterproof mortar, a feature that suggests they probably were tanks. The walls are 0.80 to 1 m thick. The S side of the eastern compartment of the small ‘rooms’ has an apsidal plan.<sup>446</sup> At a distance of ca. 15 m towards SE from the submerged

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<sup>434</sup> Kaklamanis 2004: 193.

<sup>435</sup> Beautiful man-made harbour with a chain. [translation from Italian by the author].

<sup>436</sup> Mariani 1895: 319.

<sup>437</sup> Spratt I 1865: 253-4.

<sup>438</sup> Falkener 1854: 11.

<sup>439</sup> Sanders 1982: 139, fig. 49.

<sup>440</sup> Gallimore 2011: 597, fig. 4.19. According to Zois, until 1994 the 186 m of the coastal wall were visible. [Zois 2002: 26].

<sup>441</sup> Zois 2002: 26, n. 1.

<sup>442</sup> Sanders 1982: 139.

<sup>443</sup> Xanthoudidis 1948: 533.

<sup>444</sup> Mourtzas 1988.

<sup>445</sup> Mourtzas 1988: 1558.

<sup>446</sup> Personal observation.

building there is a thick wall ca. 15 m long with a different orientation (NE - SW) in relation to the other structures. Moreover, ca. 25 m towards SE from the aforementioned wall there is a small part of another one that has the same orientation and dimensions.<sup>447</sup> On the shore, N of the submerged building, there is an oblong construction constituted by the remains of two long walls<sup>448</sup>, parallel to the coastline and 1.70 m distant the one from the other. The area between them is covered by waterproof mortar and at the base of the N wall there are cylindrical clay conduits.<sup>449</sup> Furthermore the N wall has an apse in the middle of its length (ca. 10 m). It is apparent that the structure functioned as a tank. E from the 'tank' there is a part of a wall that is partially submerged (oriented N – S) and W from it a part of a building (oriented N – S). In our opinion the oblong structure can be individuated as a fountain and the submerged buildings as a part of a small bath complex. As far as the two distant walls towards SE are concerned, judging by their orientation, they probably belong to another construction phase.

Finally it should be added that the city became a bishop's see during the Byzantine period,<sup>450</sup> while, during the Venetian period, in 1212, on the S mole of the port there was built a fortress.<sup>451</sup>

### Early Modern Travel Literature

From Buondelmonti comes the older testimony regarding Hierapytna. In his text, dated in 1415, he mentions a big number of ancient buildings and columns as well as a very large harbour that he found silted in and transformed into a fertile valley.<sup>452</sup> He also refers to a lot of big temples and several scattered statues' protomes.<sup>453</sup>

Cyriacus of Ancona, who visited Hierapytna in 1445, saw also remains of the large ancient city, including theaters, colonnaded structures, and numerous statues stretching out over a vast area.<sup>454</sup>

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<sup>447</sup> Personal observation.

<sup>448</sup> that currently are under a modern house (personal observation).

<sup>449</sup> Mourtzas 1988: 1560.

<sup>450</sup> Spanakis 1993: 278.

<sup>451</sup> Idem.

<sup>452</sup> Aposkiti 1983: 35.

<sup>453</sup> Aposkiti 1983: 36.

<sup>454</sup> Bodnar 2003: 189, diary IV.5.

Barozzi in 1577<sup>455</sup> writes about Hierapytna that the area of the port, which was filled with numerous remains of marble columns and buried statues, was frequently excavated and ‘looted’ by the Venetian governors. One example of that activity is the statue that was transported at Bembo fountain, in Herakleion. He then refers to the remains of temples, mosaics and of the amphitheater, without, however, specifying the location. Finally he describes the port, which “had a chain and was entirely hand-made”<sup>456</sup>.

The report of Onorio Belli from 1586<sup>457</sup> contains valuable information about the two theatres and the amphitheatre of Hierapytna. Apart from the details with respect to the architecture (he includes two detailed plans in his report) and the building material (granite), we learn that parts of the marble decoration of the smaller theatre had been sent to Venice, that its columns were “destroyed by fire” and that many of its seats were still *in situ*.<sup>458</sup> The report for the larger theatre is missing from Belli’s text. Instead there is a brief report for the amphitheatre, which was constructed between two little hills or rocks, in order to exploit the natural geomorphology and was not particularly decorated.<sup>459</sup> Furthermore Belli mentions the existence of a small islet in front of the port, which was connected to the land through a mole.<sup>460</sup> This observation suggests that the past Sea Level at the coast of Hierapytna, at least until 1586, was lower to the point that a currently submerged reef was visible.<sup>461</sup>

Gerola<sup>462</sup> provides us with a very detailed report on the fortress of Ierapetra, with regard to its construction, architectural details, as well as its various reconstructions and re-buildings in the scope of its defensive improvement. Most of his information comes from the text of Monanni<sup>463</sup>, written in 1631.

Coronelli in his *isolario* of 1696 observes Hierapytna’s multi-colored marble columns, and the broken and whole statues.<sup>464</sup>

Tournefort passes from Hierapytna around 1700 and mentions the existence of the Venetian fortress. He notices the Chryssi island and he characterises the beach of Hierapytna

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<sup>455</sup> Kaklamanis 2004: 192.

<sup>456</sup> Kaklamanis 2004: 193.

<sup>457</sup> Falkener 1854: 11-14.

<sup>458</sup> Falkener 1854: 12.

<sup>459</sup> Falkener 1854: 14.

<sup>460</sup> Falkener 1854: 11.

<sup>461</sup> Papadakis 1982: 39.

<sup>462</sup> Gerola 1905: 243-250.

<sup>463</sup> R. Monanni 1631: It.VII, 889 (7798), f. 9.

<sup>464</sup> Coronelli 1697.

as “an exposed one”.<sup>465</sup> He then refers to the architectural remains he saw (stone blocks and columns’ fragments) informing us for the previous existence of a (coastal) fortification wall. He also reports the existence of coins of Caligula with the symbols of an eagle on a lightning and of the palm tree that are represented on the reverse. He compares the latter with the palm tree of another coin (female head with tower-like buildings on the front) commenting that, since the palm tree does not exist in the area, the Hierapytnians probably wanted to represent a pine tree, which by mistake<sup>466</sup> looked similar to a palm tree.<sup>467</sup>

In the early 17<sup>th</sup> century Basilicata comments that there were abundant fragments of buildings and columns scattered to the W of the modern town.<sup>468</sup>

Sieber<sup>469</sup> provides us with an extensive –and careful– description of the town. He refers to two, currently dry apparently, “lakes with salty water” that were located, we assume from the text, at the N side of Hierapytna. Apart from the ancient ruins that bear testimony to the ancient splendor of Hierapytna, he also observes the re-use of building material from the ruins of the earlier occupation periods into the 19<sup>th</sup> century’s houses and fortification walls. Moreover he attests the existence of a ancient man-made breakwater W to the Venetian fortress. He finally argues that the origin of Ierapetra’s inhabitants was Egypt.

Trevor-Battye<sup>470</sup> in 1833 approaches Ierapetra from the sea and he writes a geographical description for the surroundings of the town without adding something new. He also refers to the big quantity of oil that the town exported at the time.

Raulin<sup>471</sup> provides us with valuable information about the big earthquake of 1508 that ruined the modern settlement of Ierapetra, something that also explains the very poor state of preservation of its antiquities.

Spratt gives an extensive geographical and geological description of the wider area of Hierapytna. He attests the previous existence of an inner (or *naumachia*) and an outer port, which he found silted in.<sup>472</sup> He mentions the poor health conditions of the inhabitants and their

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<sup>465</sup> Apergis and Apergi 2003: 58.

<sup>466</sup> This is not true, even today there are palm trees at the S and E coast of Crete, so it is very probable that two millennia ago there were also at Ierapetra.

<sup>467</sup> Apergis and Apergi 2003: 58, 59.

<sup>468</sup> Spanakis 1969: 41.

<sup>469</sup> Sieber 1817: 227-9.

<sup>470</sup> Trevor-Battye 1913: 88-9.

<sup>471</sup> Raulin 1858: 165.

<sup>472</sup> Spratt 1865: I 253-4.

basic means of income that was the export of the olive oil.<sup>473</sup> Regarding the antiquities he refers to the Venetian fortress, the numerous sparse remains of aqueducts, cisterns, granite and marble columns and of various other structures.<sup>474</sup> In order to give a more complete picture of the town's antiquities Spratt uses Onorio Belli's older testimony about the two theatres and the amphitheatre, from which he manages to relocate the latter.<sup>475</sup> He argues that it was probably constructed on an ex-quarry and he attests the "dilapidation" of the ruins of the three theatres since the Venetian period. Finally he dedicates a whole chapter to the two marble relief-decorated sarcophagi that were purchased and taken from Ierapetra to be brought to the British Museum.<sup>476</sup>

### Literary evidence

The available literary evidence with regard to Hierapytna is mainly of geographical character. Stephanus of Byzantium<sup>477</sup> provides us with important information regarding the earlier names of the city, which were *Κύρβα*, *Πύτνα* and *Κάμιρος*. Strabo describes the wider geographical area of the isthmus and defines Hierapytna a *polis*.<sup>478</sup> In the texts of other ancient geographers is mentioned only the name of the city in several variations; i. *Pietra Sacra*, *Ierapoli*, *Girapetra*<sup>479</sup>, ii. *Hierapytna*<sup>480</sup>, iii. *Hiera*<sup>481</sup>, iv. *Ιεραπύδνα*<sup>482</sup>, v. *Ierapina*<sup>483</sup>. Finally in *Stadiasmus* is mentioned the distance between Hierapytna – Samonium promontory and Hierapytna – Biannos, while *Ιερά Πύδνα* (Hierapytna) is defined again as a *polis* with a bay and an island with a harbour and water (Chryssi)<sup>484</sup>.

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<sup>473</sup> Spratt 1865: I, 255.

<sup>474</sup> Spratt 1865: I, 262-3.

<sup>475</sup> Spratt 1865: I, 256-262.

<sup>476</sup> Spratt 1865: I, 274-288.

<sup>477</sup> *De Urbibus* 328. 4-5.

<sup>478</sup> *Geographica* X.475.

<sup>479</sup> *Geografia* III.X.183.

<sup>480</sup> *Historia Naturalis* IV.12.59.

<sup>481</sup> *Tabula Peutingeriana*.

<sup>482</sup> *Synecdemus* 649.8.

<sup>483</sup> *Geographus Ravennas* V.21.

<sup>484</sup> *Stadiasmus* 319.

## Epigraphic and numismatic evidence

The epigraphic evidence that is associated to Hierapytna is very rich. In fact, much of the knowledge of its history derives from these inscriptions. Guarducci<sup>485</sup> published sixty-four inscriptions (votive, funeral and treaties) and in *Supplementum Epigraphicum Graecum*<sup>486</sup> there have been published other 37 (votive, funeral, building inscriptions, treaties, amphora stamps and a coin inscription) all dated in the Hellenistic and Roman Imperial periods. The Hellenistic inscriptions are mostly of public character (e.g. documentation of judicial or administrative matters), while the Imperial ones of private (e.g. funeral inscriptions commissioned for personal use). The limits of the present study do not allow us to make an extensive mention of the large amount of inscription texts. We will, however, refer to some of the most important information that they provide us with regarding the history of Hierapytna.

The numerous treaties (for alliance<sup>487</sup>, isopolity<sup>488</sup> or peace<sup>489</sup> with other city-states or for arbitration regarding territorial matters<sup>490</sup>) indicate Hierapytna's growing influence in the Hellenistic period as well as its pro-Macedonian policy<sup>491</sup> towards the end of the 3<sup>rd</sup> century BC. Hierapytna had also another strong ally (treaty dates at ca. 250 – 200 BC); Seleucus II Callinicus Pogon.<sup>492</sup> In the war of certain Cretan city-states supported by Macedon against Rhodes and her allies (204-201 BC), the powerful Hierapytnian fleet attacked its allies (Kos and Kalymnos).<sup>493</sup> After the war the city changed sides and made a treaty with Rhodes<sup>494</sup> (ca. 200 BC), in which there was mentioned that Rhodes needed her support in suppressing piracy. Between 145 and 140 BC Hierapytna expanded to the E destroying the neighboring city of Praisos and occupied its territory, including the Temple of Dictaeon Zeus (at Palaikastro on the E coast).<sup>495</sup> Furthermore the Hellenistic inscriptions contain valuable information with regard to the political institutions of that period, such as: *kosmoi* (regional governors), *voule* (council)

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<sup>485</sup> IC III.III.1-64.

<sup>486</sup> "Hierapytna" SEG online.

<sup>487</sup> IC III. III.1A

<sup>488</sup> SEG 46-1223.

<sup>489</sup> SEG 29-826.

<sup>490</sup> SEG 46-1225.

<sup>491</sup> SEG 46-1222.

<sup>492</sup> Apostolakou 2006.

<sup>493</sup> Blackman 1976.

<sup>494</sup> SEG 39-966.

<sup>495</sup> IC III.IV.9.



and *ekklesia* (assembly).<sup>496</sup> The city prospered also during the Imperial period, as it is clear from the continuing inscriptions. Apart from the numerous private inscriptions, recently there was published a series of building inscriptions that date to the early AD 1<sup>st</sup> century<sup>497</sup> and constitute evidence for the development of a road network, as well as the socioeconomic recovery of Hierapytna after the Roman conquest.<sup>498</sup>

Hierapytna struck coins (staters) on the Aiginetan standard from the 4<sup>th</sup> century BC. Svoronos published fifty-one coins.<sup>499</sup> Regarding the Hellenistic coins, some of the symbols they bring are the boar protome, Zeus protome, palm trees, eagle, bow figurehead, female head and tower-like buildings, a cross-like monogram, eight-ray and six-ray star and the head of Athena. The most standard of them are the eagle and the palm tree. The Roman coins are dedicated to the emperors Augustus, Tiberius, Caligula and Flavius.<sup>500</sup>

#### Historical geography (cartography, portolan charts) and commentary

As expected Hierapytna is mentioned very often by the cartographers. Some of them mention only the Venetian fortress (*Cl. Di Gerapetra, Castel di Gerapetra*)<sup>501</sup>, others only the cape<sup>502</sup> (*C. de/di Girapetra, Capo di Girapetra, Cap de Gerapetra*) and others only the name of the town<sup>503</sup> (*Hierapetra, Hierapytna, Girapetra, Girapetro, Gierapetra*). In other cases the cartographers distinguish –some of- the characteristic elements of the wider area of Hierapytna such as the fortress, the valley, the town, the bay and the cape: *Castel di Gerapetra – Spiazza di Girapetra*<sup>504</sup>, *Cl. Di Gerapetra – Plano di Gerapetra*<sup>505</sup>, *C. de Girapetra – Gierapetro*<sup>506</sup>, *Cap de Girapetra – Gierapetro*<sup>507</sup>, *Castello di Girapetra – Capo di Girapetra*<sup>508</sup>,

<sup>496</sup> IC III.IV.78; Martinez 2007: 1.

<sup>497</sup> SEG 56 1051-1054.

<sup>498</sup> Whitley et.al. 2006-7: 98.

<sup>499</sup> see Svoronos 1890: 183-195, pl. XVII, XVIII for catalogue and descriptions.

<sup>500</sup> Idem.

<sup>501</sup> F. Basilicata 1618-9, Anonymous year, M. Merian 1629, J. Chiquet 1719, N.S. d'Abbeville 1665, G. Bouttats 1674.

<sup>502</sup> A. Ortelius 1580, G. Mercator 1590, M. Merian 1629, J. Janssonius 1638, N. Visscher 1638, W. Janszoon J. Blaen 1640, M. Merian 1642-1688, J. Boisseau 1645, M. Boschini 1645, A. F. Luchini 1645, M. Boschini 1651, M. Boschini 1654, F. Collignon ?, J. De Beaulieu 1674, G. Mercator 1726.

<sup>503</sup> A. Ortelius 1584, G. Mercator 1607, P. Bertius 1616-8, G. Mercator 1473, G. Mercator 1630, J. Laurenberg 1699, P. du Val 1667, P. du Val 1602, F. Piacenza 1688.

<sup>504</sup> G. Corner 1625.

<sup>505</sup> G. Corner 1630.

<sup>506</sup> G. Mercator 1726.

*C. de Girapetra – Girapetra*<sup>509</sup>, *Capo de Girapetra – Castello de Girapetra*<sup>510</sup>. During the review of the cartography we came to notice that several cartographers put at the place where Hierapytna should be a town (?) called *Verapolo* or *Verapoli*.<sup>511</sup> Other cartographers<sup>512</sup> instead distinguished Hierapytna from *Verapolo*, which they put either where Makrygialos is or N of it (at the area of modern Stavrochori). We suppose that the abovementioned cartographers<sup>513</sup> reproduced a mistake that maybe derived from the wrong transcription of Ptolemy's *Ierapoli*<sup>514</sup>. In fact there is a map (*Tabu Nova Can*) that follows the model of Ptolemy<sup>515</sup>, which has the toponym *Yerapolis* on the area of Hierapytna. It is probable that the Y from *Yerapolis* was mistakenly copied as a V, forming the word *Verapolis*. It is also important to say that all the maps that bring the toponym *Verapolo/i* are later than the *Tabu Nova Can* map.

The absence of Hierapytna from the texts of the portolans can be attributed to the silting-up of its harbour<sup>516</sup> that resulted in its exception from the local sea-routes. In fact the portolans of *Grazia Pauli, Il Compasso da Navigare* and the two Greek ones<sup>517</sup> describe a W to E itinerary that passes near the two small islands opposite the SE coast (Kaloi Limenes-Chryssi-Lefki).

Observations in the perspective of a landscape archaeology approach – Further considerations

Ierapetra is the only large-scale settlement of our study area. Unlike all the other settlements we have dealt with, this one does not follow the pattern of the *fragmented seascape*. Not only it 'occupies' a vast and accessible area with numerous natural resources but it is also connected with the hinterland and the N coast through the easiest and fastest

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<sup>507</sup> F. de Wit 1680

<sup>508</sup> V. Coronelli 1689, J.B. Homann 1702.

<sup>509</sup> P. Schenk 1709.

<sup>510</sup> G.M. Seutter 1725.

<sup>511</sup> G.F. Camocio 1564, Anonymous 1682-7, N. Nalli 1573, A. Ortelius 1576, D. Bertelli 1574, F. de Belleforest 1575, A. Thevet 1570-80, A. Ortelius 1576.

<sup>512</sup> Such as P. Bertius 1616-8.

<sup>513</sup> I refer to the ones that used the Verapolo toponym for Hierapytna.

<sup>514</sup> *Geografia* III.X.183.

<sup>515</sup> C. Ptolemaeus 1535.

<sup>516</sup> As Buondelmonti mentions [Aposkiti 1983: 35].

<sup>517</sup> Tselikas and Koromila 2003.

'path' of the island; the isthmus. Indeed, obeying to its large-scale potential, the settlement history of Ierapetra is characterised by large-scale historic facts and material evidence.

In the case of Ierapetra it is difficult to draw conclusions in terms of landscape archaeology because, as we have seen, the latter has been greatly altered during the past decades. This is mostly owed to the extensive greenhouse cultivation that has covered a big part of Ierapetra's coastal area. The construction of the greenhouses also presupposes the bulldozer levelling of hill slopes and hill tops as well as the removal of sand dunes from the coastal areas in order to use the sand for the further leveling of uneven surfaces.<sup>518</sup> On the other hand, in the center of the town the change of the coastal landscape was caused by the uncontrollable expansion of the modern city as well as the recent embellishment works at the area of the port.

Despite the aforementioned alterations, the available archaeological markers provide us with valuable information regarding the Sea Level change. The relation of the building complex at Stomio with the Sea Level indicates that the latter rose at least 1.20 m during the past 2000 years. That assumption agrees with the submerged beachrock platforms that Mourtzas observed at the area W from Gra Lighia at the depths of -1.50 m, -1.90 m, -2 m, -2.10 m.<sup>519</sup> Regarding the area E from Stomio to Ierapetra, there are attested also other beachrock platforms at the same depths, (-1.50 m to -2.10 m)<sup>520</sup> something that gives an impression of homogeneity regarding the isobath that corresponds to Hierapytna's Hellenistic and Roman paleoshoreline. Moreover, the different depths of the platforms suggest several tectonic events of subsidence.<sup>521</sup> Mourtzas also reports the existence of embedded shreds of Classical and Hellenistic pottery in a beachrock formation<sup>522</sup> the depth of which is from -1.50 m (surface) to -3.75 m (bottom). However, as far as the dating of the beachrock formation is regarded, it should be noted that the pottery provides us with a *terminus post quem*, not a precise dating. Furthermore, that chronology concerns only the part of the beachrock formation (and the depth that the latter corresponds to) in which the pottery shreds were found in.

The reason we mentioned all of the above data regarding the archaeological markers for the Sea Level change is to show that according to the existing evidence, during the Hellenistic

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<sup>518</sup> Chalikias and Cantoro 2015: 229-230.

<sup>519</sup> Mourtzas 1990: 161.

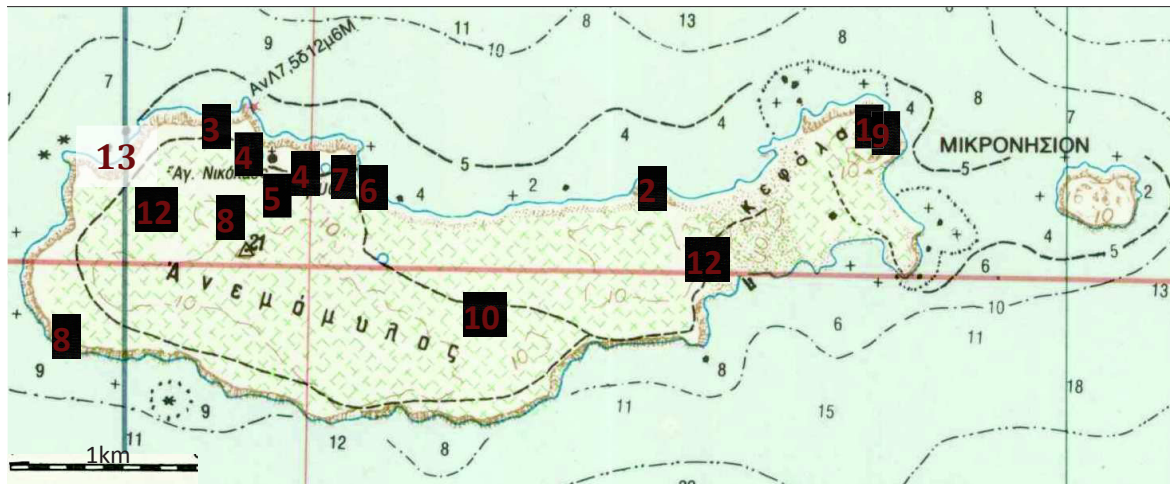
<sup>520</sup> Mourtzas 1990: 174.

<sup>521</sup> Mourtzas 1990: 181.

<sup>522</sup> Although he does not specify its location.

and Roman period the land surface of Hierapytna was much larger towards S. As a consequence, and given that this area has not been surveyed, maybe we still ignore the existence of other submerged architectural remains. We surely ignore, though, a big part of the past landscape of this settlement.

## 15. CHRYSSI ISLAND (GAIDURONISSI)



### Main geographic features

Chryssi is located approximately 8 nautical miles off the coast of Crete and is ca. 5 km long (E-W) and 200 m to 1 km wide. Its highest point is a small hill of 30m above Sea Level near its NE coast. The seabed that surrounds the island is shallow (about 5-10m deep in a radius of ca. 500m)<sup>523</sup>. The N coast slopes down gradually to a depth of 20m about 2km N of the island, while, on the contrary, the S coast is steeper and the sea bottom drops to about 20m within 300m from the shore.<sup>524</sup> In addition, approximately 700m E of Chryssi is a rocky islet, the so-called Mikronissi. Chryssi is a dry island. Fresh water is scarce and there are no natural springs or watercourses. However there are underground reservoirs (aquifers) formed in the volcanic rocks and supplied by rainwater,<sup>525</sup> which the seven wells of Chryssi apparently attempted to reach. The island is subject to the strong N winds and, mostly its northern part, is covered by sand dunes. Its vegetation is limited to the famous juniper trees and shrub vegetation. The geology of the island consists in flysch deposits (also volcanic rocks), marls

<sup>523</sup> Le Guern 2004: 37, Pl. 12.

<sup>524</sup> Chalikias 2013: 7.

<sup>525</sup> Idem.

and sandstone along the beaches.<sup>526</sup> The two main anchorages of Chryssi are at Tou Vougiou To Mati bay (SE) and at Mouri (NW).

## Archaeology

Thanks to the recent (2008-2010) systematic surveys and excavations carried out at Chryssi by the 24<sup>th</sup> Ephorate with the assistance from the INSTAP Study Center, a significant number of sites has been documented offering, in this way, insight into the previously unknown settlement history of the island. The attested occupation on Chryssi dates back to the Final Neolithic and continues uninterrupted at least until the Venetian period and consists in twenty-eight (attested) sites. Here we will follow the classification and description of the various sites as provided in the monograph of K. Chalikias<sup>527</sup>. Site 1: EM I - LM IB settlement related to the purple-dye production (Fig. 137),<sup>528</sup> EM concentration of pottery shreds, Hellenistic/Roman settlement maybe in association with a vaulted tomb and two fishtanks<sup>529</sup> (Fig. 138),<sup>530</sup> Hellenistic/Roman enclosure wall (Fig. 139), Hellenistic/Roman well<sup>531</sup> (Fig. 140). Site 2: Early Christian basilica's (?) foundations, AD 14<sup>th</sup>-century chapel, (Fig. 141) Roman cistern (?), Venetian beacon tower, Hellenistic rock-cut tomb, Roman and Byzantine settlement. Site 3: Hellenistic farmhouse (?). Site 4: Hellenistic/Roman settlement. Site 5: diachronic anchorage site (Fig. 142). Site 6: Roman aqueduct (Fig. 143). Site 7: Hellenistic/Roman enclosure walls. Site 8: other Hellenistic/Roman enclosure walls. Site 9: Final Neolithic coastal settlement (architectural remains and pottery concentration)<sup>532</sup> (Fig. 144). Site 10: Hellenistic/Roman enclosure wall. Site 11: MM-LM single building. Site 12: diachronic well. Site 13: MM-LM pottery concentration. Site 14: Hellenistic/Roman farmhouse (?). Site 15: Hellenistic/Roman rock-cut well. Site 16: field wall of uncertain date (maybe Byzantine). Site 17: Diachronic

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<sup>526</sup> Le Guern 2004: 38.

<sup>527</sup> Chalikias 2013: 57-68.

<sup>528</sup> Apostolakou et al. 2010.

<sup>529</sup> In basis of their vicinity, there has been proposed the association of those fishtanks with the EMI-LMIB purple-dye related settlement and their subsequent function as pools for the gathering and breeding of murex molluscs [Apostolakou et al. 2012: 181].

<sup>530</sup> Apostolakou et al. 2010: 148.

<sup>531</sup> Or maybe LM tomb, given also that LM pottery was found during its excavation (personal observation and evaluation).

<sup>532</sup> Similar to the FN settlement on Lefki island. Nowicki 2008: 218 and Alexiou 1975: 341.

coastal settlement (FN-V period) (Fig. 145). Site 18: Hellenistic fort (?) with enclosure wall and two rectangular towers. Site 19: field walls related to Site 18. Site 20: Hellenistic pottery concentration. Site 21: traces of walls and LMI, Hellenistic and Ottoman pottery concentration. Site 22: miscellaneous stone structures (probably of round plan) of unknown function. Site 23: diachronic anchorage site with Byzantine or Venetian wall, maybe used as an animal pen. Site 24: Hellenistic building maybe related to the small harbor. Site 25: Hellenistic field wall. Site 26: LM I building. Site 27: single building of uncertain date (LM, Hellenistic or Roman). Site 28: semicircular structure, possible tholos tomb. In addition to the abovementioned there is another significant finding: a stone slab that was handed in some years ago and comes from Chryssi island. The slab is broken in two and on its smoothed surface bears a series of carved signs, possibly of the Linear A script as well as depressions set in a semi-circular arrangement similar to those on kernoi.<sup>533</sup>

A quick review of the density and typology of Chryssi's archaeological sites shows that during the FN period the occupation of the island was seasonal, characterised by defensible habitats that, according to Nowicki<sup>534</sup> could have served as 'bridgeheads' by the newly arrived populations, before their expansion towards the Cretan coast. From the LM period there is limited evidence, however a settlement shift towards sites in close proximity to lowland plains and to the coast can be traced. During the MM period is attested a gradual increase in pottery concentrations (namely in site density), although the latter is not associated with architectural remains. The Neopalatial period (MM IIIA-LM II) is marked by radical changes in the settlement pattern of Chryssi island, such as the site density (16 sites), differentiation of site typologies, the appearance of a large settlement with houses and specialised activities such as purple dye production<sup>535</sup>, fishing, weaving<sup>536</sup> (site 1) and the increased and more organised land-uses (agricultural and pastoral exploitation, sites 17 and 21). From the LM III to the Hellenistic period there is no documented material evidence from Chryssi Island. However the intensive 'reoccupation' -and consequently exploitation- of the island is evident during the Hellenistic and Roman periods (20 and 18 sites respectively). The defensible character of the Hellenistic settlements (forts, fortification walls) is also noteworthy. The geopolitical and economic

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<sup>533</sup> Apostolakou 1995: 753; Blackman 2000-2001: 133.

<sup>534</sup> Nowicki 2008: 219, 220.

<sup>535</sup> Workshops related to the processing stage of the smashing and crushing of the shells (Apostolakou et. al. 2012).

<sup>536</sup> Apostolakou et. al. 2012: 181.

dependence of Chryssi by the emerging city of Hierapytna during this period is very likely.<sup>537</sup> During the Roman period we notice that the occupation of most Hellenistic sites continues (as well as the exploitation of Chryssi's resources) along with the foundation of some new ones. The evidence of the Byzantine period suggests that the island was inhabited between the 6<sup>th</sup> and 8<sup>th</sup> centuries and again between the 10<sup>th</sup> and 14<sup>th</sup> centuries AD.<sup>538</sup> Finally the remains of the watchtower suggest the 'participation' of Chryssi at the wider Venetian fortification system of the Cretan coastline.

### Literary evidence

Chryssi is mentioned briefly in Pliny<sup>539</sup> "contra Hierapytnam Chrysea, Gaudos" and in *Stadiasmus*<sup>540</sup>, which informs us of its port as well as of its fresh water "ἔχει δὲ καὶ νῆσον [ἣ] καλεῖται Χρύσεια. ἔχει λιμένα καὶ ὕδωρ". In the above passage it is also implied that Chryssi belonged geopolitically to Ierapytna. In addition Ptolemy<sup>541</sup> mentions a 'Letoa isola' as one of the small islands around Crete that maybe could be identified with Chryssi.<sup>542</sup>

### Epigraphic and numismatic evidence

Chryssi is indirectly mentioned in the unpublished inscription<sup>543</sup> of the treaty alliance between the city-states of Hierapytna and Aptera, in which is also mentioned the obligation of each city to offer its assistance to the other in case that enemy forces occupy their islands.<sup>544</sup> Apparently the island of Hierapytna was Chryssi.

### Historical geography (cartography, portolan charts) and commentary

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<sup>537</sup> Chalikias 2013: 50, 51.

<sup>538</sup> Chalikias 2013: 52.

<sup>539</sup> *Historia Naturalis* IV.VIII.61.

<sup>540</sup> 319.

<sup>541</sup> *Geografia* III.X.

<sup>542</sup> In a 1730 map the cartographer Jean Denis Barbie du Bocage attributed to Chryssi and Mikronissi variations of these toponyms (namely 'Chrysa' and 'Letoa').

<sup>543</sup> Archaeological Collection of Ierapetra, Inv. No. 1321.

<sup>544</sup> Apostolakou et. al. 2012: 179.



The general overview of the historical maps of the island of Crete showed that i. there was a certain confusion regarding the location of Chryssi Island, ii. in some cases the island is depicted but it is unnamed<sup>545</sup>, iii. most of the cartographers name the island with several variations of its modern toponym, such as Gaidurognissa<sup>546</sup>, Ga(r)deroni<sup>547</sup>, Gaiderones<sup>548</sup>, Gaderon<sup>549</sup>, iv. few cartographers define it a reef,<sup>550</sup> v. only three cartographers use a slight corruption of its ancient toponym (Chrysa)<sup>551</sup>. However, if we consider that the cartographers and mariners of the previous centuries consulted the texts of Pliny, Stadiasmus and of course Ptolemy in order to follow their descriptions and toponym attributions, is worthy of note how the ‘Gaiduronisi’ toponym persisted and was even more frequent in relation to that of ‘Chryssi’. In the author’s opinion, that could be due to the general confusion regarding the location and identification of the small islands around Crete. In fact in several maps Chryssi Island is depicted (wrongly) very close to that of Gaudos (which is located opposite to SW Crete). That is explicitly demonstrated in the case of Abraham Ortelius, who in his 1584 map of Crete has attributed to Chryssi various island toponyms<sup>552</sup>: Chryssa, Caudo, Butoa, Ophiusa and Rhamnus, “hoc tractu insula”. Therefore it is not impossible that the Gaiduronissi toponym was influenced by that of Gaudos, given their similar sounding. However we cannot exclude the ‘obvious’ explanation of the toponym, namely that Chryssi Island was exploited in the past as a donkey-farming place.<sup>553</sup> In fact local fishermen remember that until the 1940s the salt from the saltmarsh at the NW side of the island was transported to the S coast with donkeys.<sup>554</sup>

The portolan ‘Compasso da navigare’ dated at the ca. AD 13<sup>th</sup> century contains a detailed description about the navigation around ‘Gaideronese’<sup>555</sup>, as did also the ‘Portolano di Grazia Pauli’<sup>556</sup>. Similarly in the two Greek portolans<sup>557</sup> there is an extensive mention about ‘Gadaronisson’. The reason for that is that the reefs that surround the island represented a

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<sup>545</sup> For example: Anonymous *year*.

<sup>546</sup> Basilicata 1636-8, Corner 1630, Merian 1629, Boschini 1638, Bouttats 1674.

<sup>547</sup> Ortelius 1570, Thevet 1570-80.

<sup>548</sup> Mercator 1590, Visscher 1638.

<sup>549</sup> Matal 1602.

<sup>550</sup> Coronelli 1689, Seutter 1725.

<sup>551</sup> Ortelius 1584, Seutter 1725, Du Bocage 1788.

<sup>552</sup> Maybe in order not to leave the right one out.

<sup>553</sup> Gaiduronissi in Greek means ‘the island of the donkeys’.

<sup>554</sup> Chalikias 2013: 61.

<sup>555</sup> Il compasso da navigare (Motzo 1947: f.8 5-20).

<sup>556</sup> Il portolano di Grazia Pauli, (Terrosu Asole 1987: 15-25).

<sup>557</sup> Tselikas & Koromila 2003: 93, 147.

danger for the passing vessels. We also observe that the sea route described by those portolans follows a W to E direction that passes near the two small islands opposite the SE coast (Kaloï Limenes-Chryssi-Lefki).

### Early Modern Travel Literature

The mentions about Chryssi are very rare in the texts of the early travellers. Buondelmonti refers to the monks that inhabited the island at the time, to the “false ebony” and to the “plants from which the red colour is produced”<sup>558</sup>. Spratt in his *Sailing Directions*<sup>559</sup> described in detail the location of the island’s anchorages according to the various wind-directions. Raulin<sup>560</sup> discussed the flora of Chryssi as well as some recent land uses such as the salt marsh at the NW part of the island.

Observations in the perspective of a landscape archaeology approach – Further considerations

A few observations of geoarchaeological interest concern the fishtank<sup>561</sup> at the NW part of the island (Mouri bay) as well as the so-called mole at Spilios bay. The fishtank appears to be functional today, judging by the relation of the (functional) depth of the structure with the actual Sea Level. However if we consider i. that probably the fishtank dates to the Hellenistic or the Roman period, ii. the variation of the Sea Level since the Hellenistic or Roman period, it becomes apparent that the fishtank should not be functional today. The fact that it is though, according to the author’s opinion, could be explained by an emerged beachrock that is visible at the pebbled bay of Mouri (where the fishtanks are), which is ca. 1.5m above Sea level (Fig. 146).<sup>562</sup> That is an indication for the 1.5-meter (total) uplift of the coast (that of course predated the construction of the fishtank). If we assume that the uplift is a stable tectonic tendency of

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<sup>558</sup> Aposkiti 1983: 35.

<sup>559</sup> Spratt 1866: 21, 22.

<sup>560</sup> Raulin 1869: 601.

<sup>561</sup> In the relative analysis it is presumed that the fishtank is of Roman date and not of a LM one.

<sup>562</sup> Personal observation, needs further confirmation by a geologist.

this area, we may suppose that it has suffered more than one uplift episode, something that could be further indicated by the high tectonic activity of the wider area SE of Crete. Consequently we may assume that between those episodes, at a chronological point that the fishtank was already constructed and the Sea Level below the current one, another uplift-tectonic episode occurred that ‘pulled out’ of the water the fishtank, which, at a later point in time, acquired again its original depth-relation to the Sea Level, since the latter increased.<sup>563</sup>

At Spilios bay, one of the –probably diachronic- small harbour sites of the island (site 5) we noticed a ca. 46-meter-long structure (NE-SW) of which the first ca. 15m emerge slightly from the water surface while the last ca. 25m are submerged, that has been interpreted as an ‘old mole’<sup>564</sup> (Fig. 147). The construction consists of small and medium stones and concrete mortar and it is apparent that it has been subjected to some modern interventions in order to maintain its stability. However we noticed that the structure continues under the sand towards SW and that it bears great resemblance (size, building materials) with the remains of the aqueduct related (?) enclosure walls towards SW, near the salt marsh (Fig. 148). In the light of that, it is highly likely that this is another remaining part that at a later point in time was partially submerged because of the increase of Sea Level. This is further reinforced by the fact that we identified a submerged beachrock platform S of the structure, at a depth of ca. 1m (Fig. 149). At the sea bottom NE and SE from the submerged structure there is a slight concentration of amphora shreds that date probably from the LR and Venetian times, (Fig. 150) as well as a perforated stone block of undefined shape and date (at -0.50m) that could have served as an anchor (Fig. 151).<sup>565</sup>

An argument that may be raised here, given the small distance of ca. 700 m between the two locations, is the disagreement regarding the tectonic behavior of Mouri (where the fishtank is located) in relation to Spilios bay. However it is very probable that at the sea bottom around the fishtank there is a submerged beachrock formation at ca. -1 m that we did not succeed to identify. In this case, the emerged paleo-shoreline we discussed above is older than the submerged one and the elevation it indicates is not 1.5 m but 2.5 m instead, in order to ‘match’ the submergence of 1 m that happened at a later point.

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<sup>563</sup> Personal observation (awaits confirmation by a geologist).

<sup>564</sup> Chalikias 2013: 61.

<sup>565</sup> Personal observation.

Apart from the main difference of Chryssi and Lefki, which is probably the much easier accessibility of the former from the Cretan shore,<sup>566</sup> the two islands share a lot of geographic and geological peculiarities. Those have defined not only the nature of their natural resources, but also their occupational patterns. In fact we notice a lot of common elements regarding the agricultural land use (agro-pastoral), the type of settlements (mostly seasonal), the type of economic exploitation (purple dye production, fishing, harvesting of sponges, collection of salt) and the fact that they were regarded as the extended territory of the settlements on the opposite coast. Those 'special' features justify the preference of the inhabitants for settling in these small islands and not in mainland Crete. As far as the "contrast between the desolate present and the consistently rich Minoan and Roman past"<sup>567</sup> is concerned, in our opinion it should be explained as a combination of i. the change of the Mediterranean sea-trade balances in both the post-Minoan and post-Roman eras, ii. the evolution of the commercial interests towards different products, iii. the engagement of the islands into piracy activities.

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<sup>566</sup> In addition it is likely that, due to the lower Sea Level, it had better anchorages and, of course, more territory. [Rackham and Moody 2004: 208].

<sup>567</sup> Rackham and Moody 2004: 208.

## 16. KOUTSOUNARI



## Main geographic features

Koutsounari is a coastal area between Ierapetra and Makrygialos bays. It is mainly characterised by its long and sandy beach as well as a coastal strip with a plain fertile valley. The valley is well watered due to the ca. four small streams and a bigger one on the W side. It has also a subterranean water deposit, which is exploited by means of ca. seven wells. The cliffs towards N and NW are low (average altitude ca. 100 m) and are interrupted by two small gorges. The bay does not offer a good anchorage because it is subject both to the southern and to the northern winds.

## Archaeology

On a conglomerate protrusion at the E side of the sandy beach of Koutsounari (Fig. 152) there are three rectangular rock-cut tanks. The shallow tanks (7 m long, 5 m wide, 0.10 m deep and 4 m long, 5 m wide, 0.50 m deep) communicate between them by means of

surrounding channels (0.80 m deep and 0.17 m wide) (Fig. 153). The S tank (the one towards the sea) has two entrances for the water. In addition the channel that surrounds it is 0.10 m wide, 1.40 m deep on the E side and 0.50 m deep on the W side. The third tank is 2 m deep and its dimensions are 7 m long and 5 m wide. Unfortunately its bad state of preservation (erosion, fallen rocks) prevents us from getting more data about it (Fig. 154). The two shallow tanks have been individuated as saltpans, while the function of the deep one is still uncertain. However, we may suggest here that it has the characteristics of a 'salt-boiler'. These structures have been dated –without certainty- to the Roman period, given the vicinity (1 km) to the fishtank and the quarries at Ferma.<sup>568</sup>

#### Early Modern Travel Literature

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#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

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<sup>568</sup> Mourtzas 1988: 1561, 1562.

The toponym of Koutsounari is modern. However we were not able to retrace neither an older version of it used in the historic maps of Crete or in the texts of the portolans, nor other toponym(s) that was/were attributed to the wider area.

Observations in the perspective of a landscape archaeology approach – Further considerations

Mourtzas<sup>569</sup> retraced a paleoshoreline indicator on the conglomerate protrusion with the rock constructions, at a depth of -1.20 m. that should bear testimony to the Sea Level during the Roman period.<sup>570</sup> So, if we suppose that the saltpans are indeed Roman, then the -1.20 m Sea Level probably permitted them to be functional, since, as we saw before, the surrounding channel of the S tank has a maximum depth of -1.40. If we calculate also the tide amplitude (-1.20 +/- 0.20 m) we can be sure that the water managed to flow in the channels and consequently in the pans in order to dry.

The function of the deeper tank could be related to the warming of the water before it entered the saltpans. The so-called 'boilers' were a standard part of the saltworks and they served to heat the water and begin the process of its crystallization. After ca. twenty days the water became denser and it was transferred in the pans. The boilers were then refilled with seawater.<sup>571</sup>

We should add here that the area where are the rock cut constructions is exposed both to the S and N winds, as we realised first hand. That must also be the reason of the formation of this beachrock agglomeration (the rock protrusion), since the opposite winds 'meet' at this point and form a geomorphological trap for the stone and sand materials of the beach, which gathered at that point and gradually became concrete. The fact that this agglomerate protrusion is exposed to the winds (especially the northern ones since, as we noticed, on the rock there is Aeolic erosion that, with its relief, 'betrays' the frequent blow of them) is ideal for the saltpans because the N dry winds accelerate the evaporation process.<sup>572</sup>

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<sup>569</sup> Mourtzas 1988: 1561.

<sup>570</sup> Mourtzas 1990: 168, 170.

<sup>571</sup> Saitas and Zarkia 2002: 153-156.

<sup>572</sup> Dalaka and Petanidou 1998: 69, 70; and Zarkia 2002: 153.

Unfortunately we are not aware of any other antiquities at Koutsounari. However we consider this area to be very resourceful for the surrounding settlements due to its valley and for that reason we may assume that the modern intensive cultivation maybe covered any existing traces that beared evidence regarding its past exploitation.

The number and dimensions of the saltpans suggest a small-scale exploitation of the specific marine resource and they probably belonged to local families.<sup>573</sup> The same pattern should apply also to the neighbouring fishtank at Ferma.

As far as the small-scale exploitation of the salt at the S-SE coast of the island (probably with the exception of Ierapetra) is concerned, judging by the small size of the settlements, we can safely assume that the consumption needs in salt must have also been limited. If that was the case, they could also be covered by the parallel exploitation of the abundant natural saltpans, namely the small pits on the coastal limestone rocks. That could explain the rarity of this type of construction at the under study geographical area.

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<sup>573</sup> Assuming that this is the correct dating of the structures.



## 17. FERMA



## Main geographic features

The coastal area of Ferma is located on the E of Koutsounari and it is separated from it by a gorge (Aghii Apostoli). On its E side it is delimited by the gorge of Aghia Fotia. In the middle of those two gorges a fertile valley is formed. Apart from those two watercourses, there are also other eight smaller streams that supply with water the area. The ridges of the gorges that surround Ferma from the W are ca. 169 m high, while those towards E are ca. 100 m high. The cliffs towards N are ca. 200 m high. Ferma has two small sandy beaches that are exposed to the southern winds, therefore are not good anchorages (especially the eastern one that is not protected from the N winds either).<sup>574</sup>

<sup>574</sup> Pilot chart of Eastern Crete 2011 1:154.000.

## Archaeology

The known antiquities regarding the area of Ferma are gathered on the rocky E promontory of the bay. The most important one is a rock-cut fishtank<sup>575</sup> of a trapezoidal ground plan (Fig. 155 and Fig. 156). Its maximum height is 4.8 m and on its N side there are ten steps 0.7 m wide and 0.3 m tall each (Fig. 157). At the inferior part of its S side, which is the coastal one, there are two almost pyramid-shaped entrances (that currently are partially collapsed) in order to have constant circulation of fresh water in the tank (Fig. 158). We know that the entrances closed with a metal grid because of the pair of square deep holes that are above each one of them, as well as two others at the lower part of the entrances, (at the angle that they form with the NE and SW sides) cut on the NE and SW side (Fig. 159). Moreover, there is a low rock-cut bench across all the sides of the tank<sup>576</sup> (Fig. 160). According to Davaras, there is a 'wall' division orientated SE-NW, which served for separating the tank in two compartments.<sup>577</sup> At the NW part of the tank there is a big block of not elaborated rock that probably fell down from above, maybe as a result of seismic activity (Fig. 161). The depth of the bottom of every quadrant in the tank varies, from -0.80 m (N) to -1.55 m (E) and from -1.00 m (W) to -1.40 m (S) from the water surface. Due to its constructive characteristics the fishtank is dated in the Roman period. According to Davaras there is a similar fishtank at Mochlos that, due to its context, is securely dated to the Roman period.<sup>578</sup>

Davaras reported also the existence of three stone quarries at a very near distance in relation to the fishtank.<sup>579</sup> At the publication of 1975 he reported that there were traces of stone quarries NW in relation to the fishtank.<sup>580</sup> We do not know if in those two cases he was referring to the same quarries<sup>581</sup>. However, we would like to report here that on a small plateau towards N-NE in relation to the fishtank, which is 2 m higher in relation to the upper part of the latter, there is a shallow stone quarry ca. 0.40 m deep and of an almost rectangular ground plan. The quarry is constituted by the 'negatives' of several small rectangular blocks that have

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<sup>575</sup> Davaras 1975.

<sup>576</sup> The so-called *crepidines* for the maintenance of the fishtank.

<sup>577</sup> Davaras 1975:152.

<sup>578</sup> Idem.

<sup>579</sup> Davaras 1973-4: 933. In the report is mentioned that the depth of each quarry is 20 m, something that we consider impossible. We have to assume that it is a typographic mistake and that the writer probably intended to write 2 m.

<sup>580</sup> Davaras 1975: 153.

<sup>581</sup> Probably he did in the second case.

been removed and a few others that have not. However there is no diagnostic element to date it (Fig. 162, 163, 164).<sup>582</sup>

We should also add here the mention about a Neolithic cave and remains of Minoan buildings that are located “close to the modern settlement of Ferma”,<sup>583</sup> without, though, further details.

#### Early Modern Travel Literature

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#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

The toponym of Ferma is modern. However we were not able to retrace neither an older version of it used in the historic maps of Crete or in the texts of the portolans, nor other toponym(s) that was/were attributed to the wider area.

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<sup>582</sup> Personal observation.

<sup>583</sup> Greek Ministry of Culture 1976.

Observations in the perspective of a landscape archaeology approach – Further considerations

Firstly, with regard to the quarries that Davaras mentions,<sup>584</sup> we were not able to relocate them, given that the one we did locate does not match his description (or better, the location that he had suggested). However towards W in relation to the fishtank, at a distance of a few meters, there is a cut of a dubious form that could suggest it is man-made (Fig. 165).<sup>585</sup> Indeed this limestone rock is ideal for offering building material, since it can be easily cut in rectangular blocks. The missing parts of the rock could also be the result of water corrosion that removed them in a rectangular form. This assumption is reinforced by the fact that in the sea bottom at the area S and SW in relation to the fishtank and at a few-meters distance from it, we encountered some rectangular limestone blocks (Fig. 166).<sup>586</sup>

As far as the plan of the fishtank is concerned,<sup>587</sup> we would like to express some objections regarding the NW-SE ‘wall’ division. This -thin- ‘wall’ indeed starts from the bench of the SE side, between the two entrances and continues only for about 0.50 m towards NW.<sup>588</sup> In addition there is another thicker ‘wall’ on the axe SW-NE that begins from the SW side of the tank, right next to the SE side of the fallen rock, and continues for ca. 1.5 m towards NE. Consequently we may assume that there were indeed two compartments in the tank, but divided in a different way: the S quadrant of the tank was probably separated from the rest of it with the abovementioned ‘walls’ (Fig. 167, 168). However, according to the interpretation of Mourtzas, the ‘wall’ division separated the tank into two compartments (NW and SE) and the NW-SE ‘wall’ division served for “separating the SW compartment into two smaller compartments”<sup>589</sup>. The latter is not true since the NW-SE ‘wall’ division is nearer to the SE quadrant than the NE because of its partial preservation, not because it was intended. Furthermore the SE half of the tank is ca. 0.50 m deeper than the NW half. Finally, we noticed that at the bottom of the S quadrant there are some fallen rocks of small and medium size (see

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<sup>584</sup> Meaning the report at Davaras 1973-4: 933.

<sup>585</sup> Maybe this is the quarry that Davaras suggested, since it suits the location (W from the fishtank), although we consider almost impossible that he missed the quarry on the E-NE from the fishtank.

<sup>586</sup> Personal observation.

<sup>587</sup> As published in Davaras 1975: 150.

<sup>588</sup> However we cannot exclude that it has been severely eroded from the wave action since 1975.

<sup>589</sup> Mourtzas 2012: 2400.

the two previous photos). After reviewing the 1975 photos by Davaras we realised that these rocks are fragments of the upper part of the entrances that has fallen almost completely in the bottom of the S quadrant.

Given that the bottom of the tank is very irregular (see exact depths at Fig. 157), thus not functional to its purpose of construction, we consider that the theory of Mourtzas in respect to the unfinished floor as well as separation wall of the tank is very plausible.<sup>590</sup> We may also suggest here that since, in our opinion, the depth of this structure is too much of an effort for constructing a fishtank (maximum depth from rock surface to fishtank floor 6.20 m), it is possible that it initially served as a quarry (given also the useful limestone in which the rock consists of) and maybe at a later time it was decided to be modified in a fishtank.

With respect to the Sea Level Change, Davaras observed that the surface of the 'wall' division was about 0.30 m below Sea Level and in order for it to be functional the Sea Level should be ca. 0.30 to 0.50 m lower. Then, supposing that the Sea Level rose ca. 1 m since the Roman period (as it was and still is generally accepted for the southern Aegean sea), he assumed that the earth at the coastal area of the fishtank was tectonically uplifted by ca. 0.50 m.<sup>591</sup> We may add here that, according to a 1996 prediction model for the Sea Level Change in the Aegean Sea that indicates a 1.5 m-rise of the Sea Level during the past two millenniums,<sup>592</sup> or according to the most detailed (regarding the wider area) study of Mourtzas who suggests a 1.20 m rise of the Sea Level at the coastal area between Ierapetra and Makrygialos<sup>593</sup>, the uplift could also have been higher.

Concerning the dating of the structure, although Davaras mentions, "there are no traces of buildings or pottery shreds"<sup>594</sup> we encountered scattered shreds of the Roman period at the area between the parking of Kakkos hotel and the limestone rock.

Fishtanks constitute the most reliable class of monuments concerning the study of the Sea Level variations. However, the general interpretation of the geoarchaeological data regarding the Ferma fishtank is correct but lacks in accuracy. In order to get all the valuable

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<sup>590</sup> Mourtzas 2012: 2400 and p. 2402, fig. A2, B2.

<sup>591</sup> Davaras 1975: 154.

<sup>592</sup> Lambeck 1996: 599.

<sup>593</sup> Mourtzas 1990: 168, 170.

<sup>594</sup> Davaras 1975: 153.

information regarding the geological history of this area, an update of the existing information needs to be done. This update concerns the measurement standards as they are set in Auriemma and Solinas<sup>595</sup>, such as the correction of measurements for tide and atmospheric pressure values at the time of the surveys as well as the local tide amplitudes.<sup>596</sup> It is apparent that the current situation of the fishtank at Ferma (namely the relation between the structure and Sea Level) is very close to what must have been the original and functional one, assuming that it ever functioned. Consequently, during the past 2000 years the rise of the earth at Ferma and the rise of the Sea Level seem to have been very close too. However, if we accept that “in intensively active tectonic areas the rapid rates of glacio-isostatic models are unrealistic”,<sup>597</sup> namely the 1.5 m SLR,<sup>598</sup> we should stick only to any geomorphological indicators are available in the area, in order to understand the rate of submergence or uplift. Indeed at the underwater part of the SE entrance, during our visit we observed a geological formation that appears to be a tidal notch (Fig. 169).<sup>599</sup> If that observation is correct then the existence of the submerged tidal notch suggests a former Sea Level at ca. -0.50 m that should be also functional for the structure. So, if we suppose that this was the ideal relation between the Sea Level and the structure, it becomes apparent that the wave motion eroded the rock and formed the notch, while the construction was still functional. We have to assume that the fishtank of Ferma was subject to a submergence of 0.50 m since the –probably– Roman date of its construction.<sup>600</sup> The submerged marine terrace at -1 to -1.40 m<sup>601</sup> as well as the submerged beachrock at -3.40 to 4.30 m x 80 m at the wider area of Ferma, probably predate the fishtank and should not be associated with it. However, if we assume that i. the structure was not finished, ii. the initial objective was for all the four cavities to arrive at the same depth of the NE quadrant (-1.55 m), we could also accept a former SL lower than -0.50 m, that fits the depth of the submerged marine terrace (-1 to -1.40 m) associated with the fishtank. In this way all of the compartments could be filled through the high tide and the wave motion.

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<sup>595</sup> Auriemma and Solinas 2009.

<sup>596</sup> Auriemma and Solinas 2009: 135.

<sup>597</sup> Mourtzas 2012: 2406.

<sup>598</sup> Lambeck 1996: 599.

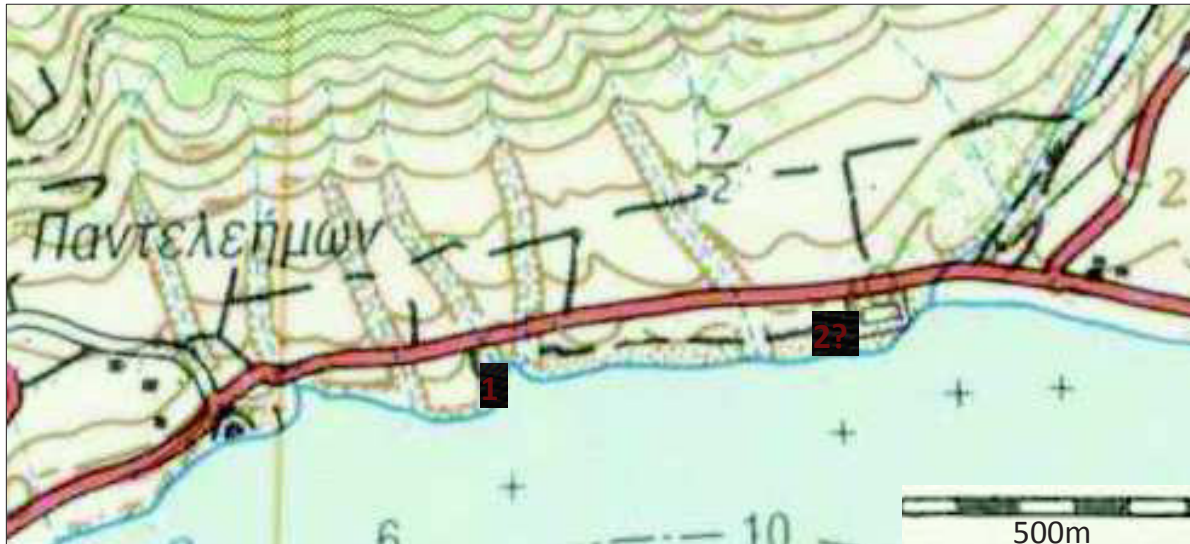
<sup>599</sup> Confirmed also by Mourtzas et al. 2015: fig. 4(y).

<sup>600</sup> To be noted that all these are assumptions of the author and should be confirmed also by a geologist.

<sup>601</sup> Mourtzas 2012: 2400.

Unfortunately, given the probability that this structure is not finished, we ignore basic information such as the depth of the lower surface of the openings, thus we are not able to draw more refined conclusions from this archaeological SL indicator.

## 18. KOUTSOURAS



## Main geographic features

Koutsouras is a large coastal valley, delimited on the W by the coastal cliffs 'Plakoures' and on the N by the S mountainous extensions of Thrypti mountain. Towards E the plain coastal strip becomes narrower but does not get interrupted until the hill 'Vigla' at Diaskari bay (E from Makrygialos bay). The location is rich in water due to the river Koutsouras and the several (ca. eight) streams that come from the mountains at the N. The western (and the bigger) of these streams stems from the gorge of 'Kokkines petaloudes' that ends near the coast. Koutsouras does not have suitable bays for anchorage. Its bays are small and not sheltered from the S winds. In addition they are not sandy, except for the two at the mouths of the river and of the big stream on the W, and the sea bottom around them presents several reefs.



## Archaeology

The archaeological data we have for this area is, unfortunately, limited to the observation of some coastal building remains (at Kipourou, Lenika, Spiliaridia) that have been dated from the LM III to the Protogeometric period and have been identified as port structures (Fig. 170).<sup>602</sup> In addition, on the coastal area between Koutsouras river and Makrygialos bay<sup>603</sup> there have been traced also remains of MM and Orientalising pithos burials<sup>604</sup>. The burials were dated on the basis of their diagnostic decoration.

## Literary evidence

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## Epigraphic and numismatic evidence

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## Historical geography (cartography, portolan charts)

The cartographers mention quite frequently the river of Koutsouras, which, as any other river was important to the mariners, being both a source of fresh water and a landmark. The variations that they use are *Cuzzura*,<sup>605</sup> *Cuzura F.*<sup>606</sup> and *Cuchura F.*<sup>607</sup>

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<sup>602</sup> Faure 1962: 40.

<sup>603</sup> Unfortunately we do not have the precise location.

<sup>604</sup> Platon 1959: 391.

<sup>605</sup> Basilicata 1618/9, Basilicata 1636/8, Corner 1625, Corner 1630, Boschini 1645, Boschini 1651.

<sup>606</sup> Merian 1670, Iacobus Francus 1668/9.

<sup>607</sup> Visscher 1638.

## Early Modern Travel Literature

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Observations in the perspective of a landscape archaeology approach – Further considerations

As we saw the coastal area of Koutsouras is a location of many resources. The fact that it has not a natural border with the bay of Makrygialos could maybe indicate that the settlements at the two locations acted as an extended unified territory in the past,<sup>608</sup> since the one could offer to the other important resources that could lead to sufficiency (fertile valley, abundance in water, anchorage, access towards inland).

We are under the opinion that at the coastal area of Koutsouras there must have been a lot more ancient remains, given the potential of its location and its vicinity to Makrygialos. Unfortunately the recent construction of a new national road, of the port that we mentioned above, of a stadium (next to the port), as well as of several greenhouses, have fundamentally altered the coastal geomorphology of the area and probably also eliminated any past material traces (Fig. 171).

When we visited the coastal area near Koutsouras (Spiliaridia), in particular 1 k W from Koutsouras river, at the mouth of the gorge of 'Kokkines Petaloudes', (Fig. 172) in order to retrace the so-called port structures, we realized that the bigger part of them is gone, due to the recent construction of an –illegal- small port, which modified radically the coastal geomorphology of the site. What we retraced instead were numerous LM III pottery shreds scattered all over and around the port, as well as a part of a wall, also destroyed during the operations of the construction of the port. However, the interpretation of the remains as port structures needs further confirmation. We may say here that the scholar, who first documented them, was very vague in his description.<sup>609</sup> Sadly other scholars simply reproduced that description, without acquiring a personal opinion on the matter. In our opinion that

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<sup>608</sup> Idea developed thanks to the argumentation of Xifaras 2002: 273.

<sup>609</sup> Faure 1962: 40.

interpretation is very doubtful; the fact that these structures are currently located on the shoreline is not surely a geological relation that remained stable since the LM III period. Unfortunately we do not have data such as a prediction model regarding the paleoshoreline during the LM period at this coastal area. However, and thanks to the submerged beachrock platforms we do know that during the past 2000 years the coastal zone E from Ierapetra has suffered a subsidence of -1 to -1.20 m.<sup>610</sup> So, most probably the subsidence and, as a consequence, the distance between the under discussion structures and the shoreline during the LM III period (ca. 1400-1100 BC) was even bigger. From the other side, there has not been documented any particular architectural feature that could justify the characterization of the 'port structures'.

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<sup>610</sup> Mourtzas 1990: 180-182.

## 19. MAKRYGIALOS



## Main geographic features

Makrygialos is the second largest bay and the best anchorage point at the coastal area E from Irapetra. It is better sheltered from the SW winds and subject to the SE ones. The area has cultivable land and it is rich in water with five seasonal streams as well as an underground water deposit (there are at least thirteen wells). The landscape of the coastal area of the bay alters between limited plateaus, river valleys and several low terrain elevations owed to the mountainous inland. Despite these terrain elevations the coastal area maintains a general low elevation (0 to ca. 40 m) until ca. 800 m towards the inland areas, where the altitude arrives at 100 m. The main beach (Megali Paralia) as well as its sea bottom are sandy due to the fluvial depositions. The rocky promontory on the W side separates it from the W beach, which is pebbly, again due to the fluvial depositions.

## Archaeology

At the W end of Makrygialos bay, on a low hill called 'Plakakia', which is ca. 260 m away from the current shoreline, there is the site of the LM I so-called 'cult villa' or 'country house' of Makrygialos (Fig. 173, 174, 175). Just E of the site there is a small deep valley. The plan of this architectural complex has many similarities with that of the Minoan palaces, such as the orientation, shape and proportions of the central court, the two colonnades that form porticoes on two sides of it, the large altar in the middle, the monumental main façade with recesses on the W court and the magazines at its W wing.<sup>611</sup> The site presents also, according to the excavator<sup>612</sup>, strong religious associations since i. there is an altar in its central court, which, in part, has also a bench shrine, ii. it is probable that the large room on the E side had a ritual function. Furthermore, there were discovered cult-related finds such as; a bronze female figurine with pronounced genitals, a large stone chalice, a stone anchor and a sealstone with the representation of a ship, a palm tree and a female worshipper.<sup>613</sup> There was also discovered a large quantity of roof tiles that preserved traces of reeds.<sup>614</sup> The site was abandoned in LM IB after destruction by fire.<sup>615</sup>

At a distance of 500 m towards SE from the LM site and 100 m N from the shoreline there is a large private Roman villa that was excavated by the local Ephorate<sup>616</sup> and documented firstly by Pendlebury<sup>617</sup>. The villa is dated from the 1<sup>st</sup> century BC to the 3<sup>rd</sup> AD.<sup>618</sup> There were uncovered over thirty rooms and courtyards. Almost all of the rooms were connected to the central open-air courtyard (*peristilium*) through corridors (Fig. 176, 177). The complex has the characteristics of a typical *villa rustica*, namely a private Roman villa with a main house, a farm area as well as a cultivation area. It contains the atrium –decorated with marble ornamentation and mosaics–, an aqueduct, (at least) one cistern, service areas with stairs, furnaces and boilers, a hypocaust (Fig. 178), an open-air *piscina* (Fig. 179) and a *mausoleum* (destined for the owner and his family).<sup>619</sup> Finally, the impressive absence<sup>620</sup> of movable finds as well as of

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<sup>611</sup> Davaras 1997: 117.

<sup>612</sup> Davaras 1992: 172.

<sup>613</sup> Idem.

<sup>614</sup> Davaras 1976: 590.

<sup>615</sup> Idem.

<sup>616</sup> Davaras 1987: 406-9.

<sup>617</sup> Pendlebury 1939: 179.

<sup>618</sup> Davaras 1987: 406-9.

<sup>619</sup> Idem and personal observation.

fragments from the ornamental decoration, led the excavator to assume a massive looting of the site, maybe sometime in the Early or Middle Byzantine period, when the piracy flourished in the Mediterranean sea.<sup>621</sup> However the Roman occupation of the area probably was not limited to the villa as there are older testimonies regarding the presence of a larger Roman site below the modern village of Makrygialos.<sup>622</sup> Indeed, at the surroundings of the villa there have been located Roman tombs, walls<sup>623</sup> and an inscribed tombstone of the AD 4<sup>th</sup> century<sup>624</sup>.

There has been also discovered an amphora production site, dated in the AD 2<sup>nd</sup>-3<sup>rd</sup> century.<sup>625</sup>

### Early Modern Travel Literature

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### Literary evidence

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### Epigraphic and numismatic evidence

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### Historical geography (cartography, portolan charts) and commentary

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<sup>620</sup> With a few exceptions.

<sup>621</sup> Sofianou 2012.

<sup>622</sup> Sanders 1982: 136; Pendlebury 1939: 376; Pendlebury et al. 1935: 100.

<sup>623</sup> Sofianou 2014 (2009): 923.

<sup>624</sup> Sofianou 2012.

<sup>625</sup> Marangou-Lerat 1995: 50.

The toponym of the bay was known to many cartographers, although they transliterated it in several mistaken ways; *Macrigial*<sup>626</sup>, *C. Stroma Crigialo*<sup>627</sup>, *Stomachri Giallo*<sup>628</sup>. There are also some other toponyms that refer to the area of Makrygialos bay, offering landmark information for the mariners; *Trachilla*<sup>629</sup>, *Vigli*<sup>630</sup> and *Stiponta*<sup>631</sup>. We noticed that the *Stiponta* substituted the *Trachilla* toponym. We presume that they both refer to the W rocky promontory of Makrygialos bay.<sup>632</sup> Furthermore, the toponym *Vigli*<sup>633</sup> provides us with information regarding the former presence of a Venetian guard.

Observations in the perspective of a landscape archaeology approach – Further considerations

Despite the alteration of the bay's landscape (mainly at the coastal strip) by modern constructions and greenhouse cultivation, it is apparent that Makrygialos was a place where a settlement could flourish for a long period, given that it provided with sufficient cultivable land and water, hills that could serve as watch-out posts, natural passages towards inland, a sandy bay and a semi-protected anchorage. The purpose of our visit there was to understand better the coastal and underwater landscape of the area, for which we have no information, although it should have represented an important aspect of every settlement that flourished there. Unfortunately, due to the recent landscape alterations we mentioned before, we have no points of reference regarding the usage of the coast at this large bay. Thus we assumed that the current small port and the beach near it (Megali Paralia) were also in the past the most suitable point as far as the anchorage is regarded. The sand that covers the sea bottom until the distance of ca. 600 m from the shoreline suggests the same thing, since, despite the variations of the Sea Level, it is apparent that the beach –or a part of it- must have always been a sandy

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<sup>626</sup> G. Corner 1625.

<sup>627</sup> Mercator 1590, J. Janssonius 1638-1661, N. Vischer 1638, M. Merian 1642-1688, A.F. Lucini 1645, P. Schenk, G. Valck 1709.

<sup>628</sup> N. Vischer 1638, G. Bouttats 1674, Coronelli 1689, J.B. Homann 1702, G.M. Seutter 1725.

<sup>629</sup> F. Basilicata 1636-1638, M. Boschini 1645, M. Boschini 1651, N. Sanson d'Abbeville 1665.

<sup>630</sup> F. Basilicata 1636-1638.

<sup>631</sup> M. Merian 1629-1718, G. Bouttats 1674, Coronelli 1689.

<sup>632</sup> 'Trachila' derives from 'trachilos', which in Greek means cervix and it is used metaphorically to describe a land protrusion into the sea, while 'Stin punta' is a mixture of Greek and Italian and means 'at the head/point'.

<sup>633</sup> See n. 367.

one, thus ideal for pulling a boat out of the water. The same sand probably covers any existing material evidence regarding the –probable- use of this beach as an anchorage point during the antiquity. The abovementioned material evidence could also be under the modern small port. We also noticed that the reefs near the W rocky promontory of the bay were connected to it through a protrusion that has collapsed and now is submerged. Since this land protrusion, which is ca. 100 m long and on the axe NW-SE, was emerged in the past, it can be deduced that the anchorage of Makrygialos was even more sheltered from its SW side. We also noticed some pottery fragments among the abovementioned reefs. At this point we should add that according to Mourtzas<sup>634</sup> at the bay of Makrygialos there is a submerged paleoshoreline at the depth of 3.50 to 5 m, which, for the moment, is of unknown date, thus we cannot connect it to any of the coastal archaeological evidence of Makrygialos.

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<sup>634</sup> Mourtzas 1990: 174.



## 20. DIASKARI, LANGADAS



## Main geographic features

Diaskari is located at the E part of the larger Makrighalos bay. It is a plain and sandy bay, delimited on NW by a small rocky peninsula and on SE by a rocky cliff that protrudes slightly in the sea (Fig. 180). The latter separates it from Langadas bay that continues towards SE and is very similar to Diaskari (Fig. 181). Diaskari bay is surrounded by low cliffs (ca. 40-50 m high) except for its NE side where the plain land is more extended. On the SE side of the abovementioned rocky cliff there is an underground water deposit, if we judge by a -currently dry- well (Fig. 182) and a few others that are marked on the HMGS topographic map of the area.

We should mention here that at Langadas bay there is a small and fertile valley formed by the deposits of Langadas river that in the past was without doubt much richer in water. However the area is still well watered by the two streams. In addition, on the HMGS topographic map there are marked three wells.

## Archaeology

The occupation on the coastal hill of 'Vigla' has been confirmed from the LM IB<sup>635</sup> to the LM III. The excavation that was carried out by the local Ephorate in 1972 in some parts of the site (eleven 5 x 5 m<sup>2</sup> pits) revealed an extended settlement (Fig. 183). Among the most important findings were i. a building with paved floor, ii. a stirrup jar, iii. a female figurine and iv. a stone pot vessel similar to another one found at the site of Siva, in Messara. The superstructure of the buildings was made of tiles.<sup>636</sup> In addition, a cave that is located at the centre of the hill and inside the area of the settlement was investigated too, although the respective results have not been published yet.<sup>637</sup> Finally on the edge of the hill there is a 19<sup>th</sup> century look-out post (we assumed this due to the toponym 'Vigla', which means exactly that), constructed with building material from the Minoan settlement (Fig. 184).<sup>638</sup>

The information we have regarding the settlement of Diaskari is insufficient, given that it is limited in one preliminary report and an additional one on the subject of the Reed Painter vase. However, it is generally assumed that Diaskari was associated with the settlement of the LM III Minoan villa at Makrygialos,<sup>639</sup> maybe forming a kind of territorial division in the Neopalatial E Crete.<sup>640</sup> Davaras argues that Diaskari was responsible for the "control of the navigation and the fishing activities of the whole area", since it possessed "the extensive harbour, widely open to eastern trade".<sup>641</sup> These assumptions were strengthened by the discovery of Day who, after the petrographic examination of the pottery from Makrygialos, Diaskari and also Kalo Nero,<sup>642</sup> argued about "the existence of a centre of production near the coastal plain of Makrygialos, which served the surrounding area".<sup>643</sup>

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<sup>635</sup> The earlier date was attributed at a later point of the study, thanks to the 'Reed painter' vase. See also Apostolakou 1992 (1982): 391.

<sup>636</sup> Davaras 1974: 52-53; Davaras (1973): 591.

<sup>637</sup> Idem.

<sup>638</sup> Personal observation.

<sup>639</sup> Davaras 1997: 119; Tsipopoulou and Papakostopoulou 1997: 206; Day 1997: 225.

<sup>640</sup> Tsipopoulou and Papakostopoulou 1997: 206.

<sup>641</sup> Davaras 1997: 119.

<sup>642</sup> An unpublished site located and surveyed by Dr. M. Tsipopoulou. [Day 1997: 225, n. 35.]

<sup>643</sup> Day 1997: 225.

Finally there has been attested an amphora production site dated at the AD 2<sup>nd</sup> century at the area of Langadas.<sup>644</sup>

#### Literary evidence

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#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

The toponym of Diaskari<sup>645</sup> is modern. Although we were not able to retrace an older version of it used in the historic maps of Crete or in the texts of the portolans, after the review of the relative cartography, we are under the impression that Diaskari bay was considered to be a part of the larger bay of Makrygialos. However the river of Langadas is frequently mentioned by the cartographers as *Lang(h)ad(h)a F.* or *Langadà F.*,<sup>646</sup> given its double function as both a source of fresh water and a landmark.

#### Early Modern Travel Literature

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<sup>644</sup> Marangou-Lerat 1995: 49.

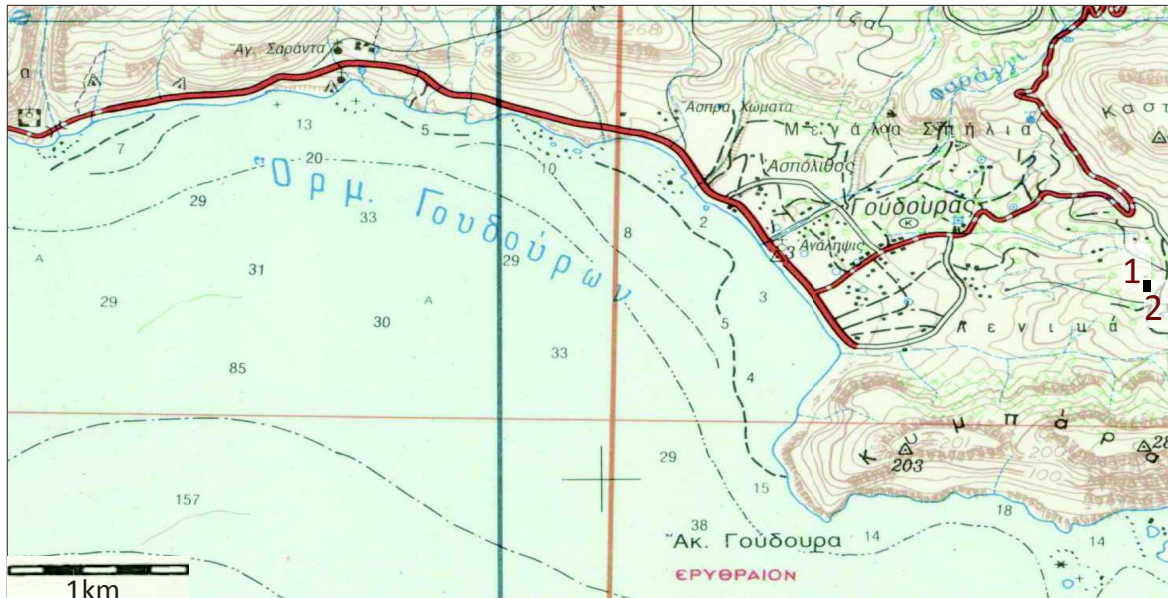
<sup>645</sup> Diaskari, according to Amandos, who found parallels in Cycladic toponyms (Gialiskari, Dialiskari), means 'the small bay'. Amandos 1964: 153.

<sup>646</sup> Basilicata 1618/9, Basilicata 1636/8, Corner 1630, Anonymous *year*, Visscher 1638, Boschini 1690.

Observations in the perspective of a landscape archaeology approach – Further considerations

During our visit there we realized that the settlement is seriously damaged by the continuous trespassing of flocks of the local shepherds (Fig. 185, 186, 187). For that reason the comprehension of it is quite impossible. However we took notice of the potential of the location, regarding not only its strategic qualities (control of the entire bay of Makrygialos, good visual towards inland) but also its resources, both towards its NW and its SE side (river, valley, plain land etc). That is also the reason why Diaskari and Langadas bays are presented here as one; the one is the natural continuity of the other and their 'division' is only toponymic. Regarding Day's assumption about a LM pottery production center somewhere in the wider area of Makrygialos, we believe that Langadas bay is a very good candidate for it, due to the existence of the river and its vicinity to the important settlement of Diaskari and although the absence of archaeological evidence from the area that should be interpreted as a gap of research, not of evidence.

## 21. GOUDOURAS



### Main geographic features

Goudouras is a coastal valley surrounded by mountainous ridges (altitude from ca. 200 to 500 mt) that are interrupted by two gorges on the W and one on the E side, as well as the small plateau of Dasonari (ca. 50 m high) towards E-NE. Apart from the gorges at the bay of Goudouras there are other twelve seasonal streams that water the area. The bay is not a good anchorage as it is subject to both northern and southern winds, and particularly exposed from SW.<sup>647</sup> In addition, in the nautical chart of East Crete there is a special note for the “extremely violent N winds” in the area. On the top of that the beach is rocky and the bay full of reefs.

### Archaeology

On the N-NE side of the cliff of cape Goudouras, at the location Dasonari, where there is a small mountainous plateau, there have been traced remains of buildings with megalithic

<sup>647</sup> An indirect proof for all that is the modern port that has been built inland and communicates with the sea by means of a channel.

masonry that are dated in the MM or in the LM period. The pottery shreds in the nearby area also date from the MM to the Sub-Mycenaean period.<sup>648</sup> There have also been found Geometric, Archaic<sup>649</sup> and Classical pottery shreds.<sup>650</sup>

In addition, on the rocky coastal area of Cape Goudouras, along the course from the E side of the bay to southern end of the cape, there have been located six points with scattered pottery shreds that cover a wide chronological range, from the Final Neolithic to the Venetian period (Fig. 188 and 193).<sup>651</sup>

### Early Modern Travel Literature

Buondelmonti begins his narration about the island of Crete with cape Goudouras<sup>652</sup>: “I firstly saw cape Zephyros<sup>653</sup> that looks at Damietta (of Egypt). On the top of this cape there is a small forest of pine trees.<sup>654</sup> Opposite to the cape there are two plain islands that are called Christiana<sup>655</sup> and Gaidaronissi.<sup>656</sup>

### Literary evidence

According to some scholars<sup>657</sup> Goudouras cape is the ancient *Ερυθραίων ἄκρον* (cape Erythraeon) mentioned by Ptolemy<sup>658</sup>. On the basis of this identification it has been proposed that the ancient city of *Στάλαι* or *Στηλαι* (Stalai or Stelai) was at Dasonari.<sup>659</sup> Stalai is identified as a polis by Stephanus of Byzantium (*Στηλαι*)<sup>660</sup> as well as in the decree of the city of Praisos

<sup>648</sup> Schlager et al. 1997: page number.

<sup>649</sup> Perlman 2004: 1187.

<sup>650</sup> Xifaras 2002: 293.

<sup>651</sup> Personal observation. It is not included in the site numeration because the information should be confirmed firstly by the local Ephorate.

<sup>652</sup> Aposkiti 1983: 35.

<sup>653</sup> Namely Goudouras.

<sup>654</sup> He means Dasonari.

<sup>655</sup> Lefki island

<sup>656</sup> Chryssi island.

<sup>657</sup> Faure 1960: 238; Coutsinas 2013; Pharaklas et al. 1998: 169.

<sup>658</sup> *Geografia* III.X.183.

<sup>659</sup> Faure 1960: 238, 244; Schachermeyer 1938: 479; Chaniotis 1996: 386.

<sup>660</sup> *De Urbibus* 585.12.

concerning the *Stalita*<sup>661</sup> (the inhabitants of Stalai), which secures for them the enjoyment of their *chora* and *polis*.<sup>662</sup>

#### Epigraphic and numismatic evidence

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#### Historical geography (cartography, portolan charts) and commentary

Given the importance of a cape for the mariners, Cape Goudouras is mentioned frequently in the historical cartography. In particular it is indicated in the maps of Basilicata in 1638 as 'Ponta d'Aguduro', of Corner in 1630 as 'Pota Di Agyduro', of Merian in 1670 as 'Ponta Diaguduro', of Boschini in 1645 as 'Ponta D'aguduro', of Sanson d'Abbeville in 1665 as 'Pta Di agudro', of Collignon as 'Pt d'Aguduro' and of Chiquet in 1719 as 'Ponta de Agodura'.

Observations in the perspective of a landscape archaeology approach – Further considerations

As we saw, Goudouras bay is not a hospitable one. Its importance was surely not based on its marine resources or its nautical utility but on its strategic location and its land resources (relatively large fertile valley Fig. 189 and fresh water). Cape Goudouras seems ideal as a diachronic lookout post, since it is not easily accessed from most sides (including the sea side Fig. 190) and it has excellent view towards the bay and its immediate inland, Atherinolakos bay on the E and also Lefki island towards S-SE, which is only 3.6 nautical miles distant (Fig. 191). Indeed the –unfortunately poor- archaeological evidence suggests a very long period of occupation, the characteristics of which, for now, we ignore.

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<sup>661</sup> IC III.IV.9 and IC III VI.7.

<sup>662</sup> Perlman 2004: 1187.

As far as the name *Erythraion* is concerned (which in Greek means ‘red’), it has been suggested<sup>663</sup> that it was due to the vicinity to Lefki island that was a renowned place for the purple-dye production. However we are of the opinion that this toponym is owed to geological reasons. During our visit there we realised that the big amount of fallen rocks has altered the general colour of the promontory. Namely, the promontory is constituted by limestone, so the colour of the fallen and broken rocks is grey. However, we noticed that under these rocks there is a thin stratum of red soil, (Fig. 192, 193) that in the past maybe was much more visible.

As far as Dasonari is concerned, its identification with the city of Stalai unfortunately cannot be confirmed without an extensive survey and a targeted excavation, although, judging from the location and the landscape of the area it seems very likely. This fertile mountainous plateau with the visibility on the bays of Goudouras and Atherinolakos, on the mountainous inland as well as the fact that it occupies the only easily accessed side of Goudouras cliff, is surely a good location for a settlement. Moreover, from the text of the decree, we know that the *Stalitai* (Stalai inhabitants) should give to Praisos a share of the revenue from the fishing industry “as they did in the past”.<sup>664</sup> It has been suggested that this revenue was the product of taxation and that it is probable that for some time the community of Stalai (obviously a dependent one from Praisos<sup>665</sup>) exercised public authority in the area.<sup>666</sup> We should not forget the existence of the valuable island of Lefki at a near distance from the shore. As we saw in the relative chapter, Lefki was famous for its purple-dye industry. Therefore we cannot exclude that the latter was included in the ‘fishing industry’ that was mentioned in the decree and that maybe it was also subject to taxation. If the above assumptions are true, they add even more value to the choice of the specific settlement for the *polis* of Stalai.

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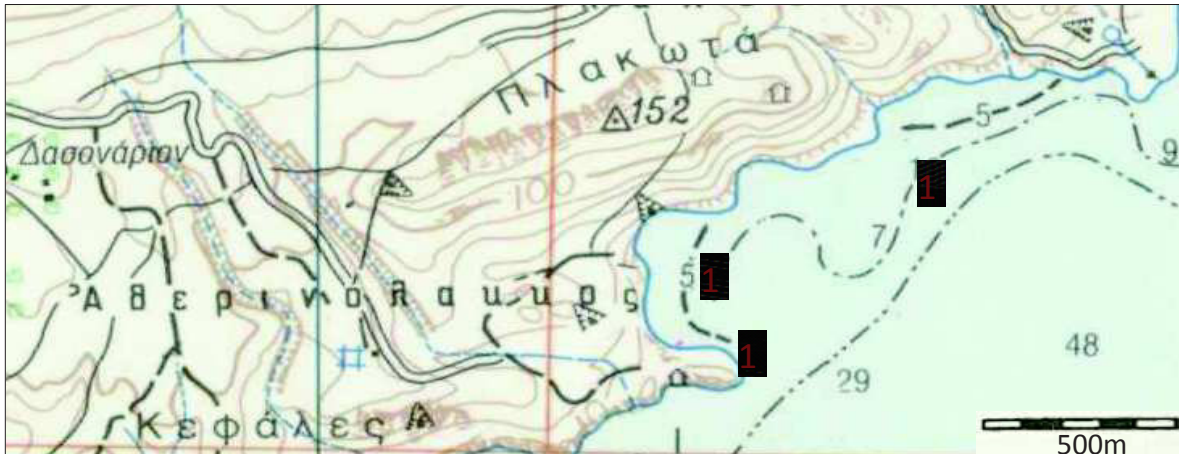
<sup>663</sup> Pharaklas et al. 1998: 170.

<sup>664</sup> IC III VI.7; Perlman 2004: 1187.

<sup>665</sup> Chaniotis 1996: 161-168, 383-393.

<sup>666</sup> Perlman 2004: 1187.



22. ATHERINOLAKOS<sup>667</sup>

## Main geographic features

Atherinolakos bay is probably the best anchorage at the coastal area E from Makrygialos. It is oriented towards E and the northern side of the bay is the most suitable for anchorage. The bay is delimited by a relatively high and rocky peninsula on its S side. Part of that peninsula has collapsed and is currently underwater, to the depth of 9 m. W of the peninsula there is a water stream. Its fluvial deposits have formed a small sandy beach. The beach as well as the sea bottom of the main bay are rocky. However, at ca. 80 m towards E the sea bottom becomes sandy.

## Archaeology

The coastal and underwater rescue survey that took place in 1998 by the Ephorate of Underwater Antiquities, supplied us with valuable information about the –previously unknown– archaeological evidence of this area. At the reef ‘Chamili’, NE from the bay, there were discovered traces (amphora shreds and one iron anchor) of ship cargoes dated at the Roman,

<sup>667</sup> All the archaeological and some of the geographic data for this site is taken from the personal file of Dr. Elpida Hadjidaki, with her kind permission. The file regards a coastal and underwater survey that was carried out by the Ephorate of Underwater Antiquities in 1998, under the direction of Elpida Hadjidaki.

Late Roman, Early Byzantine period (AD 3<sup>rd</sup>-7<sup>th</sup> century<sup>668</sup>) (Fig. 194, 195, 196, 197, 198). However the biggest concentration of amphora shreds was encountered at the submerged part of the peninsula (-6 to -9 m) at the S side of the bay. In addition, on the rocky outlets of the sea bottom in the bay there have been noticed several Roman and Byzantine amphora shreds encrusted upon them.<sup>669</sup> Finally, two iron cannons were discovered<sup>670</sup> at a distance of 250 m E from the peninsula. As far as the coast is regarded, according to the report of the survey, it presents a high concentration in prehistoric pottery shreds, obsidian flakes and marine shells (many of which are *murex*), some of them embedded in a beachrock on the shoreline (Fig. 199, 200, 201). Furthermore at a distance of ca. 35 m W from the coast there is a small cave. Near its entrance there were noted some tufa blocks, a lot of pottery shreds of the Minoan periods<sup>671</sup>, as well as murex shells. Finally, at a small distance W from the cave there were encountered foundations of Minoan buildings along with another concentration of Minoan pottery shreds (Fig. 202).

#### Early Modern Travel Literature

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#### Literary evidence

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#### Epigraphic and numismatic evidence

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<sup>668</sup> The *comparanda* we used for the definition of the date context are samples from the amphoras published in Reynolds 2005.

<sup>669</sup> Which, most probably, derive from the abovementioned concentrations.

<sup>670</sup> And lifted, as well.

<sup>671</sup> Unfortunately we do not have a more precise dating.

## Historical geography (cartography, portolan charts) and commentary

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### Observations in the perspective of a landscape archaeology approach – Further considerations

Despite the fragmented and rudimentary nature of the archaeological data regarding the site of Atherinolakos, its value lies in the fact that it is the only available source of evidence for this area. Most importantly, though, it was both the first and the last attempt for raising the archaeological knowledge about this site, considering that the area has changed radically since then. The construction of the new steam electric station of DEI has altered completely the coastal and the underwater landscape of the bay, (Fig. 203) depriving us of any further information. On the other hand, any on-site visit would have been worthless. So, the present analysis is based completely on the file of E. Hadjidaki.

The rescue survey provided us with evidence regarding a coastal Minoan settlement that was probably related at some level with the purple dye production, as well as the Late Roman and Early Byzantine maritime ‘traffic’ near the bay. In our opinion Atherinolakos is a key-site for the comprehension of the wider area, which includes Dasonari (the area of the probable inland settlement of Goudouras bay) and Lefki island. As mentioned also above, Atherinolakos offers the best anchorage at the abrupt coastal area E from Makrygialos bay. If we also consider the small distance that separates it from the island of Lefki, we realise that, in the specific geographic context, Atherinolakos bay must have been of great importance to the maritime transport of the wider area. Furthermore the association that can be made between the two Minoan settlements at Atherinolakos and Lefki island (maybe concerning also the purple dye production activity) is apparent. With regard to the Hellenistic and Roman periods, we consider the absence of the respective material evidence from the bay a pure coincidence.<sup>672</sup> Consequently, we agree first with the identification of Dasonari as the Hellenistic settlement of

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<sup>672</sup> I am referring to the relative information from Dr. Hadzidaki’s file.

Stalai and second with the identification of Atherinolakos as its harbour.<sup>673</sup> If that is correct, then the following inscription explains sufficiently the value of Atherinolakos; “It is under the following conditions that the Praisians have given to the Stalilai the land and the polis and the islands, which they have now, and one half of the following *dekatai* (10% tax) of the portuary tax, of the tax on murex, and of the tax on fish –the tax on fish according to the earlier arrangement. They have given all this for all this time, securely and firmly, to them and to their descendants”<sup>674</sup>. Consequently Stalai (and Lefki too) was a Praisos’s dependent community and belonged to its sphere of political and economical influence (at least for the period to which the text of the inscription refers to, and the harbour of Atherinolakos was the ‘means’ of the Praisians to impose tax on the revenues from the abovementioned sea-related activities. We may add here that in our opinion the economical link between Atherinolakos (maybe also Stalai, or in general the precedent and successive settlements of that area) and Lefki island was diachronic. These sites were probably interconnected for a much longer period of time due to their vicinity and their economical interdependency. In the light of this assumption we could not exclude either the seasonal transportation of a part of the inhabitants from the one place to another, in order to exploit the whole spectrum of the natural resources that the wider area had to offer.

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<sup>673</sup> Chaniotis 1996: 386.

<sup>674</sup> IC III.VI.7; Chaniotis 1996: no 64, I. 4-9.

### 23. LEFKI ISLAND (KUFONISSI)



#### Main geographic features

The complex of Lefki islands is located 3.6 nautical miles off of the SE Cretan coast towards S, opposite from Atherinolakos bay and it consists in Lefki and three other islets that surround it, Makroulo, Trachilas and Marmara. It is a lowland island (maximum altitude 86m), covered mostly by coastal dune formations, white limestone sediments and Pliocene marls. It is characterised by low vegetation. As far as the water sources are regarded, a –currently dry– spring of fresh water has been attested and there is also an aquifer, as a modern well on one of Lefki’s eastern beaches indicates. Lefki islands are surrounded by several reefs that complicate the navigation around them. It has various small bays (NW, SE, SW) with sandy beaches that can serve as anchorages depending on the direction of the wind, but none of

them is well sheltered. Furthermore, the strait between Lefki and Atherinolakos bay is known to be of high-risk navigation in case of N or E winds.

## Archaeology

The most ancient evidence of the human presence on Lefki island dates back to the Final Neolithic period and it consists in two large pottery-shreds concentrations on the summit of the northern promontory and towards SE and around 100 m SE from the NW bay, near the chapel. According to Nowicki these were temporary settlements (since there are not -naturally or artificially- defensible ones), used only as a “bridgehead” by the newcomers, before their expansion towards the Cretan coast.<sup>675</sup> However the occupation pattern seems to change during the Early Minoan period since there are traces of a more permanent type of settlement, with a defensive wall of big stone blocks (oriented W-E, near the chapel SE from the theatre), a large concentration of shreds,<sup>676</sup> a few obsidian chips,<sup>677</sup> as well as a five-tholos tombs cemetery at Exo Trachilas, at the SW coast of the islet<sup>678</sup> dated at the same period. Papadakis has also reported the existence of clay coffins (*larnakes*).<sup>679</sup> In addition, thanks to the mention of Bosanquet and Currelly who associate the findings of a “bank of crushed murex shells” and “a whole nest of Kamares pottery” with a steatite bowl and a stone-hut<sup>680</sup>, we have either another evidence for the consumption of these molluscs or an indication regarding the extraction of purple dye out of the murex shells already in the MMIA-LMIA periods but, in both cases, a confirmation of its exploitation as a natural resource. In favour of the second case we could think also of the economic status that the Kamares ware implies, or the fact that there should exist something precious enough for a prehistoric community to establish a whole settlement at Lefki islet, where the maritime communication is complicated, the weather conditions are advert and the local resources limited. As we will see next this is a pattern that more or less lived on also during the historic periods.

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<sup>675</sup> Nowicki 2008: 219, 220.

<sup>676</sup> Papadakis 1983: 64, 65.

<sup>677</sup> Stieglitz 1994: 50.

<sup>678</sup> Papadakis 1976: 202; Papadakis 1989: 304.

<sup>679</sup> Papadakis 1976: 204.

<sup>680</sup> Bosanquet 1902-3: 276-277; Bosanquet 1943: 69.

At the coastal area of the NW bay of the islet there was located the centre of the Hellenistic and Roman (Imperial and Late Roman) town settlement. Its traces consist in the remains of a one thousand-spectators' capacity theatre with scene, proscenium, a semi-circular *plateia*, two arched entrances and a rock cut *koilon*, extended by built up masonry at its N side (Fig. 204, 205, 206), a bath complex and two house complexes (one with eight and the second with sixteen rooms (Fig. 207, 208). The abovementioned remains have been excavated<sup>681</sup> and the finds mostly of the 'B' house indicate a certain wealth (decoration with mosaics, walls with painted plaster and marble decoration Fig. 209, 210), as well as that the inhabitants were engaged in fishing (fishing weights, fishhooks) and purple dye extraction and production (*murex trunculus* shells, pumice, rock-cut cavities)<sup>682</sup>. As far as the chronology of the houses and the bath-house is concerned, they all are of Roman Imperial original construction with Late Roman additions. We note here that Papadakis mentions also the existence of the inferior part of a pottery kiln and of a limestone *perirrhanterion* (a ritual basin), without giving further details.<sup>683</sup>

The settlement seems to extend towards the NE coast of the bay, where there are visible remains of other buildings, and also towards NW, at the sea area between the bay and Marmaras islet, an area that was probably emerged at the time, since there have been detected during a survey in 2004 –submerged at ca. 2.5m- columns, column bases, pottery shreds and building foundations (Fig. 211, 212, 213).<sup>684</sup> Moreover on Marmaras islet there are remains of yet other buildings, such as miscellaneous walls, mosaics and painted plaster fragments.<sup>685</sup>

Stieglitz mentions yet another site, probably related to the Hellenistic/Roman settlement (although we cannot exclude the association to the Minoan one), at the NE coast: the remains of a purple dye factory, consisted in stone and clay vats, basins and channels.<sup>686</sup> Furthermore, towards the SE coast of the bay there are remains of a large –ca. 80m length- unidentified building (forum?)<sup>687</sup> and the aqueduct system which consists in four vaulted cisterns (Fig. 214)

<sup>681</sup> Excavation campaigns directed by Papadakis (local Ephorate) in the years 1976, 1977, 1978.

<sup>682</sup> Papadakis 1983: 62.

<sup>683</sup> Papadakis 1976: 264.

<sup>684</sup> Leonard 1972: 362, Papadakis 1983: 64. Further confirmed by Hadjidaki 2015: personal communication.

<sup>685</sup> Leonard 1972: 362, Sanders 1982: 137.

<sup>686</sup> Stieglitz 1994: 51. Although the information about this site needs further confirmation.

<sup>687</sup> Leonard 1972: 354 (fig.1), 356, Papadakis 1978: 261.

and three low water channels (made of local stone, bricks, mortar, concrete of pottery fragments) that connect the town with the SE side of the islet (Fig. 215, 216). Each water system is approximately 1.5 km long. At the summit over the SE coast there is a platform (artificial terracing Fig. 217) that served either for a colossal statue (Hellenistic beacon)<sup>688</sup>, or for a temple<sup>689</sup>. Two fragments of this colossal seated statue of Parian marble are lying under and NW of the terrace (Fig. 218). It is supposed that the original terrace was ruined and then reconstructed, because initially it was described as “a platform constructed of square limestone blocks<sup>690</sup>”, later as a “pyramid with 20 steps of well-cut limestone<sup>691</sup>” and finally as “a square platform serving as the base for the datum and the navigation beacon” made by “small pieces of local stone roughly mortared together”<sup>692</sup>. We only add here that the latter describes well the current situation of the terrace and that the modern building (namely the old lighthouse) next to it contains building material from the terrace (Fig. 219).<sup>693</sup>

#### Literary evidence and comments

Lefki seems to be absent from the texts of the ancient authors. Only in Pliny the Elder there is a mention of a “Leuce”, which, however, he does not identify as the actual Lefki, but as one of the islets Grandes, opposite Itanos at the NE coast of Crete: “contra itanum promunturium onysia, leuce<sup>694</sup>”.

#### Epigraphic and numismatic evidence

Lefki (“Λεύκη”) is mentioned in an inscription, dated at 130 BC that documents the Magnesian arbitration between Itanos and Hierapytna regarding their territorial dispute about

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<sup>688</sup> Leonard 1972: 355, Sanders 1982: 137.

<sup>689</sup> Papadakis 1976: 201,202.

<sup>690</sup> Spratt 1865: 241

<sup>691</sup> Bosanquet 1943: 71.

<sup>692</sup> Leonard 1972: 355.

<sup>693</sup> Papadakis 1976: 202.

<sup>694</sup> *Historia Naturalis* IV.20.



the possession of Lefki and of the Temple of Dictaeon Zeus at Palekastro.<sup>695</sup> The inscription informs us for the repeated attempts to resolve the conflict (three different arbitrations in total) as well as for the fact that the final decision was in favour of Itanos. However it seems that the dispute went on, since there is another inscription that mentions Lefki,<sup>696</sup> the text of which has been interpreted as the objection of the Hierapytnians to the decision of the third arbitration.<sup>697</sup> All of the above apparently indicates the economic importance of Lefki. Finally we should mention here an inscription of the 3<sup>rd</sup> century BC from Praisos that records a vote regarding the hiring of fleet from two coastal towns by the Praisians. However its association with Lefki is not certain since the latter is not mentioned directly in it, but -according to some scholars- it is indicated by the word “νάσους” (islands). If we accept that theory then the phrase “νάσους, τὰς καὶ νῦν ἔχοντι καὶ ἐλλιμενίου καὶ πορφύρας καὶ ἰχθύων δεκάτας” defines Lefki as an island that has a harbour and trades purple-dye and fish.<sup>698</sup> As far as the numismatic evidence is concerned, Lefki is absent.

#### Historical geography (cartography, portolan charts) and commentary

Lefki is mentioned in the portolans of *Grazia Pauli*<sup>699</sup>, *Il Compasso da Navigare*<sup>700</sup> and a Greek one (so-called *Zagoras*<sup>701</sup>) with the toponym C(h)ristiana. As far as the cartography is concerned, Lefki Island is indicated on the maps quite often although various toponyms are attributed to it, something that implies a certain confusion regarding the identification of the small islands around eastern Crete. For example, Basilicata (1636-8), Corner (1625), Mercator (1590) and an anonymous cartographer of the 17<sup>th</sup> century<sup>702</sup> among others, use variations of the toponym “Cufonissa”. However in Coronelli’s map (1690-6) a three-island complex with the toponyms “Cufognissa”, “Lafognisi” and “Chriftiana” is depicted. Moreover, Bellin (1764), in his map of Crete, probably seems unsure regarding the attribution of the toponym and names the

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<sup>695</sup> IC III, IV 9.

<sup>696</sup> Xanthoudidis 1920: 82-86.

<sup>697</sup> Papadakis 1938.

<sup>698</sup> IC III, VI.7.

<sup>699</sup> Terrosu Asole 1987: 20, 25.

<sup>700</sup> Motzo 1947: Par. 243, 20.

<sup>701</sup> Tselikas & Koromila 2003: 248.

<sup>702</sup> Anonymous year.

island “Isle de la Cristiane or Cofonisia”. This could be indicative of the confusion, since the toponym “Christiana” and its variations were probably destined to be used for the island of Chryssi (Chrysea according to its ancient version), S of Ierapetra, if we also consider their apparent resemblance.

### Early Modern Travel Literature

The only early traveller that visited the island of Lefki was Spratt, who wrote an extensive account about it.<sup>703</sup> In brief, Spratt recognised the remains of “a small Roman town”, a small tower or fortress (probably of Venetian date), the cisterns and the water-channels (according to Spratt the spring had still water during winter), along with the remains of a probably templar building (he reports the existence of fragments of columns and of a marble statue) towards the S end of the town. In addition he describes (as we also saw above) the former condition of the colossal statue’s platform at the S, which consisted in “square blocks of limestone”. During his visit Spratt is wondering if the absence of Lefki Islands from the ancient literature could be explained by the fact that the small island had always served as a pirate base (which, according to him, was the case at least from the Medieval times and then on). However that explanation does not satisfy him since, as far as the ancient past of Lefki is concerned, the archaeological evidence indicates “a legitimate city [...] subject to Hierapytna”. He then discusses the toponyms of Leuce and Koufonissi, attempting to relate them based not on Pliny, who mistakenly wrote that Leuce was opposite the promontory of Itanos, but to its geological aspect that can surely justify the name “white islands” (Leuce). Finally he makes a nautical evaluation of the NE bay of Lefki in ‘pirate terms’, classifying it as a very suitable pirate base. He also informs us that the islands opposite the eastern coast of Crete were for a long time famous among the mariners for being pirate bases, something that, according to the author, could interestingly explain not only the absence of Lefki from the texts of the ancient authors (supposing that after the Late Roman period has been nothing more than a diachronic pirate base) but also the confusion regarding the toponym and the position of the island<sup>704</sup>.

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<sup>703</sup> Spratt 1865: 241-244.

<sup>704</sup> That goes as well for the other small islands opposite to the eastern coast of Crete.

However that is not the only reason why Lefki became almost a 'ghost-island'. In the 14<sup>th</sup>-century -Venetian- *Book of Bans*<sup>705</sup>, there is an entry for 'Cufonissi' dated in 22 June 1318, where it is defined as a private property of a certain Nicholas Pantaleon Pataruli. Trespassers are also warned off it. Searching the later entries in the book we found out that there is a second one related to 'Cufonissi', dated in 18 June 1320, that basically repeats the ban of 1318. We do not know the total duration of this ban, but it surely contributed in creating an 'off-limits' impression for Lefki island.

Observations in the perspective of a landscape archaeology approach – Further considerations

Our visit at Lefki island did not last as long as we would have liked due to the adverse weather conditions. However we will expose here our limited observations, in relation to the data presented above, in an attempt to interpret some aspects of the past uses of this peculiar landscape.

Although it is difficult to imagine a persistent occupation at Lefki island, the archaeological evidence suggests the opposite. So there should be a certain 'attraction' at the island to even the difficulties caused by its exposure to the weather conditions, the risky navigation around it and its limited natural resources. On the basis of the material remains that we mentioned earlier, it has been assumed that the inhabitants of MM Lefki were involved in the production of purple dye. Apart from Lefki, deposits of crushed or perforated murex shells in MM and LM contexts have also been attested at Palaikastro<sup>706</sup>, Kato Zakros<sup>707</sup>, Atherinolakos<sup>708</sup>, Myrtos Pyrgos<sup>709</sup>, Myrtos Fournou Korifi<sup>710</sup> and Kommos<sup>711</sup>. In addition, the term *po-pu-re-ia* ('purple') is found in several administrative Linear B tablets from Knossos, which deal with textile allocations.<sup>712</sup> All this is sufficient evidence to indicate the existence of a small-scale purple

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<sup>705</sup> Vidulich 1965: 70.194, 101.274.

<sup>706</sup> Bosanquet 1904: 321.

<sup>707</sup> Burke 1999: 79.

<sup>708</sup> Hadjidaki 2015: personal communication.

<sup>709</sup> Shackleton 1972.

<sup>710</sup> Reese 1987: 201.

<sup>711</sup> Ruscillo 1998.

<sup>712</sup> Stieglitz 1994: 52.

dye production during MM and LM periods at eastern and central Crete, which in fact preceded the Phoenician industry.<sup>713</sup> We should add here that the only large-scale workshop making purple dye from murex shells has been found at Pacheia Ammos, at the northern side of Ierapetra Isthmus (NE Crete).<sup>714</sup> So, apparently, and already in the beginning of the second millennium BC, Lefki was a part of the small-scale purple dye industry that had been formed in the wider coastal area of E Crete. At the time being we cannot say if that was enough to hold permanently its inhabitants, but it is safe to assume that they had also other resources such as fishing, small cultivation fields and farming. As far as the last two are regarded, we can attest that until one century ago they were still practiced by the inhabitants of the small villages from the opposite coast, so it is not improbable that the prehistoric inhabitants of the island did the same. We should also consider that Lefki was a larger island at the time, given the lower Sea Level.

The production of purple dye from the murex shells apparently continued to be the main ‘attraction’ for the inhabitants also during the Hellenistic and Roman Imperial periods. However, Lefki, apart from its inhabitants, begun to attract also external political and territorial forces, something that cannot be justified by the fact that it was a purple dye production site, which traded part of its supplies. During the Hellenistic period Lefki was the object of a long-term territorial dispute between Itanos and Hierapytna, as attested in the inscriptions we analyzed in a previous chapter. In fact Hierapytna, during its expansion period (2<sup>nd</sup>-3<sup>rd</sup> century BC), attempted to annex the Sanctuary of Zeus Diktaios and the island of Lefki, both of which were under Itanian hegemony, in a conflict that went on for decades.<sup>715</sup> The hidden cause of this claim is probably the valuable position of the island regarding the trade sea routes of that period. Gaining control over Lefki meant gaining control over westbound shipping lanes that passed by Crete’s S coast<sup>716</sup>, or over the sea route between Itanos and the Egypt of Ptolemy III, as well as the respective harbor dues. In other words at Lefki there was allowed “the embarking of murex and fish as freight for the homeward journey and gave Itanos (or Hierapytna) the revenues charged on exchanges”<sup>717</sup>.

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<sup>713</sup> For this argument see also Brogan et al. 2012.

<sup>714</sup> Apostolakou 2008: 2.

<sup>715</sup> Gallimore 2011: 115.

<sup>716</sup> Idem.

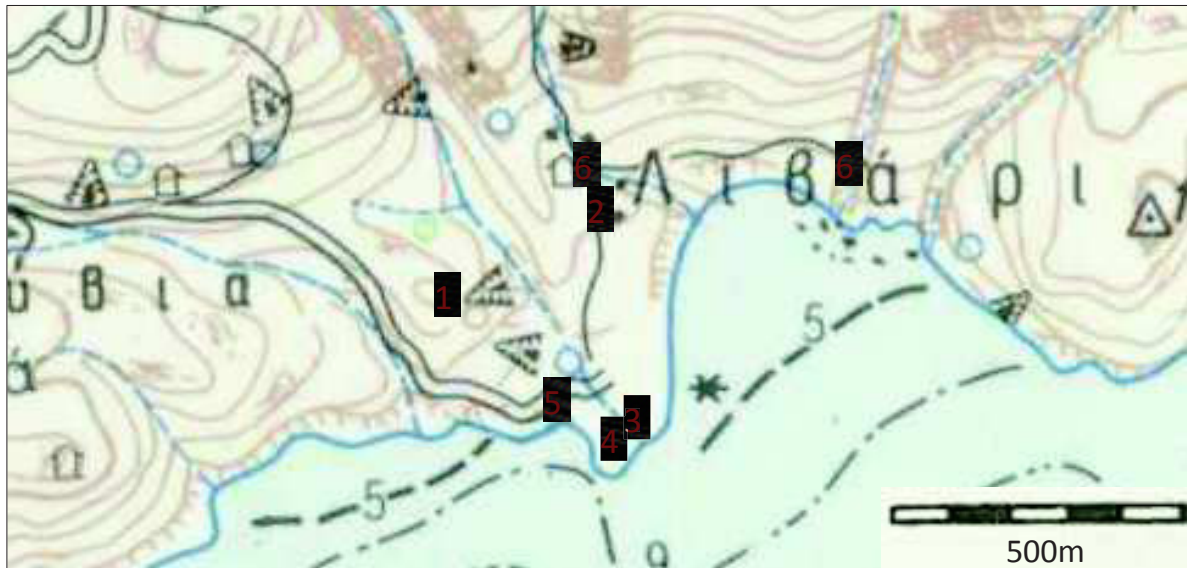
<sup>717</sup> Viviers 1999: 225-6.

We should not forget that Lefki was also a valuable maritime station, something that is indicated also by the ethnographic observation of Bosanquet regarding the sponge-boats from Syme and Kalymnos that, in 1903, frequented Lefki as it was “a convenient halting-place [...] on their way to the African waters”.<sup>718</sup> Consequently its significance, under the specific historical circumstances, went much further than the sole purple dye production.

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<sup>718</sup> Bosanquet 1940: 72.

## 24. LIVARI



## Main geographic features

Livari has one large bay on the E (orientation SE) and one much smaller on the W side (orientation SW). The two bays are sandy or with pebbles and they form a small rocky promontory in the middle. The area is rich in water; it has five watercourses from which the two are streams and the other three gorges (that become also streams during winter and spring seasons). The two bays are surrounded by low cliffs and the large bay has a big coastal – almost- flat area.

## Archaeology

The wider coastal area of Livari has been studied thanks to a systematic and extensive survey and a rescue excavation. The –known- settlement history of the area around the bay of Livari can be summarised as follows: i. the FN settlement site constituted by the acropolis

(35<sup>719</sup>) and the bastion (34) (Fig. 220), ii. the FN-EM II settlement site (38A) associated with the cult-place<sup>720</sup> (38B), the cave (burial?) deposit (38C) (Fig. 221) and the cemetery (37), (Fig. 222) iii. the MM-LM settlement (36) also associated with the aforementioned cemetery and iv. a AD 19<sup>th</sup> century walled look-out post ('vigla') on top of the cliff that limits Livari bay towards E.<sup>721</sup> During the first survey campaign in 1996, with regard to the sites 38 and 39 it is mentioned also the existence of Geometric, Archaic, Classical, Hellenistic, Roman and 19th-century pottery shreds.<sup>722</sup>

The cemetery (site 36) is constituted by a tholos tomb and a two-roomed burial building, (Fig. 223) both excavated, and it is located on a small rocky promontory at the S side of the large bay of Livari. With regards to the tholos tomb<sup>723</sup> it was in continuous use from EM IB until the EM III period. Its internal diameter is 4.40 m and it is constructed mainly by big stone blocks. The tomb has not any primary burials; all the (fragmented and burned) human bones come from secondary ones. It is assumed that the bones had been burned outside the tomb along with some pottery vases. The findings include obsidian and chert blades, a copper dagger and spit, stone pendants, stone beads, as well as three silver pendants. The pottery findings suggest external contacts with eastern and SC coastal settlements (Aghios Onoufrios ware) as well as Cycladic influences (Kampos pottery group) during the EM IB period.<sup>724</sup> The tholos tomb has been associated to the aforementioned site 38A (Kastrokephalaki) that is identified as an EM settlement.<sup>725</sup>

In a small distance from the tholos tomb there is a Neopalatial (LM IA period) two-roomed burial building of an almost square ground plan. In the small room there were discovered one primary and at least five secondary burials. An important finding was a red quartz-seal that depicts a flying fish in a sea-bottom context.<sup>726</sup>

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<sup>719</sup> Site-numeration and classification by Schlager 2008.

<sup>720</sup> A roughly quadrangular rock cut feature with a small cleft that leads into the rock.

<sup>721</sup> Schlager 2008; Whitelaw and Morgan 2009: 79-81.

<sup>722</sup> Schlager et al. 1997.

<sup>723</sup> Papadatos and Sofianou 2010: 50-54.

<sup>724</sup> Papadatos and Sofianou 2010: 51.

<sup>725</sup> Schlager 2011.

<sup>726</sup> Sofianou 2014 (2009)b: 922-923.

### Literary evidence

There has not been individuated yet the ancient toponym that corresponds to Livari. It had been proposed that it was the ancient *Στάλαι*<sup>727</sup> (Stalai), but the archaeological evidence has not confirmed this assumption so far.

### Epigraphic and numismatic evidence

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### Historical geography (cartography, portolan charts) and commentary

The toponym Livari is modern. However we were not able to retrace neither an older version of it used in the historic maps of Crete or in the texts of the portolans, nor other toponym(s) that was/were attributed to the wider area.

### Early Modern Travel Literature

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Observations in the perspective of a landscape archaeology approach – Further considerations

The impression that gave Livari to us was that of an area suitable only for seasonal occupation, although the resources for the establishment of limited population exist (such as

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<sup>727</sup> Faure 2003: 80; Chaniotis 1996: 386. 21



water as well as sufficient land for cultivation at the coastal strip of the large bay). The disadvantage of this area is that it is relatively unhospitable to the ships since the bays are not well protected from the winds, given that the SE and the SW winds are very frequent in the S coast of Crete. In addition, we may assume that the bays are not well-protected either from the N, since the gorges not only expose the S coast –in general- offering a passage to the winds coming from the N but they also strengthen them. The archaeological evidence, so far and for the most part, agrees with the assumption of the seasonal type of occupation. The architectural remains are few and always associated to permanent settlements (look out posts, bastion, cult-place etc). However, what we suggest here is that the permanent occupation at the wider area of Livari bay was difficult, not impossible. We cannot exclude that a small group of people stayed there in order to exploit the strategic advantages that this area offers. Apart from being at the SE ‘corner’ of Crete and, consequently, able to control the passage of ships that come from several directions, it has also a very good visibility at Atherinolakos bay towards W and also at Lefki island (see Fig. 220). Livari could have served as a diachronic look out post.

The only period for which we have evidence of a more permanent type of occupation is the Minoan one (EM IB – LM IA), to which the tholos tomb and the burial building are attributed. It is important to point out the EM II external relations of Livari with other very distant coastal areas of the island. The imported finds suggest the existence of distant networks of interaction for the exchange of raw materials and finished objects, along with people and ideas.<sup>728</sup> Besides, the burial practice of the tholos tombs is considered to represent a group of people with a different cultural identity (maybe also a different ‘ethnic’ origin) that, as it was initially assumed, (and now gainsaid due to the cases of the distant tholos tombs at Livari and Krasi<sup>729</sup>) came from the area of Messara. All that suggests the existence of sea routes that connected the bay of Livari (during the EM II period) to distant areas of the island. In addition, the maritime contacts maybe were more facilitated in relation to what we can imagine now, due to the different coastal landscape that the Sea Level formed at that period.<sup>730</sup>

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<sup>728</sup> Papadatos 2014: 220.

<sup>729</sup> See also the article of Papadatos for an in-depth analysis, Papadatos 2014: 203-220.

<sup>730</sup> Of course more in-depth study is needed in order to understand the past Sea Level variations at the area of Livari and to confirm or not the previous assumption.

## SETTLEMENT PATTERNS' ANALYSIS<sup>731</sup>

Although the coast is the meeting point between land and sea, it is the belief of the author that the human activity and occupation within such a landscape is far more influenced by the sea. For this reason the analysis of the evolution of the human occupation at the SC and SE coast of Crete will lean towards the concept of the *Maritime Cultural Landscape* as Christer Westerdahl<sup>732</sup> defined it,<sup>733</sup> while it will be articulated as an attempt to detect and describe the occupational settlement patterns of the study area throughout the prehistoric and historical times (Late Final Neolithic to Roman period).

### Late Final Neolithic period<sup>734</sup>

Although an important limitation of the following interpretative attempt is the total lack of an excavated context in our area of study, the information that derive from the topography and the surface pottery of the sites can still offer some insight into this period.

The Late Final Neolithic sites at SC and SE Crete (ca. 3200-3000 BC) indicate a temporary colonization of coastal areas of limited accessibility by small groups of people. By summing up the characteristics of the sites we are able to deduce a pattern<sup>735</sup> of newly founded sites located on ridges, rocky promontories and islets,<sup>736</sup> which present the typologies of small, often fortified, villages and isolated houses or hamlets<sup>737</sup> (such as S2.1, S24.1, S24.2, S15.1, S15.2, S23.1). In order to interpret this sudden colonization of marginal sites with those curious

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<sup>731</sup> For the better comprehension of this chapter see also Fig. 229.

<sup>732</sup> Westerdahl 1992.

<sup>733</sup> That could be summed up as the holistic view of the multi-layered context of the coastal areas that should include any hermeneutic kind of human relationship to the sea.

<sup>734</sup> There is an on-going debate regarding the term and dating of the Cretan Final Neolithic (see an illuminating and critical summary in Nowicki 2014: 61- 76). Here we will follow the dating and terminology of Vagnetti 1996 that coincides also with FN II of Nowicki in Nowicki 2014.

<sup>735</sup> Nowicki, 2011: 42. According to our documentation the exception in this pattern is the cave with Neolithic occupation at S17.3.

<sup>736</sup> However, in the case of the islets Nowicki (Nowicki 2008: 220) detects a variation in the settlement pattern, defined as "undefended extensive sites on low coastal terraces", which in our opinion is debatable. Even if they do not share the exact same topographic characteristics, they present the element of defensibility since they are located at the isolated and of limited accessibility islets of Chryssi and Lefki (S15.1, S15.2 and S23.1 respectively).

<sup>737</sup> Nowicki, 2008: 209, 212.

topographic characteristics of habitation, which defines -mostly the second half of- the fourth millennium BC in the entire island, various theories have been proposed: i. the search for natural resources, ii. the human response to the climatic change,<sup>738</sup> iii. the arrival of a pastoral economy,<sup>739</sup> iv. the potential of defensibility, namely the inhabitants' response to the security threat that newcomers' groups represented to them,<sup>740</sup> v. the emergence of a sea exchange network, followed by the intensification of maritime activity and the consequent usage of geographically strategic coastal sites<sup>741</sup>.

The FN period is a transitional phase with deep socioeconomic changes the causes of which could be an issue of an endless controversy. The facts on which we should focus are the unprecedented expansion of settlements, the more developed social and territorial organization and the numerous new elements in the material culture with no antecedents in Neolithic Crete.<sup>742</sup> Concerning the latter, the inhabitants of Crete seem to acquire a more extrovert character towards the rest of the Aegean, as the attested 'import'<sup>743</sup> of pottery, raw materials (copper and obsidian) and finished products at the site of Petras Kephala (NE Crete),<sup>744</sup> as well as the stylistic affinities with the Dodecanese, present at various coastal FN sites (cheese pot vessels, new pottery wares) indicate.<sup>745</sup> Consequently, the evidence strongly suggests that the new material culture appears to be the result of cultural influence and interchange. In fact, in our case, namely the FN sites of the SE coast, a further element they also have in common is one of the abovementioned new pottery wares, the Red Ware.<sup>746</sup> Therefore our settlement pattern is enriched with the feature of the maritime-based cultural interchanges.

This temporary colonization of marginal coastal sites with no environmental potential to support long-lasting occupation seems to have been a conscious collective choice in the light of the emerging conditions and needs. For Siteia, a region of E Crete, where, as far as the coast is concerned, we can observe a similar pattern to those of the S-SE sites, there is a

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<sup>738</sup> Vagnetti, 1972-3: 132; Tomkins, 2010: 43.

<sup>739</sup> Tomkins, et. al. 2014: 1.

<sup>740</sup> Nowicki, 2011: 202.

<sup>741</sup> Papadatos, Tomkins, 2014.

<sup>742</sup> Nowicki 2009: 288.

<sup>743</sup> There is not implied a trade aspect here.

<sup>744</sup> Papadatos and Tomkins 2014: 331-336.

<sup>745</sup> Nowicki 2008: 225; Papadatos 2008: 265, 270.

<sup>746</sup> Nowicki 2008: 225.

study on the macro-scale socio-economic relationships of FN settlements<sup>747</sup> that, in the author's opinion, offers insight regarding the 'bigger picture' of that new choice of settlement. According to the authors of the study "the dispersal of small sites seems to have been balanced by a form of visual integration that supported the formation of a type of dispersed community [...] certain sites appear to have been special sites where communities could gather [...] In this way dispersed inland and coastal clusters were inter-linked to form a single network of overlapping social fields"<sup>748</sup>. So we end up with a model of a multicellular settlement pattern constituted of smaller and bigger 'cells', where every site location should be seen in the context of its surroundings in order to make sense.

The validity of this model on the S-SE coastal sites is not certain but is worth considering. If that was the case these coastal sites with the curious topographic characteristics would become the 'satellites' of the larger defensible inland settlements, such as (from E to W) Xerokampos Kastri, Goudouras Kastri, Vainia Stayromenos and Dermatos Kastrokefala (Nowicki, 2008: 209, 213, 214; Nowicki, 2011: 42). Thus, in this context, the under discussion settlement pattern at the S-SE coast of Crete was functional to its wider socioeconomic network for a specific period of time and for a specific set of activities. The sites may have served as outposts of the larger settlements in terms of territorial control, exploitation of new natural resources and also as a gateway to sea-related activities.

### Early Minoan period

The recent developments regarding the knowledge on the Early Minoan sites (ca. 3000-2200 BC)<sup>749</sup> have radically reversed the initial impression about the entire period, the comprehension of which could be summed up as "simple, village-based/non-urban, conservative and lacking craft specialization" sites<sup>750</sup>. The sites that are located in our area of study can be categorised as follows; small (probably seasonal) settlements detected by the scattered pottery and poor architectural remains such as S15.1, S24.2, S9.4S and S5.1, EM II

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<sup>747</sup> Tomkins et al. 2014.

<sup>748</sup> Idem.

<sup>749</sup> Evans 1921.

<sup>750</sup> Cherry 1983

settlements/hamlets such as S13.5, S3.1, S4.1, diachronic settlements/hamlets such as S15.1 and S13.1, fortified settlements such as S2.1, S1.2, S23.2 and tholos tomb cemeteries at S2.3, S1.1, S3.2, S23.3 and S24.3 that were apparently related to their neighbouring EM settlements.

All of the above shows a differentiation as well as a standardization regarding the characteristics of the settlements. Furthermore the settlements of S3.1, S13.1, S13.5, S4.1, and S1.2, which have the characteristics of well-established settlement arrangement of villages that consist in several households,<sup>751</sup> indicate an increasing level of social organization and of natural resources' management. Regarding the emergence of the social complexity it is crucial to point out the introduction of sealstones, encountered at S3.1, S13.5<sup>752</sup> and S13.1<sup>753</sup>.

In addition a new tomb type appears, namely the tholos tomb, which is attested at S24.3<sup>754</sup>, S23.3<sup>755</sup>, S3.2<sup>756</sup>, S2.3<sup>757</sup> and S1.1<sup>758</sup>. The emergence of these formal burial customs<sup>759</sup> is a significant development that so far stimulated various interpretations such as i. the possibility that they are indicative of primary burials of status or ii. the introduction of new burial customs as a consequence of population movements from other areas and specifically from North Africa into Crete<sup>760</sup>.

Other elements worthy of mention are the higher density of sites, the fact that most of them are newly founded and the continuity and intensification of the external relations as indicated by various findings such as obsidian at S3.1<sup>761</sup> and S24.3<sup>762</sup>, an Egyptian scarab at S2.3<sup>763</sup> and silver pendants at S24.3<sup>764</sup>. The settlements of S13.5 and S13.1 were destroyed by fire during the Early Minoan IIB period.

If something becomes evident from the observation of the evolution of this settlement pattern, that is undoubtedly the more permanent character that most sites acquire and the

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<sup>751</sup> Nowicki 2010: 223.

<sup>752</sup> Rutter 2011.

<sup>753</sup> Cadogan 1977-8: 71.

<sup>754</sup> Schlager et al.: 1997.

<sup>755</sup> Papadakis 1989: 304.

<sup>756</sup> Vasilakis 1989: 56.

<sup>757</sup> Alexiou and Warren 2004.

<sup>758</sup> Davaras 1968: 405-6.

<sup>759</sup> Vagnetti and Belli 1978: 150-1.

<sup>760</sup> Branigan 1988: 198-9.

<sup>761</sup> Vasilakis 1989: 56

<sup>762</sup> Papadatos and Sofianou 2010: 50-54.

<sup>763</sup> Alexiou and Warren 2004: 13.

<sup>764</sup> Papadatos and Sofianou 2010: 50-54.

consequent increasing sense regarding the ownership of the territory. While there are still some settlements of probable seasonal function (look-out posts?), the life and death-related links to the territory now seem to be stronger, something that is attested both from the small hamlets and the tholos tombs, the first exemplar of a monumental burial practice in Crete. Furthermore the interrelation between the funerary and domestic settlements that apparently created wider shared territories, encourages the theory of the “shared regional identity”<sup>765</sup>.

Finally the diversity recognized in the archaeological data, namely the different site typologies, could be attributed to the various local and regional adaptations to the diverse coastal landscape ‘units’ of SC and SE Crete, which, after all, defines the growth potential and the utility of each site.

#### Middle Minoan period

The elements that characterize the settlement pattern of the MM period (ca. 2200-1500 BC<sup>766</sup>) at the SC-SE coast are i. the continuity of occupation that is attested to most of the EM hamlet settlements (S4.1, S15.1, S15.3, S1.2, S23.2, S3.1 and S13.1) and to all of the tholos tombs (except from S24.3), ii. the introduction of the new funerary method of pithos burial encountered at S14.1 and S18.2, iii. the foundation of several new settlements at S9.7, S8.3, S8.1, S10.4, S3.4, S3.5, S11.2, S10.5 and S7.1, iv. the foundation of smaller farm sites (?) at S9.5 and S10.2, v. the foundation of long-lived sanctuaries at the cave of S7.2 and at S9.1.

The EM settlement of S13.5 was abandoned for good after its destruction, while the neighboring S13.1 was resettled in MM period after a probably short gap<sup>767</sup>. Interestingly though the buildings that represent its new MM phase are a tower, stout terrace walls and two cisterns<sup>768</sup>, something that raises discussion regarding the security issues of that period. Some attempts to explain the abovementioned development were made<sup>769</sup> but in our case we prefer not to reach conclusions about the settlement pattern based on a single site<sup>770</sup>.

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<sup>765</sup> Schoep and Tomkins 2012: 24.

<sup>766</sup> Evans 1921.

<sup>767</sup> Cadogan 2000: 171.

<sup>768</sup> Cadogan 1977-8: 74.

<sup>769</sup> Cadogan 1977-8: 74; Nowicki 2010: 233.

<sup>770</sup> Unfortunately Myrtos Pyrgos is the only SE coast site, as far as the MM period is concerned, that has been excavated systematically (but only preliminarily published).

Apart from S13.1, the other excavated contexts of the period are limited to the purple-dye production-related settlement of S13.3<sup>771</sup>. As far as the newly founded sites are regarded, except for S7.2, there is no excavated and published context. Consequently we lack important data to attempt an in-depth analysis of the MM settlement pattern, although the existing evidence shows variability in forms of burial, signs of control of technology, variability of the geographic characteristics of the settlement locations (both coastal hills and strips). The more intensive occupation and exploitation of the coastal zone is also evident. Furthermore, we consider very important i. the introduction of the pithos burial<sup>772</sup> along with the continuity of the usage of tholos tombs (and cave tombs at S10.6) that suggests the gradual adoption of new customs, ii. the foundation of sanctuaries, which indicate the establishment of a type of site dedicated exclusively to the religious expression and aggregation, iii. the foundation of single-building sites (farm-sites?) that offer insight into the more intensive agro-pastoral exploitation and the organization of its storage and redistribution.

#### Late Minoan period

During the LM period (ca. 1675-1200 BC<sup>773</sup>) the density of the sites at the coastal zone of SC and SE Crete remains at the same level with the previous period. In all the sanctuaries (S7.2 and S9.1) and the settlements (hamlets and “farm-houses”), apart from S20.1 (LMIB-LMIII) and S18.1 (LMIII), is attested continuity from the earlier period(s). However the data from the two –and only- excavated<sup>774</sup> contexts at S15.3 and S13.2 suggests developments regarding the control of technology (bronze saw, stonetools at S15.3) and the exploitation of new natural resources (the purple-dye production-related settlement of S15.3) as well as the differentiation of the domestic architecture (considering the introduction of the ‘country house’ during the LM phase of S13.2, which functions as a central main building in the surrounding

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<sup>771</sup> The initial results led the excavators to associate preliminarily this phase mostly with the LM period, even if there is presence of MM pottery.

<sup>772</sup> The MM pithos burial practice is encountered at Pyrgos too [Cadogan, 1977-8: 73].

<sup>773</sup> The LM chronological frame here does not include the LMIIIC period (ca. 1200-1050 BC), which belongs to the Early Iron Age instead. For the ‘peculiarities’ of the LM chronology see also Cadogan 1983.

<sup>774</sup> And preliminarily published.

hamlet of smaller buildings). Furthermore a LM pottery concentration was found at the valley of Myrtos (S13.4).

The new site-typology that emerges is the, popular in the island of Crete during LM I, so-called 'Minoan villa' at S19.1<sup>775</sup>. The Minoan villas can be described as rural isolated centers for the collection of agricultural surpluses in sparsely populated areas. The aforementioned LM I 'country house' at Pyrgos<sup>776</sup> is also considered to bear resemblances with the 'villa' type.

Regarding the funerary contexts we notice that the use of the pithos burial continues from the earlier period (S14.1), on the contrary to that of the tholos tomb. However the funerary architecture is further enriched with the two-roomed burial building at S24.4 and the rock cut tombs at S8.4, at the cemetery of S9.6 and S10.6. So we observe once more the coexistence of different funerary typologies. The evolution of the funerary tradition is continuous. If the behaviour (customs, architecture etc) towards the death reflects the origin and the culture of the living, then it becomes clear why a coastal area, like the one under study, should be the first place to receive the respective influences.

The archaeological evidence about the LM III relations between various central-eastern Cretan sites (mostly the coastal ones) with the palace of Knossos<sup>777</sup>, along with the indications for the extensive exploitation of Chryssi islet (opposite to Hierapytna region)<sup>778</sup>, could indicate the existence of a certain coastal control by the Knossian authorities regarding also the remote sites,<sup>779</sup> or even that of a wider economic strategy plan for the exploitation of the coastal territory.

To sum up, it seems that the LM I period is characterised by a rural-based economic system for the exploitation of the territory that is structured around the 'villa' type, which later on, during the LM III, is enriched by a sea-based local 'trade' and a production-orientated net of coastal settlements in the role of trading posts at S-SE Crete, which was probably organised by a higher (palatial?) authority.

## Late Bronze and Early Iron Age

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<sup>775</sup> Davaras 1997.

<sup>776</sup> Cadogan 1977-8: 77.

<sup>777</sup> Banou 2004.

<sup>778</sup> Chalikias 2013: 49

<sup>779</sup> Banou 2004: 187.



The chronological periods that follow, namely the LMIIIC (ca. 1200-1050 BC), the Sub-Minoan<sup>780</sup> (1050-970 BC) and the Proto-Geometric (970-810 BC), will be examined together since i. they constitute the transition period to the Iron Age and the beginnings of the establishment of the new socio-political and economic system that succeeded the Minoan one, ii. the sites that represent them have a lot of features in common, including the continuity of occupation during all of these periods (with the exception of one), due to which the chronological limits of the single phases are often hard to distinguish.

After the collapse of the Minoan state system there is a radical shift of the settlement pattern that is characterized by instability and the relocation of people from low-lying to upland sites.<sup>781</sup> The Early Iron Age emerging pattern could probably be better described as the sum of “clusters of interdependent nucleated hamlets and villages”<sup>782</sup>. The SC and SE coast seems to follow the abovementioned new settlement-pattern features and despite the insufficiency of respective excavations and publications, we will attempt to ‘extract’ any further characteristic elements from the existing yet limited data. What we can instantly notice is the considerable decrease regarding both the number of sites and the variety of their typologies. The sites of S7.2 and S9.1 present continuity from the previous periods and they are cult-sites. That element seems to illustrate well the general tendency in Crete during the Protogeometric (and Geometric) period, where several cult places re-used Late Bronze Age settlement remains, a choice that could be interpreted as a legitimising one.<sup>783</sup> As far as the S15.1 is concerned it seems to have been seasonally occupied since it preserves only pottery shreds concentration. There is also the coastal settlement at S18.1 that is continuous since the LMIII period. Given that our estimation could be biased by the lack of evidence, we have to admit that there is a difficulty in detecting the general pattern. However we could say that it is characterized by scarcity and maybe even randomness, since we cannot ‘see’ the wider plan in terms of site distribution and/or typology; a no-pattern. The absence of an occupation pattern in a macro-area as this one though, could indicate the emergence of more localized –thus invisible to us-

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<sup>780</sup> The Sub-Minoan period is the brief transition-phase that followed the end of the Minoan socio-political and economic system, that remains still a little bit foggy as far as its duration and its pottery style are concerned. (see also Hallager 2010: 141)

<sup>781</sup> D’Agata 2001: 346.

<sup>782</sup> Nowicki 2001: 153.

<sup>783</sup> Wallace 2003: 263.

socioeconomic and political microsystems. Interestingly that fits well the general occupation pattern in Crete, which, after the Minoan millennia, experiences for the first time the absence of a central authority, while the strong regionalism emerges, an element that has also defined the next centuries.<sup>784</sup>

Finally, the density of the sites at the SC and SE coast indicates its -without precedent- abandonment and it seems that the coast and probably the sea in general, has a very limited role in this new socio-political and macroeconomic system of the island. In short, as far as the Sub Minoan and the Protogeometric periods are concerned, the huge economic and cultural value that the sea represented for the past millennia seems to have been lost. According to a number of scholars this could be explained as the consequence of the general disturbances in the Mediterranean and the threat coming from the sea, related to the commonly known as ‘Sea-Peoples’ migration.<sup>785</sup>

#### Geometric and Orientalising period

The element of the sea will be retraced in the material evidence that comes from the SC and SE coast only later on, during the Geometric period (810-700 BC), in the cult-site S17.2; a diachronic cave-sanctuary that provided us with three Geometric boat clay figurines<sup>786</sup> as well as with numerous Egyptian and Syro-Palestinian votive offerings (scarabs, amulets) dated to the Orientalising period,<sup>787</sup> that indicate external relations and maritime activity. In our study area the site density remains at a very low level. At Keratokambos bay there are two sites attributable to the under discussion periods; the diachronic cult-site S9.1 and the Geometric/Orientalising/Archaic acropolis (?) at S9.9. Although the latter has not been excavated,<sup>788</sup> it has a fortification wall, a cistern and houses. At S24.6 and at S21.2 there have been identified diachronic concentrations of pottery the dating of which initiates in the Geometric period.

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<sup>784</sup> D’Agata, 2001: 353-4.

<sup>785</sup> Nowicki 2001: 23,24,37.

<sup>786</sup> Kanta and Davaras 2011: 141, 135.

<sup>787</sup> Kanta, and Davaras 2011: 168-187.

<sup>788</sup> The dating is based on a Geometric/Orientalising pithos that was found on the surface, so the site maybe was occupied also in earlier or later periods.

According to the broader picture of Crete, during the Geometric and the Orientalising periods the island seems to regain its extrovert character and the sea its importance, something that is further attested by the participation of Cretans at the colonisation of Gela in Sicily and of Cyrene in Libya in the 7<sup>th</sup> century BC.<sup>789</sup>

The brief mention of the Orientalising period (700-600 BC), is due to its limited available evidence. The particular period is represented by only two sites at the SC and SE coast, thus it is impossible to draw further conclusions about the wider settlement pattern. However, in order to maintain a general idea of the historical sequence, it is worth noting that during the Orientalizing period Crete served as a transshipment point in the Phoenician trade circuit.<sup>790</sup>

#### Archaic and Classical period

Archaic and Classical periods (600-330 BC) are represented only by four sites in our study area, which are unfortunately unexcavated (apart from the site of S7.2 that is partially excavated). The other sites, which were all founded before the Archaic and Classical periods, are the sanctuary of S9.1, the acropolis (?) settlement at S9.9 and the probable settlement at S21.2 (indicated by pottery concentration). Pottery concentration of this period was also found at S24.6.

Therefore it would be premature to attempt to detect and interpret the respective settlement pattern. The scarcity of evidence though should not be interpreted as the reflection of historical reality. These centuries are characterised by a low archaeological profile all across the island of Crete and the absence of evidence that initially gave the impression (which was maintained for a long time) of a recession caused by a catastrophic decline in population and in cultural achievements, always in the context of a pre-assumed 'Dark Age', is now re-considered and defined as 'negative evidence'. Recent studies have shed light on what seems now to be "an emerging warrior culture, a prototype of the militaristic and austere culture of the Spartans"<sup>791</sup>. Finally it should be mentioned that the –mostly ceramic- material traces of this new socio-

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<sup>789</sup> Scirpo 2012: 92.

<sup>790</sup> Ericksson 2010: 279.

<sup>791</sup> Ericksson 2010: page.

economic pattern are difficult to distinguish and that, consequently, this could be one of the reasons for the scarcity of Archaic sites along the SC and SE coast.

### Hellenistic period

It becomes evident just by looking at the map of SC and SE Crete and the site catalogue that the settlement pattern of our study area underwent a major change during the Hellenistic period (330-69 BC). The density and the variety of site typologies increased considerably.

We notice the emergence of several new cult sites at S2.5 (Asklepios sanctuary) S23.5 (probable temple<sup>792</sup>) and S13.3 (shrine of Hermes and Aphrodite) along with the perpetuation of the cave sanctuary of Eileithyia at S7.2. The sanctuary of S2.5 will become an important center for Asklepios's cult, renowned internationally. It will maintain this major role until the end of the Late Roman period. The introduction of Asklepios, Hermes and Aphrodite as some of the 'new' important divinities of the under study area, should be also pointed out. In overall, we notice the intensification of the cult practices, which indicates the new role that religion played during the Hellenistic centuries. In a period of continuous warfare between the Cretan city-states, such as the one under discussion, it is to be expected a dependence on divine help along with the acceptance of the powerlessness of the humans when confronted with the calamities of the war.<sup>793</sup> In other words, the hopes both of individuals and communities rested upon the intervention of a saviour god.<sup>794</sup> Asklepios's sanctuary, apart from the satisfaction of the religious sentiment, offered also practical help to its -apparently many- injured worshippers (due to the continuous warfare).

Several new coastal settlements that are neighboring and probably interconnected are founded at S1.3, S2.7, S7.6<sup>795</sup>, S23.4, S3.3, S3.6, S15.4 and S10.1. Moreover pottery concentrations have been attested at S9.8, S9.10 (the last two are probably attributable to hamlet settlements), S24.6, S21.2, S6.1 and S8.2. Other Hellenistic site typologies

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<sup>792</sup> However it is possible that the architectural remains along with those of the colossal statue belonged to a navigation beacon [Bosanquet 1943: 70, n.1] and not a temple.

<sup>793</sup> Chaniotis 2005: 145.

<sup>794</sup> Chaniotis 2005: 146.

<sup>795</sup> To our knowledge the traces of the Hellenistic settlement have not been detected. However we consider certain its existence, as attested in several ancient sources.

encountered include the farmhouses at S1.6, S15.8 and S2.4, the copper and iron quarries of S1.5 and the amphora production site at S9.2. All of the above suggest an intensive and organized territorial exploitation in terms of natural resources, (purple dye, metal quarries, clay) pastoralism and agriculture. Finally there is the *polis* of Hierapytna (S14.2) that was the only settlement of this kind and size at the entire S coast of Crete as well as the most important city-state in East Crete.

The culture –and probably the economy too- of subsistence of the Archaic/Classical periods characterized the Hellenistic Crete as well. The new important features that emerge in the Cretan society, as we know from the literature sources and the epigraphic record,<sup>796</sup> are the city-states and their almost continuous warfare for territorial –and subsequently economic- control, the more intensive agro-pastoral economy, the intensive practice of piracy and the massive ‘production’ of mercenaries that were recruited from the warring states all around the Eastern Mediterranean.<sup>797</sup> In such a context the ‘rediscovery’ of the coast seems indeed inevitable, driven not only by the needs of the piracy-involved Cretan people, but also by the exploitation of maritime resources and the necessity of the Cretans to be present in the sea networks –and consequently on the coasts- for economic<sup>798</sup> and political<sup>799</sup> reasons.<sup>800</sup> The fortifications are a feature encountered throughout the Hellenistic Crete and it depicts the general instability of the period. Thus the lack of them in our study area<sup>801</sup> is at least curious and it should be explained as lack of archaeological evidence regarding their existence.

Finally another matter that deserves an extensive mention concerns the sea trade in Hellenistic Crete. Given this ‘renewed interest’ for the coast, one should expect to find evidence regarding the maritime trade. However the existence of the latter is still under debate<sup>802</sup> since the evidence for Cretan imports and exports exists, but at such a low number that implies something more similar to casual transports<sup>803</sup> and less to an organized form of exchange. According to another reading the Cretan exports are untraceable because the

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<sup>796</sup> Chaniotis 2000: 55.

<sup>797</sup> Willets 2013: 143-150.

<sup>798</sup> Viviers 1999: 224.

<sup>799</sup> Apostolakou 2006: 198.

<sup>800</sup> An example of this is the alliance between Ierapytna and the Seleucids.

<sup>801</sup> Except for the remains of the probable Hellenistic fortification wall at Hierapytna, the probable coastal fortification wall at Levena and the Hellenistic fortification wall at the settlement of Ambelos (which is not in our study area) located at the SE extremity of the island (Papadakis 1989b).

<sup>802</sup> Chaniotis 1996; Perlman 1999.

<sup>803</sup> Regarding their connection to the mercenaries see Hadjissavas and Chaniotis 2012: 168.

products “may have been part of mixed cargoes the origins of which were conveniently associated with that of the transporter”<sup>804</sup>.

Nonetheless, the real debate should not concern the existence of this ‘maritime trade’ but its nature. We cannot ignore either the evidence we have regarding the export of Hadra vases<sup>805</sup> or the strong indications about the export of cypress, wool<sup>806</sup> and purple dye<sup>807</sup>. All of the above presuppose the insertion of Cretans into the pre-established Mediterranean exchange networks, which they accessed probably in a random manner, by means of the piracy activity which aimed in the claim of booty. Therefore we should consider the possibility of a minor scale and less organized maritime exchange network, which of course differs much from the type of the later Roman maritime trade, but complies with the extrovert character (also in relation to the previous periods) that the Hellenistic settlement pattern at the SC and SE coast of Crete indicates.

The density and the site-typology variability of the abovementioned sites, which was maybe sustained by a demographic growth,<sup>808</sup> reflect the renowned interest for territorial and economic control of the coast, despite their exposure and the probability they became field of piratical raids. Finally it is important to point out that the majority of the coastal villages settlements were in fact dependent communities from the bigger inland *polis* settlements: Lassaia (Area 1) from Gortyna, Lebena (Area 2) from Gortyna, Inatos (Area 7) from Priansos, Arvi (Area 10) from Viannos, Chryssi (Area 15) from Hierapytna, Lefki (Area 23) from Itanos/Hierapytna, served –among other things- as the base for the various sea-related activities and as an additional source of income (tax revenues from sea traffic<sup>809</sup>).

#### Roman period (until AD 395)

Apart from the new settlement of S13.6, all the others present continuity from the Hellenistic period, including the *polis* settlement of Hierapytna (S14.2). Roman cemeteries are detected at

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<sup>804</sup> Viviers 1999: 229.

<sup>805</sup> Hadjissavas and Chaniotis 2012: 168.

<sup>806</sup> Viviers 1999: 229.

<sup>807</sup> Papadakis 1983: 59-60.

<sup>808</sup> Alcock 1994: 180.

<sup>809</sup> Viviers 1999: 231.

Lebena (S2.7), Inatos (S7.6), Lassaia (S1.3) and Arvi (S10.1), at the limits of the respective settlements. All the settlements (except for S15.4 and S3.6) are occupied until the end of the Late Roman period. The new habitation feature we encounter is the private (rural) villa with the bath complex (S14.3, S13.6, S19.2, S23.4, S10.1<sup>810</sup>) and the respective aqueduct (that is encountered in most of the above cases as well as at S1.3). The bathing facilities at S2.7 differ since their function should be seen in a ritual context.<sup>811</sup> At S24.6 and S6.1 there has been found pottery scatter from the Roman period that indicates a –maybe- seasonal type of occupation. The two cult-sites that maintain their role also during this period are the sanctuary of Asklepios at S2.5 and of Eileithyia at S7.2. There have been attested seven amphora production sites at S9.2, which use continues from the Hellenistic period, at S9.3, S8.5, S10.7, S20.2, S19.3, S7.3 and S7.4.<sup>812</sup> The sites related to the exploitation of natural resources are the metal quarries at S1.5, the stone quarry at S17.2, the salt pans at S16.1 and the fishtanks at S17.1 and S15.13. Finally, with regard to the sea traffic, there is amphora cargo scattered at the sea bottom near the bays of Lebena at S22.1 and Atherinolakos at S2.8.

This new situation is maybe best described with the word ‘intensification’. Of course the SC-SE coast of Crete is not unique in this since the entire empire during the Roman Imperial period was characterised by the same element.<sup>813</sup> More specifically the increase of coastal settlements as a consequence of the increased sense of security regarding the maritime activities, the more systematic exploitation of the natural resources and mostly the marine ones, the building activity that mainly concerned the so-called “romanization indicators” such as aqueducts and bath complexes<sup>814</sup>, as well as the extended road network (S1.8, S2.9, S7.7) are features that defined not only our area of study but the entire Roman empire during the Imperial period.

However, the wide range of site typologies as well as their high density at the SC and SE coast of Crete suggests that, in relation to other areas, it flourished probably because of its marine resources and the evident access to appropriate distribution networks, or, in other words, the joint senatorial province of *Creta et Cyrenaica* founded in 20 BC. Indeed the

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<sup>810</sup> In this case there has been discovered only the bath complex.

<sup>811</sup> Kelly 2013: 141.

<sup>812</sup> All of them are dated between the 1<sup>st</sup> and the 3<sup>rd</sup> centuries AD.

<sup>813</sup> Marzano 2013: 302.

<sup>814</sup> Kelly 2013: 132.

evidence has shown that Crete supplied the Roman capital with corn<sup>815</sup> and wine<sup>816</sup>. The latter is obviously related to the high number of the newly founded amphora production sites, since all of the –so-called Cretan- amphoras produced there served for wine transportation.<sup>817</sup> It is also related to the location of the newly founded rural villas near the sites of agricultural exploitation and more precisely near the vineyards (e.g. Makrygialos-Area 19, Myrtos-Area 13).<sup>818</sup> Other than the viticulture, the aquaculture (fishtanks, salt pans) seems to be developing during this period. All of the above indicate a noteworthy change in relation to the subsistence economy of the previous centuries. The Cretan economy under the Roman rule acquired a more commercial character based on intensive production directed towards external markets.<sup>819</sup>

We notice that at the SC and SE coast the cult sites and almost all of the settlements maintain the same locations as in the previous period, although the introduction of aqueducts, bath complexes, rural villas as well as of new building techniques and decorative motifs changed considerably the aspect of every settlement. The Hellenistic period in a way, served as the background for the Roman one. That seems to contradict the several new elements of the period, as they were mentioned before, but it is not a sign of conservatism: the original locations were maintained due to their overriding economic benefits.<sup>820</sup> This is the main reason for the fixation of the coastal site locations as well as for their increase, and not the “increasing sense of security” as is usually argued<sup>821</sup>. According to the existing data it is clear that during the Hellenistic period the Cretans were not the ones who suffered the piratical raids; they were the ones who practised them. From the other hand, if the coastal occupation was indeed dangerous it would not have increased so much during the Hellenistic period. In other words we think that, considering of course the particularities of each historical context, during both the Hellenistic and Roman periods the coastal environment was secure for its inhabitants.

In addition there is an interesting theory to consider regarding the same subject, according to which the settlement location was compromised by its geographic suitability for the

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<sup>815</sup> Sanders 1982: 34-5; Caesar *De Bello Civili* V.I.

<sup>816</sup> Marangou 1999.

<sup>817</sup> Marangou 1999: 269.

<sup>818</sup> Marangou 1999: 270-1.

<sup>819</sup> Marangou 1999: 278.

<sup>820</sup> Kelly 2003: 318.

<sup>821</sup> Kelly 2003: 320.



construction of the aqueducts (namely the continuous inclination). “Roman cities on Crete were predominantly located, or relocated, near river mouths, where by virtue of their low altitude they could benefit from a supply of water ensured by easy aqueduct construction along a valley contour”<sup>822</sup>, namely exactly as it happened in the case of the settlements at the SC and SE coast of the island.

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<sup>822</sup> Kelly 2003: 317.

## SEMI-NOMADISM

### A HYPOTHETICAL INTERPRETATIVE MODEL FOR SC AND SE CRETAN COAST<sup>823</sup>

In the course of the settlement pattern analysis we often, directly or indirectly, encouraged the interpretative model of a ‘multi-cellular’ type of settlement, constituted by several small units that shared a common regional identity (see Neolithic, Late Minoan, Late Bronze and Early Iron Age and Hellenistic period). That, of course, was a subsequent realization and not presumed from the beginning. According to the author the explanation for this frequent recurrence was the adaptation of the inhabitants to the particularities of the specific coastal landscape, which is characterized by a geographic fragmentation in several isolated or semi-isolated units. That in combination with the socioeconomic circumstances, the long-term climate and the vegetation history, favoured types of subsistence strategy. However, in order to achieve subsistence in the specific landscape context, a community needs to expand its ‘coverage range’, so as to exploit all the available natural resources. Furthermore, if we consider that i. the seasonality is a crucial element of a natural resource-based agropastoral community, ii. the under study coastal area is characterised by very abrupt changes of altitude in a small distance from the sea, which should be managed in some way, we can easily realise that one settlement for each community is not enough.

There can be detected two variations in the under discussion occupation model, which share the principle of the interlinked and interdependent (habitation and natural resources’ exploitation) small settlements that cover a wider region. The first one concerns the Neolithic, Late Minoan, Late Bronze and Early Iron Age and Hellenistic period and is constituted by several village and hamlet settlements that were used seasonally in a cyclical way by the same community and a few ‘specialized’ smaller settlements (e.g. farmhouses, cemeteries or look-out posts). The second variation concerns the Middle Minoan and Roman periods and it can be described as an extended bigger settlement that is constituted of the main village or hamlet settlement and the several small and supplementary ‘specialised’ ones (e.g. sites related to the

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<sup>823</sup> It does not apply in the case of the area of Hierapytna.

exploitation of natural resources etc). With regard to the Geometric – Orientalizing, Archaic – Classical periods, the scarce evidence that is available does not permit us to advance such interpretative theories.

The main difference between those two variations is the part of the community's population that participates in the mobility process. Here we attempt to sustain that the mobility process in the case of the first variation concern the whole –or the bigger part- of the community, while in the second one, where a fixed habitative centre is maintained, it regards only small groups of it. It is also useful to notice that the second variation, as we named it, coincides with the periods during which the model of the central organisation and administration flourished throughout Crete and apparently put the subsistence strategies aside: the Middle Minoan and the Roman ones.

Thus we decided to take the analysis of this occupation model one step further and attempt to evaluate whether and what features of the 'semi-nomadic' pattern of residence does it bear, defining at the same time a more precise form of it. As we surprisingly found out, the inhabitants of some settlements in our area of study were following the 'semi-nomadic' pattern of residence until some decades ago. During the research<sup>824</sup> we realised that several times the information provided by local people about the past uses of their land coincided regarding the matter of the cyclical mobility.

Part of this mobility pattern were also the islands Chryssi and Lefki. Chryssi<sup>825</sup> until recently was seasonally occupied during the fishing season (end of March to September). The inhabitants lived in stone huts and hunted rabbits, patridges and pheasants. They also maintained small-scale cultivations such as barley (to be used as fodder for the animals) and water melons and they collected salt from the salt pan at the NE part of the island. From November to May pastoral farming of sheep and goats also took place. Their owners moved their flocks from Viannos district to Chryssi with fishing boats. The island was also a destination for Kalymnian sponge divers (in the 1950's, 1960's).

The exploitation of Lefki until the 1970's was apparently very similar to that of Chryssi. We have information regarding the transportation of flocks from areas such as Atherinolakos or

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<sup>824</sup> Both on-site and bibliographical research.

<sup>825</sup> All the relative ethnographic information have been taken from Chalikias 2013: 45-6.

Goudouras, the transportation of oxen that served for the plough cultivation,<sup>826</sup> the cultivation of barley, seasonal fishing, salt collection<sup>827</sup> and sponge fishing<sup>828</sup>.

Moreover there are many modern coastal village settlements that are still being used seasonally (only during the summer period) such as: Lassaia, Tripiti, Aghios Ghiannis-Kapetaniana, Treis Eklissies. Those that are not used only seasonally (except for Hierapytna, Myrtos and Makrygialos) during the winter season lose most of their inhabitants.

Therefore, we needed to explore further this matter. The decision to interview some of the inhabitants was inevitable and gave us also the opportunity to enrich this research with an ethnographic approach on the subject. Apparently there is no evidence to sustain that the occupation model the pieces of which we are attempting here to gather applied also during some of the historic and prehistoric periods, although there are plenty of indications to consider.

So, according to the information provided to us by Mrs Maria Christaki, resident of Myrtos (municipality of Ierapetra), age 68, at the area N-NW from Myrtos there were four bigger and smaller winter village settlements (Mythoi, Gdochia, Riza, Kaimenos, Mournies) and one summer village settlement (Ano Symi) (Fig. 224). Until the end of the 1970's the inhabitants remained at the winter settlements from November to the end of March (although this period could also be from September to June if the family had children who went to school) and at the summer settlement for the rest of the year. Near the winter settlements the inhabitants cultivated cereals, olive trees, forages and they maintained pastures. Near the summer settlements there were the grapevine cultivations and the inhabitants also cultivated legumes, potatoes, vegetables, onions, cherries, figs and pears. The production of wine took place at the summer settlement (the 3<sup>rd</sup> of November) and it was gradually transferred to the winter ones. The aforementioned mobility was stable every year and most members of every settlement participated in it. An important extra motivation for the mobility was the lack of water. For that reason Kaimenos was the only settlement that was completely abandoned during the summer season. The winter settlement was considered as the main one. The latter was constituted by houses of a more thorough construction, while at the summer settlements the houses were usually small and hut-like. An element that still survives as a reminiscence of this seasonal

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<sup>826</sup> Papadakis and Basgiourakis 2001.

<sup>827</sup> Idem.

<sup>828</sup> Bosanquet 1943: 72.

mobility pattern is the choice of the saints to which the churches of both the winter and summer settlements are dedicated. To be more specific the dates of their celebrations coincide with the period of occupation of the respective settlements.

In a case where the landscape has suffered only minor changes during the past millenniums (and until the 1980's) such as in our area of research<sup>829</sup>, the ethnographic study is almost imperative given the high probability rate that some social and/or cultural features have been maintained intact since previous periods. Apparently, in order to propose a complete occupation model for this area of research, the latter must be expanded to a range well over the 300 m from the shoreline, as is the case here.

However with the data presented in the previous analysis we attempted to sustain the idea that the coastal settlements of the SC and SE Crete were just a part of a wider multi cellular system of settlements that was exploited by a 'mobile or semi-nomad community'. In other words, in order to achieve subsistence in a fragmented seascape as the one under discussion, a community has to adapt and consequently to fragment itself in smaller units of habitation and resources' exploitation. Even if at present time we ignore the details such as which were the small settlements that constituted the bigger ones, or what was the period of the seasonal use of each one, the ethnographic models mentioned before hopefully give the idea as they offer an example of 'reading'.

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<sup>829</sup> except, of course, for those of geological origin.

## EXPLOITATION OF MARINE RESOURCES AND SEA TRANSPORT

In this chapter we will attempt to gather all the available data that is related to the element of sea, in order to evaluate the role that the latter played for the coastal communities in our area of research.

Regarding the data of the prehistoric periods, at the EM II–MM IA settlement of Tripiti there were found fish remains and a big assemblage of murex shells destined for consumption,<sup>830</sup> as well as a triton shell (*charonia tritonis*)<sup>831</sup>. At Chryssi island there has been discovered a EM-LM settlement where, during its LM occupation phase, a purple-dye workshop functioned (large concentrations of crushed murex shells, relative house equipment and architectural installations).<sup>832</sup> The fishing activity is also evident (fishhooks and rich faunal remains of fish).<sup>833</sup> At Lefki island there was found a bank of crushed *murex* shells, associated with MM IA-LM IA material.<sup>834</sup> At the LM ‘villa’ of Makrygialos there were discovered numerous fragments of *murex* shells as well as a steatite amygdaloid seal (CMS V Suppl. 1A, no. 55) with a depiction of a boat with a female figure, a keg and a (palm?) tree<sup>835</sup>. At Myrtos Phournou Korifi and Pyrgos there were also detected a few samples of *murex*.<sup>836</sup> In addition at Myrtos Pyrgos there were found stone weights and a set of longline weights, both for fishing.<sup>837</sup> At the two-roomed LM IA burial building of Livari there was discovered a red quartz-seal that depicts a flying fish in a sea-bottom context.<sup>838</sup> We should also mention the obsidian cherts and blades of non-Cretan origin that were found at Lefki, Livari and Tripiti.<sup>839</sup> Finally there is a breakwater at Ai Ghiannis-Kapetaniana, which has been dated in the Minoan period<sup>840</sup>, although, in the author’s opinion, could be much later (Roman?).

Moving on to the historical periods, the available sea-related material evidence regarding the SC and SE coast of Crete comes from the cult-related findings of Egyptian and Levantine

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<sup>830</sup> Veropoulidou and Vasilakis 2010.

<sup>831</sup> Vasilakis 1989: 56.

<sup>832</sup> Apostolakou et. al. 2012: 180-181.

<sup>833</sup> Idem.

<sup>834</sup> Bosanquet, Currelly 1902-3: 276-277, Bosanquet 1943.

<sup>835</sup> Commonly known as the motif of “the Goddess beyond the sea”.

<sup>836</sup> Reese 1987: 204.

<sup>837</sup> Cadogan 1977-8: 83.

<sup>838</sup> Sofianou (2009) 2014: 922-923.

<sup>839</sup> Stieglitz 1994: 50; Papadatos and Sofianou 2010: 50-54; Vasilakis 1989: 54.

<sup>840</sup> Chatzidaki 2004: 55.

origin at the cave sanctuary of Eileithyia at Inatos (clay figurines, lamps, golden rings and cult vases), Lassaia, where there is a (most probably) Hellenistic or Roman semi-submerged breakwater as well as a second one at Traphos islet<sup>841</sup> and some also Hellenistic-Roman buildings on the coast that were maybe harbour-related structures.<sup>842</sup> In the sea bottom of Lassaia bay there are scattered mainly amphora fragments that indicate sea traffic.<sup>843</sup> At a near distance from the bay of Lebena there has been detected a 2<sup>nd</sup> century AD shipwreck. The Hellenistic and Roman *polis* settlement of Hierapytna had (probably) two harbours, of which the one was artificial,<sup>844</sup> as well as two breakwaters<sup>845</sup>. At Chryssi island there is a (probably) Roman fishtank<sup>846</sup> and at Ferma<sup>847</sup> too. At Koutsounari there is a complex of (probably) Roman saltpans.<sup>848</sup> At the sea area near Atherinolakos bay there have been detected amphora cargoes of several Roman shipwrecks.<sup>849</sup> At the island of Lefki the inhabitants of the Hellenistic and Roman village settlement were engaged in the purple dye extraction and production (*murex trunculus* shells, pumice, rock-cut cavities) as well as in fishing activities (fishing weights, fishhooks).<sup>850</sup> There is also the information regarding the remains of a purple dye factory at the NE coast that consisted in stone and clay vats, basins and channels.<sup>851</sup> Furthermore at the S end of Lefki island there was a Hellenistic navigational beacon (colossal statue on an artificial terracing).<sup>852</sup> Finally there must be mentioned also the numerous amphora production sites of Roman date<sup>853</sup> at Dermatos, Inatos (two), Keratokambos (two), Arvi, Makrygialos and Diaskari-Langadas, as indicators of the marine traffic, given that the amphora was the *par excellence* vessel for the sea transport of goods.

Further evidence for the marine traffic off the S coast of Crete provide the findings of a deep water survey that took place in 2008 at 20-25 nautical miles S-SW of Ierapetra near Chryssi

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<sup>841</sup> Chatzi-Vallianou 1978: 382.

<sup>842</sup> Blackman, Branigan 1975: 30.

<sup>843</sup> Personal observation.

<sup>844</sup> Gallimore 2011: 127.

<sup>845</sup> Sanders 1982: 139, fig. 49.

<sup>846</sup> Apostolakou et al. 2008: 148.

<sup>847</sup> Davaras 1975.

<sup>848</sup> Mourtzas 1988: 1561, 1562.

<sup>849</sup> Elpida Hadjidaki's personal file of Atherinolakos survey.

<sup>850</sup> Papadakis 1983: 62.

<sup>851</sup> Stieglitz 1994: 51. Although the information about this site needs further confirmation.

<sup>852</sup> Leonard 1972: 355, Sanders 1982: 137. Some scholars sustain it is a temple.

<sup>853</sup> Except for one of Hellenistic date at Keratokambos.

island. During this survey there were located thirty-three artefacts, mostly amphoras, dating from the Classical to the Byzantine periods.<sup>854</sup>

Thus, in order to sum up the above data, during the prehistoric periods the relation of the inhabitants of the SC and SE coast of Crete with the sea was characterised by the exploitation of fish and mollusc stocks. Moreover, in one case we have evidence for the extraction and production of purple dye from the murex shells. Apart from the alimentation and the craft specialisation related to the marine resources, thanks to the obsidian we also have indications for the maritime activity and the sea routes that connected Crete with Yali, Nisyros, Antiparos and Melos islands, where the obsidian sources were located. In another level, the familiarization with the element of the sea, acquired through the abovementioned activities, is demonstrated in the aesthetic value that is attributed to the latter in the case of the red quartz-seal with the flying fish. That familiarisation is demonstrated also in the case of the Makrygialos seal, the scene of which has been identified as “the Goddess beyond the Sea”, a common narrative motif of the Minoan iconography that involves female divinities. What is added here is the sacralisation of the sea through its association with the divine figure. However that is a matter of interpretation.

Although there are many indications that encourage a connection between the sea element and the so-called female divinity<sup>855</sup>, in the author’s opinion, that cannot be a presumed assumption for every seal depiction. For example the one under discussion can be also interpreted as a depiction of the sea transport of wooden beehives. If this is the case, the ‘palm-tree’ can be interpreted in the following way: placing a beehive (which is represented by the keg) by a tree is a common apiarist practice from the antiquity to nowadays, because trees attract swarms on their branches and because their shade protects the bees.<sup>856</sup> As for the female beekeeper, she has her hand close to her head maybe because she holds an object over it related to the beekeeping occupation. Consequently, if we deprive the seal depiction of its sacred (or ritual) context by offering an alternative interpretation, we also deprive the sea element of its sacralisation.

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<sup>854</sup> Wachsmann et al. 2009: 147-8.

<sup>855</sup> Galanakis 2007.

<sup>856</sup> Harissis and Harissis 2009: 58-60.



Proceeding on to the historical periods, from the Geometric period we have an artifact that represents the sea navigation element in a sacred or ritual context (boat clay figurine found in the cave sanctuary of Eileithyia at Inatos).<sup>857</sup> During the Orientalizing and Early Archaic periods (7<sup>th</sup>- 6<sup>th</sup> century BC) there are indications for the strong external relationships with Egypt and the Levantine coast.<sup>858</sup>

During the Hellenistic and Roman period we encounter again the exploitation of marine resources (fishtanks, saltpans, purple dye production) along with the evolved constructions for the facilitation of the marine transport such as harbours, breakwaters and navigational beacons. There are also several locations with submerged amphoras that indicate the marine traffic. Furthermore the many amphora workshops suggest the growth of the sea trade during the Roman period.

If something distinguishes the Hellenistic and Roman periods that is the gradual intensification of the exploitation of the marine resources as well as of the marine transport. That was achieved due to the increased and more efficient production that was linked to more appropriate distribution mechanisms (in other words, in the case of the Hellenistic period thanks to the Ptolemaic kingdom and in the case of the Roman period thanks to the joint senatorial province of *Creta et Cyrenaica*). However, apart from the intensification, and mainly during the Roman period, we notice also a different approach regarding the human relation with the element of the sea that is defined by the attempt for its subordination. By that we mean the artificial reproduction of various natural forms or habitats (fishponds, wave barriers, protected bays, saltpans ecc) that all derived from the accumulated knowledge regarding the sea both as a means of transport and as a natural resource and aimed in the human facilitation.

Finally, in this discussion, there must be highlighted the attested importance of the marine area off the southern coast of Crete which served for the shipping lanes to and from Egypt as well as West to East and vice versa. According to Casson<sup>859</sup> the second lane was preferred by the captains in order to avoid northwesterlies by sailing in the island's lee. As far as the first lane is concerned, it is indicated since the prehistory. It has been argued that i. Minoan

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<sup>857</sup> Kanta and Davaras 2011: 141

<sup>858</sup> Kanta and Davaras 2011: 168-187.

<sup>859</sup> Casson 1995: 287, n. 75.

seafarers are portrayed in mid-second millennium BC Egyptian tombs and texts,<sup>860</sup> ii. Minoans also maintained a presence at the capital of the Hyksos Dynasty at Avaris, modern Tell-el-Dab'a.<sup>861</sup> The written evidence that refers to this lane comes from Homer, who describes it as a five-day transit,<sup>862</sup> Lucian, who notes that this was the path preferred by Roman grain ships returning from Egypt<sup>863</sup> and in the Acts where is described St. Paul's adventure whose ship was caught in a storm while taking this route.<sup>864</sup> Furthermore the relationship between Egypt and Crete intensified under the Ptolemaic rule of Egypt in the Hellenistic period: E Crete served as a control station for Ptolemaic operations and trade in the eastern Mediterranean,<sup>865</sup> and also supplied the Ptolemies with mercenaries.

With regard to the maritime aspect during both prehistoric and historical periods, and through the above synthesis of all the sea-related data and the analysis of its implications, the SC and SE coast of Crete emerges as a diachronic network of intermediate minor maritime stations (except for Hierapytna) on the sea route from E to W and from N to S (SC-SE Crete to North African coast). So, if this assumption is true, the element of sea represents, not only in a geographic, but also in a practical sense the only continuity in the full of discontinuities seascape of SC and SE Crete.

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<sup>860</sup> Vercoutter 1956: 51-53, 56-57, 81, 87-88, 91-92; Wachsmann 1987: 297-299.

<sup>861</sup> Bietak 1996; Bietak et al. 2007.

<sup>862</sup> *Od.* 14.252- 258, 17.246.

<sup>863</sup> Casson 1950: 47-49.

<sup>864</sup> *Acts* 27:6-15.

<sup>865</sup> We mention also the presence of the Ptolemaic garrison at Itanos.

## THE RE-USE PRACTICE

The 're-use' concerns the material culture and it occurs "when an object, after some period of use, undergoes a change in the user (a person or social unit) or the activity of use".<sup>866</sup> During the landscape-oriented research-visits at the study areas we encountered many examples where the practice of re-use can be attested. Although those examples have been mentioned within the analysis of the respective study areas, here we will sum them up, in order to have the complete picture.

-At Lassaia we cannot confirm the continuity of the use of the copper ores quarry after the Roman period, although, given the fact that the mineral extraction sites are usually diachronic, we consider it highly probable.

- At Lebena in the masonry of the AD 15<sup>th</sup> century chapel there are embedded various parts of the former Early Christian basilica (fragments of marble columns and bases) and of the Roman/Late Roman settlement (fragments of pottery and tombstones) Fig. 231-233. Furthermore several modern buildings that are located on the coast (restaurants, pensions) have embedded in the lower part of their masonry parts of the coastal 'wall' (Fig. 38 and 16).

- At Moni Koudouma the rock shelters at the bay are still being used by the ascetists (Fig. 64) and in the cave of Abakospilio there is a chapel of the 19<sup>th</sup> century (Fig. 57).

- At Treis Eklisies, in the masonry of the chapels of Evangelismos and Aghios Georgios there are preserved all the currently available material traces (tiles, marble blocks, pottery shreds, column fragments) of former occupation periods (Hellenistic, Roman, Early Christian) (Figs. 67-73).

- At Arvi the masonry of the 17<sup>th</sup> century chapel of Panaghia preserves Roman and Late Roman material such as limestone blocks, tiles, marble fragments (Fig. 98-100). Fragments of tiles and pottery are preserved also in the masonry of 19<sup>th</sup>-20<sup>th</sup> houses of the modern settlement (Fig. 111-113).

- At Myrtos the masonry of the W wall of the 14<sup>th</sup> century Aghios Antonios's chapel preserves fragments of marble blocks, columns' bases and fragments of marble statues that

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<sup>866</sup> Schiffer 1981: 68

apparently belonged to the structures of the Roman/Late Roman settlement. In addition the altar of the chapel is made out of marble columns' bases.

- At Chryssi island, and in particular at the bay of Spilios, a part of a Roman water-channel has been submerged (maximum depth -1 m) and re-used as a mole (Fig. 147) That is not a personal observation, but it is indicated by the fact that the structure and its wider area is currently known with the name 'ancient mole'.

- At Diaskari, the building material (stone blocks) of the LM settlement has been re-used by the local farmers, who built several dry-stone walls for their animal pens, in some cases upon the original foundations of LM buildings (Figs. 186, 187).

- At the S part of the island of Lefki, the 1920 –now collapsed- lighthouse was built in large part with stone blocks from the Hellenistic temple or beacon (Fig. 219).

Finally, as far as Hierapytna is regarded, although we lack information regarding the re-use of ancient material, we are convinced that there must be some, probably hidden in the masonries and the foundation of old houses.

In the light of all the abovementioned observations it becomes clear that the re-use practice in the settlements of the coastal zone at SC and SE Crete was carried out for practical reasons, namely for labour saving. The buildings of previous occupation phases of a settlement could serve only as building material to its new 'occupants', considering that the extraction –plus transportation- of new one would be a waste of time and effort. Here it should be pointed out that we mostly noticed the re-use of Hellenistic, Roman and Late Roman and Early Christian material in Late Byzantine chapels and 18<sup>th</sup> or 19<sup>th</sup> houses. In fact this fits well in the wider context of that period, since the re-used pieces became a common device during the Medieval period.<sup>867</sup> The lack of any moral barrier in carrying out this process indicates also the lack of any kind of 'prestige' that the older buildings may inspired to the new occupants of the settlements<sup>868</sup>. However, there was a slight differentiation regarding the cult-related buildings: as it was observed the most 'prestigious' pieces of the marble decoration of Roman, Late Roman and Early Christian temples were re-used only in the chapels of the AD 14<sup>th</sup> century. That probably means either that our observations were not representative 'samples' of the former practises, or that the chapels were built earlier than the first houses of the

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<sup>867</sup> Sodini 2002: 145.

<sup>868</sup> We should keep in mind, though, that all this process was maybe facilitated by the strong earthquakes that had already caused the buildings to collapse in part.

settlement and consequently exploited all the then available materials. A second-level interpretation could be that through this process there was carried out a kind of *appropriation* of the precedent cult-related buildings and their symbols, either i. in a 'negative' sense: those buildings were stripped off of their 'pagan' elements<sup>869</sup> that were in a way showed off as trophies in the masonries of the new ones, or ii. in a 'positive' one: the building material of the older cult-related buildings was re-used because it was considered prestigious as it represented a link between the 14<sup>th</sup> century chapel and the past.<sup>870</sup>

As far as the other types of re-use are concerned (caves, rock shelters, 'mole', 'animal pen', foundations, lighthouse) they were purely functional to the various needs of the inhabitants.

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<sup>869</sup> Those are the architectural elements (columns, capitals etc) that a Cretan of the AD 14<sup>th</sup> century would have maybe associated more with ancient Greek ruins, thus pagan ones, than to a cult-building representative of the –also architectural- transition period from paganism to Christianity.

<sup>870</sup> See also Sodini 2002: 145.

## GEOMORPHOLOGICAL AND ARCHAEOLOGICAL INDICATORS OF THE LATE HOLOCENE SEA LEVEL CHANGES AT SC AND SE CRETE

A fundamental parameter of the evolution of every coastal and/or maritime landscape is the sum of variations regarding the relation between the sea and the land. Those variations are defined by: i. the eustatic change of the Sea Level, (namely a change with a uniform and global effect) which in the case of our geological epoch is rising, ii. the tectonic activity and the subsequent vertical movements of the earth, iii. the isostatic change of the Sea Level, (namely a change with a local effect) as a 'balancing' consequence after a tectonic uplift or subsidence, iv. the human impact on the coastal environment (i.e. touristic development, extensive greenhouse cultivation).

The island of Crete, located in the central Mediterranean basin, along the transition zone between the African and Eurasian plates and in the fore-arc of the Hellenic Subduction Zone, is characterized by a high seismicity, which is triggered by the crustal shortening and subduction of the African oceanic lithosphere beneath the Aegean microplate.<sup>871</sup> The abovementioned seismicity combined with the limited human impact on the landscape of the S coast of the island make it an ideal field for the study of the Sea Level variations during the past millennia.

The tectonic behavior of Crete during Holocene combines both uplift (western half) and subsidence (eastern half).<sup>872</sup> However, although the coast of central and eastern Crete offers numerous geomorphological and archaeological relative Sea Level indicators, their interpretations often lead to contradictory or doubtful conclusions regarding the evolution of the past Sea Level changes. However it appears that there is a general agreement on a model that considers a crustal tilting which uplifted in the SE and subsided in the NE<sup>873</sup>, although the precise size of those vertical movements, the uniformity of them as well as the rate of their contribution to the overall SL change (in relation to the eustatic rise of the SL) constitute matters that are still under discussion<sup>874</sup>. That discussion will of course continue and as long

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<sup>871</sup> Mourtzas et al. in press.

<sup>872</sup> Clearly this is a simplified description of the basic tectonic tendencies; there are many local 'peculiarities'.

<sup>873</sup> Flemming 1978.

<sup>874</sup> Flemming and Pirazzoli 1981; Mourtzas 2012: 2406.

as the relative coastal research for the discovery and documentation of more geomorphological and archaeological SL indicators (the so-called 'markers') proceeds, the model will be further improved. In fact in the very recent study of Mourtzas et al. regarding the relative SLC in Crete<sup>875</sup>, in which not only all of the previously acquired data is organized but also new one is added, the authors distinguish five distinct SL stands on which they are based in order to propose a new relative SLC curve.

For our survey the possibility to reconstruct approximately some of the Late Holocenic paleoshorelines of SC and SE Crete, is fundamental to the comprehension of the evolution of this area's maritime and coastal landscape. In the chapter where the examination of the study areas was carried out we provided with new data –where possible- regarding the geomorphological and archaeological SL indicators, along with further considerations of geoarchaeological interest and in a critical spirit regarding older assumptions. In this chapter we will attempt to put all these observations together and embed them in the data provided in Mourtzas et al., which is the most recent study on this subject. The purpose is to contribute to the existing field data and to an improved comprehension of this area's geological as well as archaeological past.

The aforementioned geomorphological and archaeological SL indicators consist in tidal notches, beachrocks and submerged, quasi-submerged or uplifted architectural ancient remains, respectively. The tidal notches are formed on exposed to the wave action limestone or aeolianite coastal cliffs, in the intertidal zone during periods of eustatic and tectonic stability, as a consequence of physicochemical and biological erosional processes.<sup>876</sup> The beachrock is also formed in the intertidal zone and it is a friable to well-cemented sedimentary rock (depending on the age of formation) that consists of a variable mixture of gravel-, sand-, and silt-sized sediment (depending on the location) that is cemented with carbonate minerals and has been formed along a shoreline.<sup>877</sup> Finally the value of the archaeological SL indicators lies in the fact that the coast-located ancient architectural remains bear testimony to the SL at the time of their construction, through the study and measurement of their direct or indirect relation to the sea surface. That can be achieved through the correct interpretation of the

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<sup>875</sup> Mourtzas et al. 2015.

<sup>876</sup> Lambeck et al. 2010; Mourtzas et al. 2015.

<sup>877</sup> Neuendorf et al. 2005: 779.

structure as well as the evaluation of its functional features and the accuracy that they can offer to the reconstruction of a former SL.<sup>878</sup>

Followingly, as mentioned also before, the field data acquired during this research regarding the geomorphological and archaeological SL indicators, will be embedded to the one already summed, documented and further updated and revised as presented in Mourtzas et al..<sup>879</sup>

It must be pointed out that in the case of our area of research (SC-SE Crete), after the review of some of the relative bibliography, we decided not to consider the rise of the eustatic SL (SLR) as a parameter to the relative SL change (SLC). The SLR prediction model provided by Lambeck 20 years ago that suggested an almost +2 m SLR during the past 6000 years<sup>880</sup>, has been criticized as unsuitable for tectonically active areas, such as SC-SE Crete. Until recently it was generally agreed that the end of the Holocene eustatic SLR had been completed with the melting of the former North Hemisphere ice sheet, towards 6000 radiocarbon years BP. However some scholars claimed a later time for the end of the Holocene eustatic SLR (SLR equal to ca. 3m since 6000 BP)<sup>881</sup>, a theory that has not been accompanied by the respective evidence regarding the additional melting.<sup>882</sup> According to Pirazzoli “the ability of model predictions should not be overestimated because they do not represent the reality as reliable and accurate field data do, but only first-order approximations of this reality based on simplified assumptions.” Moreover Mourtzas stresses that in intensively active tectonic areas the rapid rates of glacio-isostatic models are unrealistic.<sup>883</sup>

The research of Mourtzas et al. revealed five distinct sea level stands: SLS5<sup>884</sup> at  $6.55 \pm 0.55$  m, (dated between  $4200 \pm 90$  B P and  $3930 \pm 90$  BP) SLS4 at  $3.95 \pm 0.35$  m, (dated at the Protopalatial period 1900 to 1700 or 1600 BC) SLS3 at  $2.70 \pm 0.15$  m, (dated at the Neopalatial period 1600 to 1450 BC) SLS2 at  $1.25 \pm 0.05$  m (dated between 1450 BC and the 4<sup>th</sup> century BC) and SLS1 at  $0.55 \pm 0.05$  m (over the last 400 years).<sup>885</sup>

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<sup>878</sup> See also Auriemma and Solinas 2009: 145.

<sup>879</sup> I fortunately read in time the ‘in press’ version of the article and attempted to ‘embed’ it in the present chapter, thanks to Nikos Mourtzas who kindly sent it to me. Consequently I had the privilege to rely on the, currently, most refined and updated publication on the subject, in order to deduce my personal conclusions.

<sup>880</sup> Lambeck 1995: 1037.

<sup>881</sup> Nakada and Lambeck 1988.

<sup>882</sup> Pirazzoli 2005: 1996-7.

<sup>883</sup> Mourtzas 2012: 2406.

<sup>884</sup> The nomination SLS1-SLS5 is of the author’s.

<sup>885</sup> Mourtzas et al. 2015.



In Fig. 225 there are presented all the available geomorphological and archaeological indicators of the former Sea Levels. The sources of the data are the study of Mourtzas et al.<sup>886</sup> (black color) and the present research (personal observations in red and information derived from bibliographical research or pers. comm. in blue). Additionally to Fig. 225 there is the Fig. 226 in which the locations that provide us with the SL indicators are marked on the map of the eastern half of the island, along with the respective photographic documentation, where that is available. For the better comprehension of the Fig. 225 we should also specify that according to the classification of Mourtzas et al. 2015 the SLS1 corresponds to Tidal Notch I, the SLS2 to Beachrock I and Tidal Notch II, the SLS3 to Beachrock II and Tidal Notch III, the SLS4 to Beachrock III and Tidal Notch II and the SLS5 to the Beachrock IV (see also Fig. 227). In our opinion to the latter SL stand (SLS1), which is dated to the last 400 years, correspond also the beachrock formations we observed from the shoreline to ca. -0.40m at several locations during our research (e.g. Myrtos, Inatos, Atherinolakos, Arvi ecc<sup>887</sup>). So, according to the most recent relative SLC curve that concerns our area of research, (Fig.228)<sup>888</sup> we notice that during the Prepalatial period (2300 – 1900 BC), the SL was ca. 6 m lower and until the end of Neopalatial (1450 BC) had risen 3 m, while during the Classical-Hellenistic period to the Roman conquest (69 BC) the SL was 2 m lower as an average. During the Roman period (from 69 BC to AD 365) the SL presented an average of -1.5 m in relation to the current one.

Despite all this significant and solid data, a reconstruction of the paleocoastlines of SC and SE Crete is still risky; the number of the SL indicators is not yet sufficient and, for the time being, the necessary detailed bathymetric maps for this area are not available. Thus our contribution to the abovementioned data consists in the addition of more SL indicators.

- Regarding the bay of Lassaia, during the bibliographical research we came across information about a second breakwater, which is submerged at -2 m and is located on the W side of Traphos islet.<sup>889</sup> Unfortunately, until this moment, we did not have the chance to verify it and subsequently to obtain more detailed measurements of the construction.
- At the bay of Lebena, (modern Lendas) an area for which there was no documented SL-related data, we can now attest at least two subsidence episodes of tectonic origin that can be

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<sup>886</sup> Idem.

<sup>887</sup> See the relative chapter.

<sup>888</sup> Mourtzas et al. 2015, fig.12.

<sup>889</sup> Chatzi-Vallianou 1978: 382.

ascribed to the SLS1 and SLS2. SLS1 is represented by a tidal notch at ca. -0.40m and SLS2 by beachrock formations at ca. -1.5m and, most importantly, by foundations of architectural structures, at the same depth. The dating of these structures will provide us with accurate dating regarding also the related beachrock depth. Although in the limits of this survey it was not possible to do such a research in the near future it will hopefully take place.

- According to data<sup>890</sup> from the bibliographical research, at Ai Ghiannis-Kapetaniana there is a quasi-submerged breakwater of uncertain date<sup>891</sup> as well as a submerged beachrock platform at -1 m<sup>892</sup> that could be ascribed at the SLS2.

- At Moni Koudouma bay, another area with no documented SL-related data, there was attested a beachrock formation at ca. -3 m that can be ascribed either at SL4 or SL3.<sup>893</sup>

- At the bay of Arvi (E limit of the modern settlement), where there had already been documented an SL indicator of the SLS3, there was also attested a beachrock platform with embedded Hellenistic and Roman pottery (2<sup>nd</sup> century BC to AD 1<sup>st</sup> century) submerged at ca. -1.5 m that can be ascribed at the SLS2.

- According to data from the bibliographical research, at the bay of Myrtos there had been documented a submerged beachrock formation at -5 to -8 m x 70 m<sup>894</sup> that can be ascribed at SLS1. During the present research there was also attested the existence of another beachrock formation at the depth of ca. -2 m that can be ascribed at the SLS4. Most importantly, though, we obtained crosschecked information<sup>895</sup> regarding the existence of foundations of architectural constructions, submerged at over -10 m, a depth much bigger than expected. Unfortunately the motion of the sandy sediments of the sea bottom<sup>896</sup> prevented us from acquiring a personal view on the matter. However the documentation and dating of these structures is, I may say, mandatory for the progress of the future study on the subject of the paleoshoreline evolution of SC and SE Crete.

- At the NW part of Chryssi island (Spilios bay), an area with no documented SL-related data, there was attested a beachrock platform submerged at ca. -1 m, which can be ascribed at the

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<sup>890</sup> Hadjidaki 2004.

<sup>891</sup> According to the author's opinion. According to Hadjidaki instead it is of probable Minoan date.

<sup>892</sup> Hadjidaki 2004: 53.

<sup>893</sup> In order to clarify that it needs a more accurate measurement.

<sup>894</sup> Fytrolakis and Mourtzas 1988: 47.

<sup>895</sup> Personal communication with E. Hadjidaki. Further confirmed by two local residents, E. Christaki and N. Lambrinos.

<sup>896</sup> Something that has been confirmed to us by several local residents as a regular behavior of the sea bottom of this area.

SLS2. Additionally, at a distance of a few meters from the aforementioned beachrock there is a quasi-submerged construction that has been interpreted as an “old mole”<sup>897</sup>, while it is a part of a -probably R- aqueduct (specifically of the waterchannel). The visible length of it is 46 m and it is submerged at a maximum depth of ca. -1 m that can be also ascribed at the SLS2 and associated to the aforementioned beachrock. At the NW bay of Chryssi, ‘Mouri’, there has been documented a H or R fishtank<sup>898</sup>, which is slightly submerged at ca. -0.20m.

- Concerning the quasi-submerged saltpans complex at Koutsounari, the author has already suggested<sup>899</sup> that the bigger of the tanks (2 m deep) has functioned as a ‘boiler’, a construction that served for pre-boiling the sea water in order for the latter to be firstly in large part evaporated and only then transferred in the pans.<sup>900</sup> However, the fact that the S side of the tank is destroyed from erosion and the rest of it badly preserved, prevent us from acquiring more information regarding its relation to the SL. According to the use of these tanks the water had to ‘boil’ for ca. three weeks. That means that it should not get mixed with fresh water. Consequently the boiler tank at Koutsounari could have had either an opening towards the sea, which was closed with a barrier when the water should ‘boil’, or its upper part was constructed much above the level of high tide of that period and when it should be filled it did so through the use of buckets. However in both cases it is not possible to deduce accurate information concerning the functional elevation of the structure. That information, however, coincides with the -1.20 m that Mourtzas supposed (SL when the tanks were functional) due to the submerged beachrock.<sup>901</sup>

- Regarding the bay of Ferma there was attested a tidal notch submerged at ca. -0.40 m and carved on one of the water-openings of the fishtank, something that indicates an equal submersion of the structure. That must be the only variation to its relation with the SL that can be attested, although it is hard to say whether it has a tectonic origin or it is due to the eustatic SLR. The submerged marine terrace at -1 to -1.40 m<sup>902</sup> (that could be ascribed to the SLS2), as well as the submerged beachrock at -3.40 to 4.30m x 80m, (SLS4) we assume that are not associated with the fishtank since they predate it.

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<sup>897</sup> Chalikias 2013: 61.

<sup>898</sup> Apostolakou et al. 2008: 148 also evaluated the probability that the tank was of EM-MM age.

<sup>899</sup> See study area “Koutsounari”.

<sup>900</sup> See also Saitas and Zarkia 2002: 154-5.

<sup>901</sup> Mourtzas 1988: 1561.

<sup>902</sup> Mourtzas 2012: 2400.

- Finally for the island of Lefki there has been documented a tectonic uplift of +0.90 m at 2200 BP<sup>903</sup>, which represents “the western uplifted part of a large tectonic ridge opposite the SE coast of Crete”<sup>904</sup>. However that is an assumption that has been defined only by geomorphological indicators, while there are available archaeological ones that suggest a much different reconstruction of the past SL variations at the area. At the sea area between the NW bay of the island and Marmaras islet there have been documented the remains of columns, column bases, pottery shreds and building foundations submerged at -2 to -3m.<sup>905</sup> Thus the aforementioned uplift must correspond to an even more ancient SL (maybe even not an Holocene one). The archaeological SL indicators suggest an SLS3 date (Neopalatial period 1600 to 1450 BC). Although the closest ancient remains are the ones of the H and R settlement on the NW bay, we cannot exclude a Neopalatial date, given also the attested occupation during that period on the island. However, before jumping into conclusions, there should be obtained accurate measures in order to understand the exact expansion of those remains.

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<sup>903</sup> Montaggioni et al. 1981.

<sup>904</sup> Mourtzas et al. 2015.

<sup>905</sup> Leonard 1972: 362, Dermitzakis 1973: 57-8, Papadakis 1983: 64. Further confirmed by Elpida Chatzidaki, [personal communication].

## ABBREVIATIONS

A: Archaic

ABSA: Annual of the British School of Athens

ADelt Chron: Αρχαιολογικό Δελτίο Χρονικά

AEK: Αρχαιολογικό Έργο Κρήτης

AJA: American Journal of Archaeology

ASA: Atti della Scuola ad Atene

Bull.Geol.Soc: Bulletin of the Geological Society Greece

ca.: circa

Geophys. J. Int.: Geophysical Journal International

E: East

Ergon: Έργον της Αρχαιολογικής Εταιρείας

EM: Early Minoan

FN: Final Neolithic

G: Geometric

H: Hellenistic

Hist.Archeol.: Historical Archaeology

HMGS: Hellenic Military Geographical Service

IC: Inscriptiones Creticae

IJNA: International Journal of Nautical Archaeology

km: kilometer(s)

KretChron: Κρητικά Χρονικά

LM: Late Minoan

LR: Late Roman

m: meter(s)

MM: Middle Minoan

N: North

O: Orientalising

Prakt: Πρακτικά της Αρχαιολογικής Εταιρείας

R: Roman

S: South

SAIA: Scuola Archeologica Italiana ad Atene

SC: South central

SEG: Supplementum Epigraphicum Graecum

SL: Sea Level

SLC: Sea Level Change

Quat. Sci. Rev.: Quaternary Science Reviews

W: West

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\* as republished in Zacharakis 2004.

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# FIGURES APPENDIX

[PHOTOS\*, TABLES, MAPS, GRAPHS]

\*All photos of the author, unless otherwise indicated. The photos have been taken with the permission of the local Ephorates of Antiquities at Herakleion and Lassithi (former ΚΓ' and ΚΔ' Ε.Π.Κ.Α. respectively) as well as of the Ephorate of Underwater Antiquities.





Fig.1 Hellenistic cist tombs



Fig.3 Building remains on the acropolis.



Fig.2 Roman Imperial built tomb (mausoleum).



Fig.4 Building remains on the acropolis.



Fig. 5 Building remains on the western part of the beach.



Fig. 6 Building remains in the dry stream.



Fig. 7a. The breakwater from NE



7b. The breakwater from N.



Fig. 8 Stone huts' remains on Traphos islet.



Fig. 9 E and W side of the breakwater.



Fig. 10 Submerged stone blocks at the E side of the breakwater (from E).



Fig. 11 LR amphora shreds.



Fig. 12 Spatheion handle.



Fig. 13 Submerged beachrock platform, W side of the breakwater.



Fig. 14 Part of the aqueduct.



Fig. 15 Traces of the aqueduct's plastered water-channel.



Fig. 16 Lyctos Roman aqueduct.  
(source: <http://www.romanaqueducts.info/aquasite/lyttos/foto21.html>.  
Date of access: 29/10/2015)



Fig. 17 Surface mineral waste on the acropolis of Lassaia.



Fig. 18 Surface mineral waste on the acropolis of Lassaia.



Fig. 19 EM tholos tomb at Yerokambos.



Fig. 20 The cella of the Asclepeion.



Fig. 21 Residential building remains.



Fig. 22 Building associated with Asclepeion (Nymphaeum?).



Fig. 23 Coastal structure (W part of the beach).



Fig. 24 'Bridge' (according to Taramelli) at the E part of the bay.





Fig. 25 Part of a coastal structure of uncertain function (E part of the beach).



Fig. 26 Foundations of the Early Christian basilica and 14<sup>th</sup> century chapel.



Fig. 27 Western submerged column.



Fig. 28 Eastern submerged column.



Fig. 29 Submerged building remains.



Fig. 30 Submerged building remains.



Fig. 31 Marble column on cape Psamidomouri.



Fig. 32 Wall remains on cape Psamidomouri.



Fig. 33 Wall remains on cape Psamidomouri.



Fig. 34 Retaining walls on cape Psamidouri.



Fig. 35 Stone quarry on the E side of cape Psamidouri.



Fig. 36 Part of a coastal structure of uncertain function (E part of the beach).



Fig. 37 Hydraulic mortar that maybe belongs to Taramelli's circular cistern.



Fig. 38 Remains of coastal structures embedded into modern ones.



Fig. 39 Votive anchor at the sanctuary of Asclepios.



Fig. 40 EM hilltop settlement at Adami Korfali. (Photo source: <http://www.cretanbeaches.com/en/sea-tourism/central-crete-beaches-heraklion/tripiti-beach-lentas>. Used here with the kind permission of Alexandros Roniotis).



Fig. 41 Double walls of the houses. (Photo source: <http://www.cretanbeaches.com/en/sea-tourism/central-crete-beaches-heraklion/tripiti-beach-lentas>. Photo courtesy: Alexandros Roniotis).

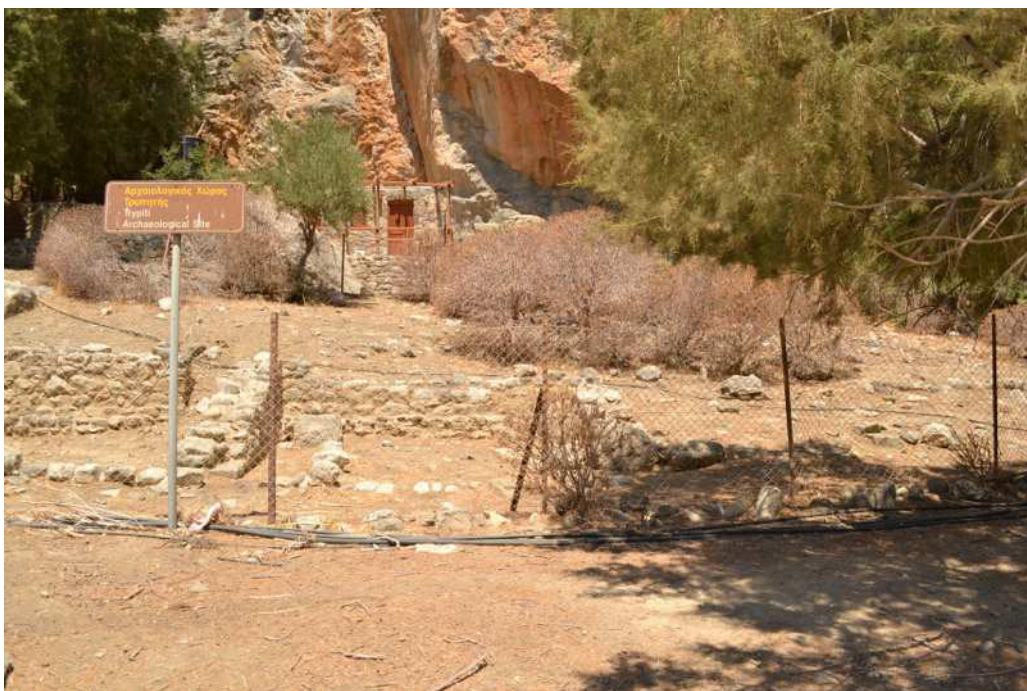


Fig. 42 Hellenistic settlement at the mouth of Tripiti gorge.



Fig. 43 MM settlement at Phylakas promontory. (Photo source: <http://www.cretanbeaches.com/en/sea-tourism/central-crete-beaches-heraklion/tripiti-beach-lentas>. Photo courtesy: Alexandros Roniotis).



Fig. 44 Panoramic view of Tripiti gorge from SE. (Photo source: <http://www.cretanbeaches.com/en/sea-tourism/central-crete-beaches-heraklion/tripiti-beach-lentas>. Photo courtesy: Alexandros Roniotis).



Fig. 45 Tripiti's gorge mouth/entrance from S.



Fig. 46 House 'decorated' with illegally taken antiquities.



Fig. 47 Panoramic view of Ai Ghiannis (from SE).



Fig. 48 Ponta peninsula (from W).





Fig. 49 Breakwater.



Fig. 50 Newly constructed houses at the bay of Ai Ghiannis.

## MONI KOUDOUMA



Fig. 51  
Panoramic view  
of Moni  
Koudouma bay  
(from E).



Fig. 52  
Surrounding  
cliffs (from SW).



Fig. 53 The rock  
shelters of the  
ascetists.



Fig. 54  
Abakospilio cave,  
interior.



Fig. 55  
Abakospilio  
cave, interior.



Fig. 56  
Abaskospilio  
cave, interior.



Fig. 57  
Abakospilio  
cave, view  
towards the  
entrance.  
Modern chapel.



Fig. 58 Submerged  
beachrock  
platform.



Fig. 59 Submerged  
beachrock  
platform.

## MONI KOUDOUMA



Fig. 60 W promontory  
(from SW).



Fig. 61 W  
promontory  
(from W).



Fig. 62 Surface  
pottery from the  
W promontory.



Fig. 63 Surface pottery from the area near the rock shelters.



Fig. 64 Current use of the rock shelters.

## TREIS EKLISIES



Fig. 65 View of the Treis Eklisies bay and the surrounding mountains (from S).

Fig. 66  
Foundations of the  
Early Christian  
basilica and the  
14<sup>th</sup> century  
chapel of  
Evangelismos.



Fig. 67  
Evangelismos  
chapel's masonry.



Fig. 68 Aghios Georgios chapel masonry, embedded marble block.



Fig. 69 Aghios Georgios chapel masonry, embedded tiles and pottery shreds.



Fig. 70 Aghios Georgios chapel masonry, embedded tiles and amphora shreds.





Fig. 71 Aghios Georgios chapel masonry, embedded tiles and stone blocks.



Fig. 72 Aghios Georgios chapel, marble column.



Fig. 73 Aghios Georgios chapel, marble basin.



Fig. 74 Evangelismos chapel, embedded shred of Africana amphora.



Fig. 75 Evangelismos chapel, embedded shred of Cretoise I or II amphora.



Fig. 76 Opening of an oven at the yard of Evangelismos chapel, Hellenistic pointed bottom.



Fig. 77 Panoramic view of Treis Eklisies bay (from NE).



Fig. 78 Cave-sanctuary of Eileithya.



Fig. 79 Early Christian basilica in Mindris gorge.



Fig. 80 Part of the Roman aqueduct in Mindris gorge



Fig. 81 The area at the entrance of Mindris gorge.



Fig. 82 Path between Tsoutsouros and Maridaki.



Fig. 83 The modern settlement of Maridaki.



Fig. 84 The modern settlement of Tsoutsouros.



Fig. 85 Illegal excavations in Mindris gorge.



Fig. 86 Wall remains.



Fig. 87 Beachrock on the shoreline of the eastern part of the bay with embedded pottery.



Fig. 88 Stone quarries at Mindris gorge



Fig. 89 Stone quarries at Mindris gorge

## DERMATOS-RIVER DELTA OF ANAPODARIS



Fig. 90  
Anapodaris river  
mouth (from S).



Fig. 91 Aghios  
Ioanis-Plaka hill.



Fig. 92  
Mitatoulia hill at  
the background.



## DERMATOS-RIVER DELTA OF ANAPODARIS



Fig. 93 Anapodaris valley.



Fig. 94 Aghios Ioannis-Plaka hill, surface pottery shreds.



Fig. 95 Dermatos bay (from SW).



Fig. 96 View of Keratokambos bay and port (from NE).



Fig. 97 Arvi gorge.



Fig. 98 Masonry of Panaghia chapel, embedded stone and marble blocks.



Fig. 99 Masonry of Panaghia chapel, embedded tiles.



Fig. 100 Masonry of Panaghia chapel, embedded fragment of a marble column.



Fig. 101 Roman bath complex (foto source: <http://arvi.gr/about-arvi/2010-07-22-11-31-39.html>. Date of access 20/7/2015).



Fig. 102 Remains of the Early Christian basilica.



Fig. 103 Remains of the Early Christian basilica.



Fig. 104 Remains of the Early Christian basilica.



Fig. 105 Submerged beachrock formation with embedded amphora shreds.



Fig. 106 Submerged beachrock formation with embedded amphora shreds.



Fig. 107 Submerged beachrock formation with embedded African amphora shreds.



Fig. 108 Submerged beachrock formation with embedded Chios amphora shreds.



Fig. 109 Beachrock formation on the shoreline with embedded E sigillata shreds.



Fig. 110 Beachrock formation on the shoreline with embedded E sigillata shreds.



Fig. 111 Masonry of old houses in the modern settlement of Arvi.



Fig. 112 A tree-retaining construction with an embedded amphora neck.



Fig. 113 Masonry of old houses in the modern settlement of Arvi.



Fig. 114 Surface pottery at the area near the mouth of Arvi gorge.





Fig. 115 Circular cistern at Pyrgos settlement.



Fig. 116 Hellenistic shrine at Pyrgos settlement.



Fig. 117 Part of the settlement at Phournou Korifi (from N).



Fig. 118 Panoramic view of Myrtos bay from Phournou Korifi settlement.



Fig. 119 A room at the settlement of Phournou Korifi (from E).



Fig. 120 Houses/rooms at the settlement of Phournou Korifi (from S).



Fig. 121 Roman cistern.



Fig. 122 Hypocaust of the Roman bath complex.

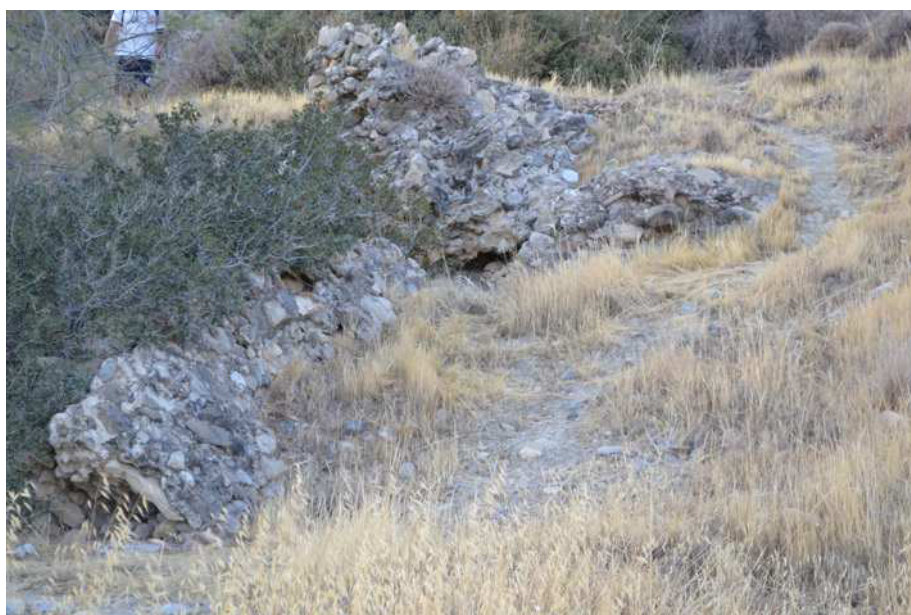


Fig. 123 Building remains at the area of the Roman settlement.



Fig. 124 Building remains at the area of the Roman settlement.

Fig. 125 Base of a marble column with sea corrosion at the W part of the beach of Myrtos. (The photo has been taken in 2004. Photo courtesy of Elpida Hadjidaki)



Fig. 126 Submerged beachrock platform at Myrtos.

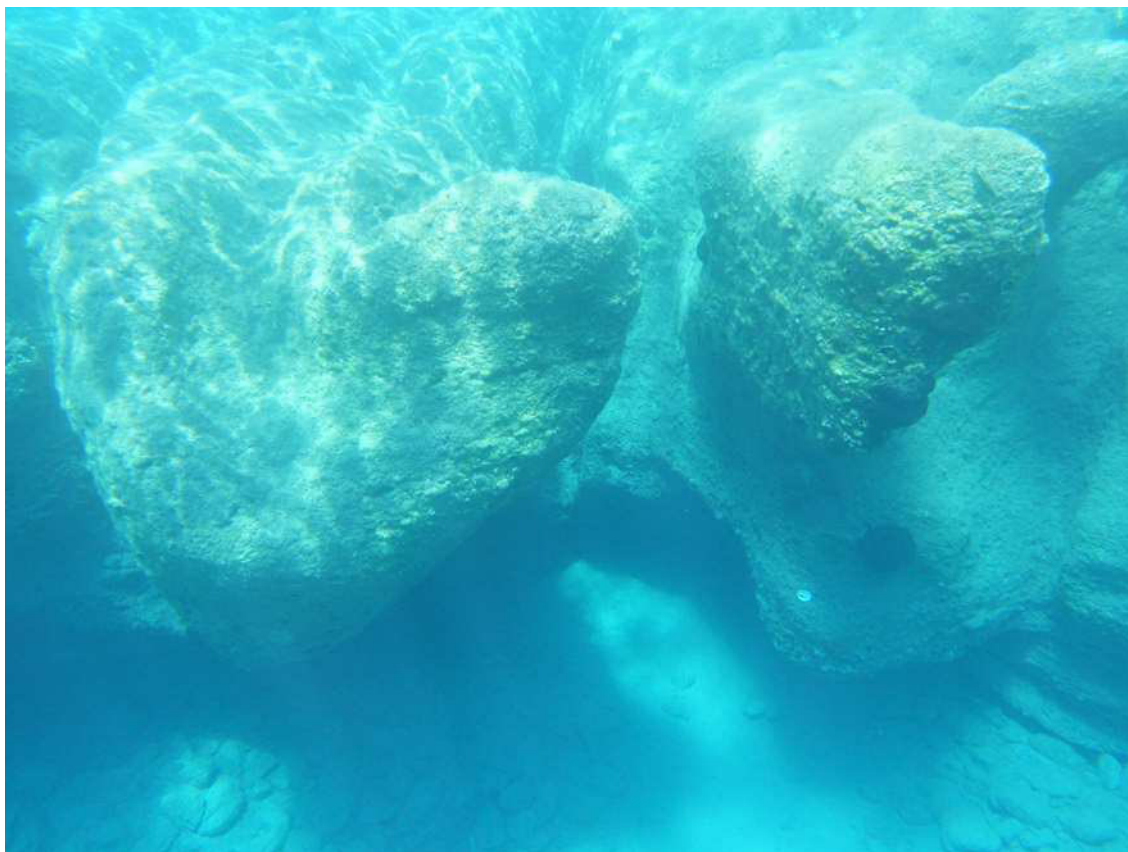


Fig. 127 Submerged beachrock formation at cape Theofilos (Sidonia).



Fig. 128 Shallow (-0.50m) beachrock platform.

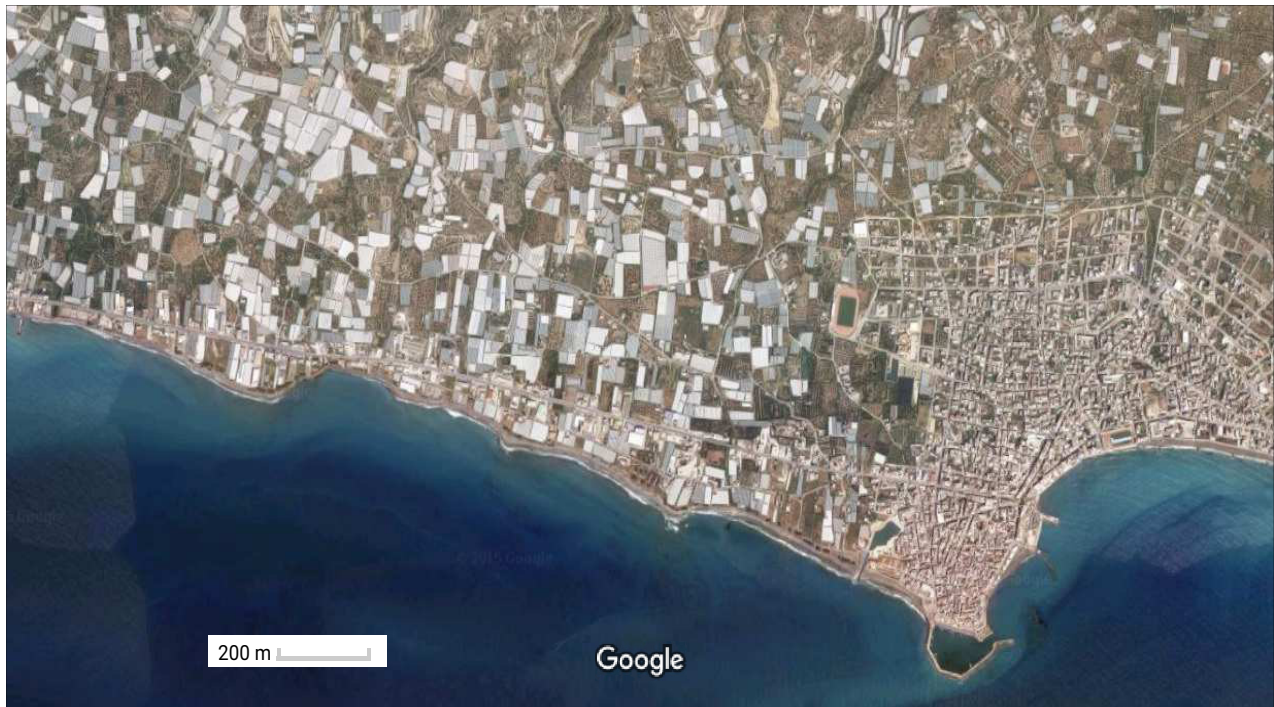


Fig. 129 Current status of the coastal landscape at Ierapetra (greenhouses, modern town). (photo source: Google Maps).

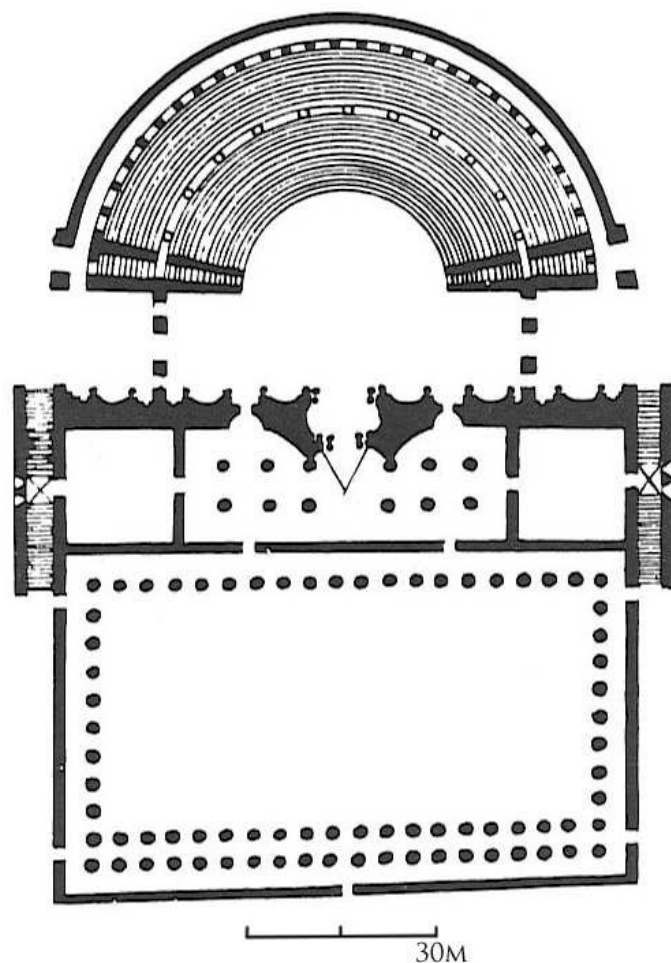


Fig. 130a Onorio Belli's plan of the large theatre of Hierapytna. (Falkener 1854: 11-14).

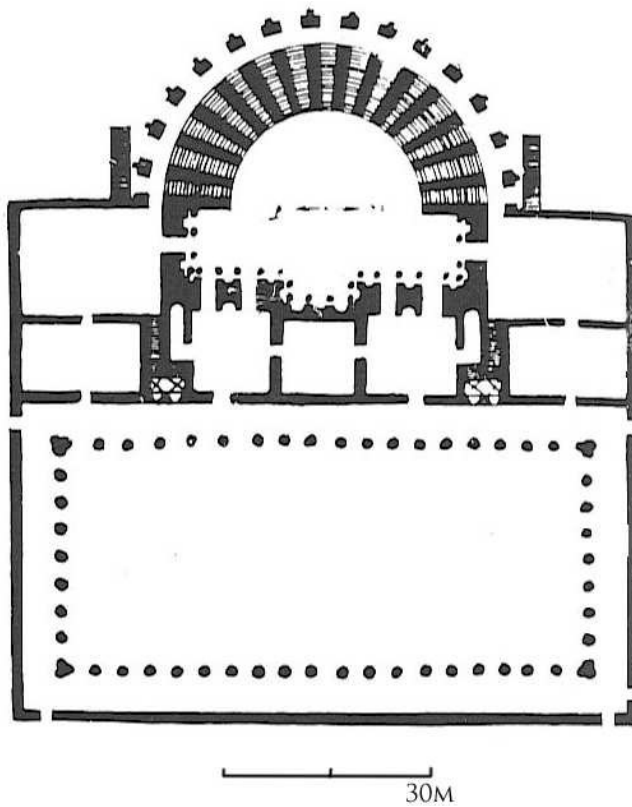


Fig. 130b Onorio Belli's plan of the small theatre of Hierapytna. (Falkener 1854: 11-14).



Fig. 131 Semi-submerged breakwater. (Photo source: Gallimore 2011. Photo courtesy: Scott Galimore).



Fig. 132 Remains of the coastal wall. (Photo source: Gallimore 2011. Photo courtesy: Scott Gallimore).

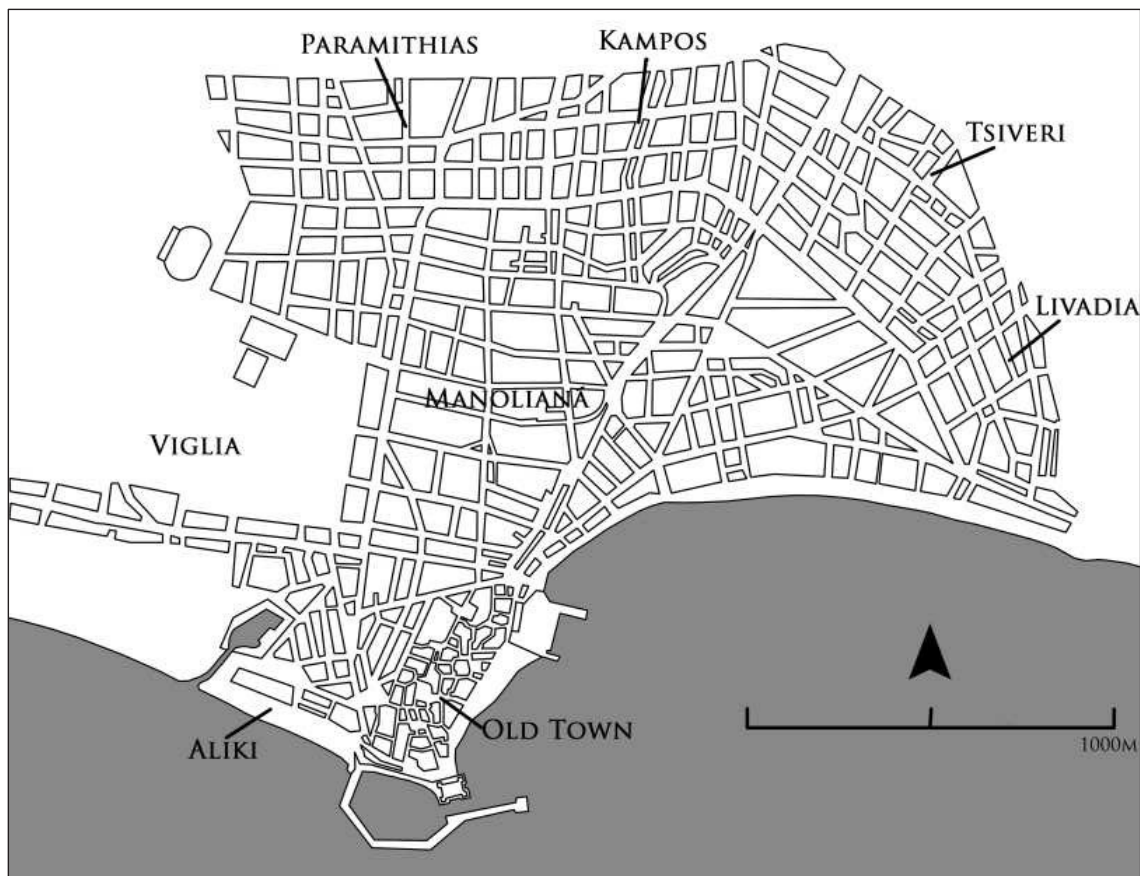


Fig. 133 Topographic map of modern Ierapetra with the names of the districts. (Photo source: Gallimore 2011. Photo courtesy: Scott Galimore).



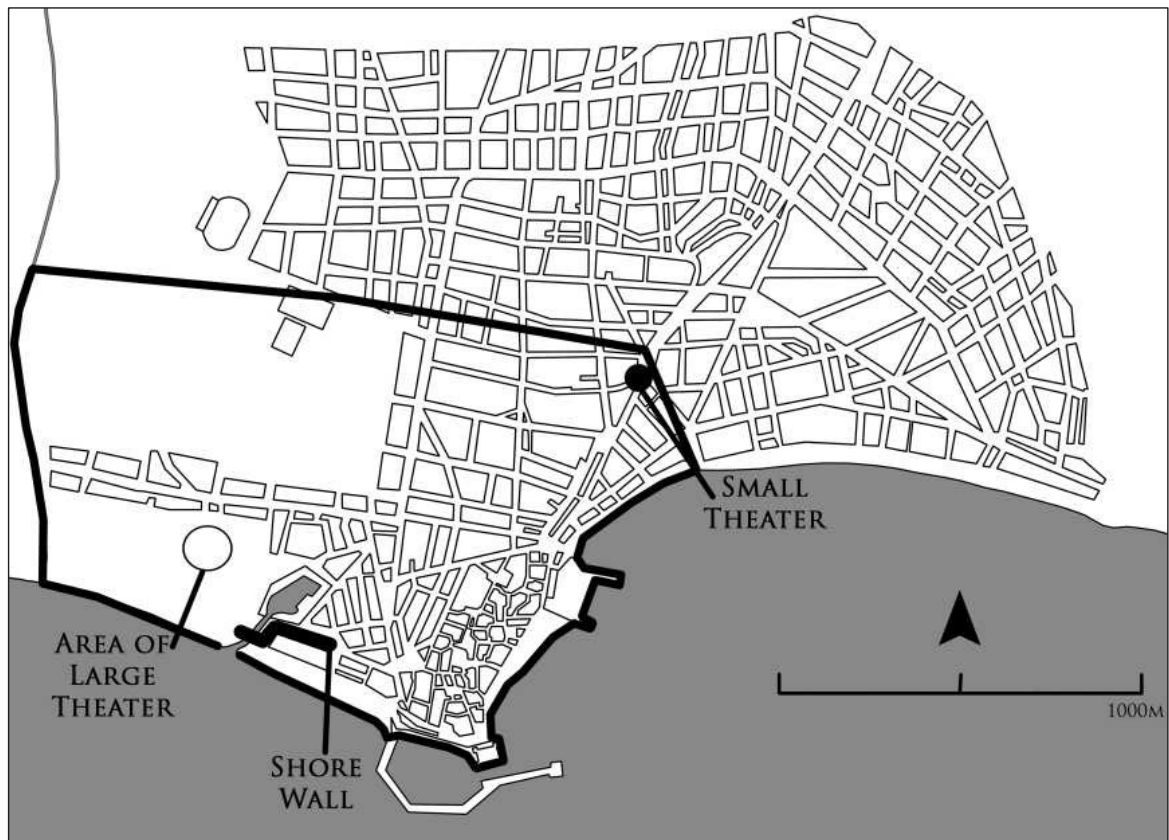


Fig. 134 Topographic map of Hierapytna with the locations of the identified ancient structures. (Photo source: Gallimore 2011. Photo courtesy: Scott Galimore).



Fig. 135 Submerged Roman building complex at Stomio.

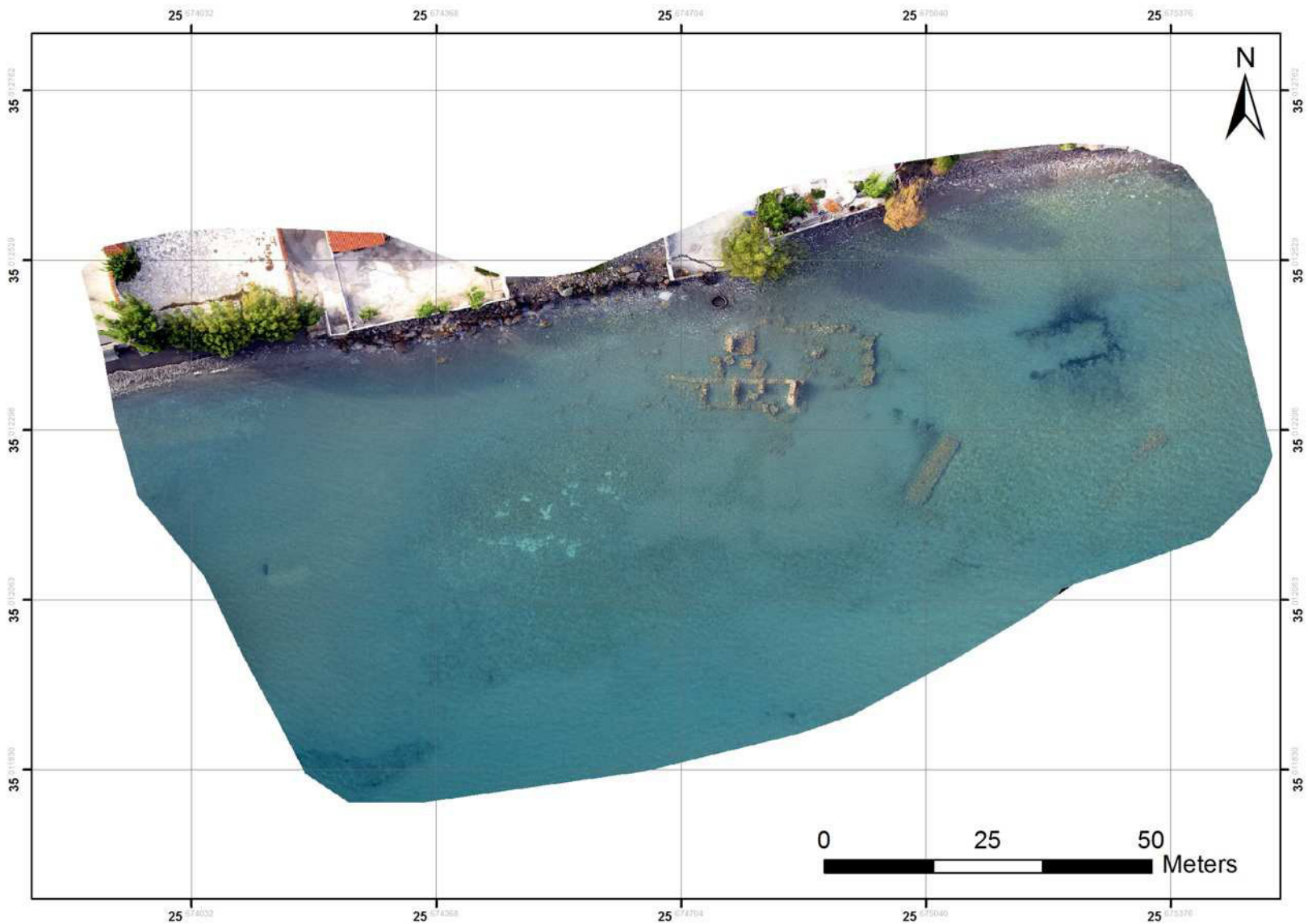


Fig. 136 Aerial photogrammetric photomosaic of the building complex at Stomio. (Photo courtesy: Institute of Mediterranean Studies, Laboratory of Geophysical-Satellite remote sensing and Archaeo-environment).

## CHRYSSI ISLAND



Fig. 137 EM-MM settlement.



Fig. 138 Fishtanks.



Fig. 139 H/R enclosure wall.

## CHRYSSI ISLAND



Fig. 140 H/R well.



Fig. 141 Early Christian basilica's foundations and 14th c. chapel.



Fig. 142 Spilios anchorage.



Fig. 143 Roman built water-channel.



Fig. 144 Bellegrina site and the Cretan coast (from SW).



Fig. 145 Kefala site (from W).

CHRYSSI ISLAND



Fig. 146 Emerged beachrock (?).



Fig. 147 Semi-submerged part of an aqueduct (water-channel) at Spilios.



Fig. 148 Salt marsh and water-channel.



Fig. 149  
Submerged  
beachrock  
platform at  
Spilios.



Fig. 150  
Submerged  
amphora  
shreds at  
Spilios.



Fig. 151  
Submerged  
stone anchor (?)  
at Spilios.



Fig. 152 The conglomerate protrusion at the centre of Koutsounari beach (from NW).



Fig. 153  
The shallow tanks (from E).



Fig. 154 The deep tank (from NE).





Fig. 155 Fishtank.



Fig. 156 Fishtank.





Fig. 158  
Holes for the  
metal grid.



Fig. 159  
Fishtank's  
entrances.



Fig. 160  
Rock-cut  
bench.



Fig. 161  
Fallen rock.



Fig. 162 Stone  
quarry (from  
SW).



Fig. 163  
Stone  
quarry (from  
N).



Fig. 164 A not  
removed  
stone block.



Fig. 165 Probable  
artificial cut.



Fig. 166  
Submerged  
stone block.

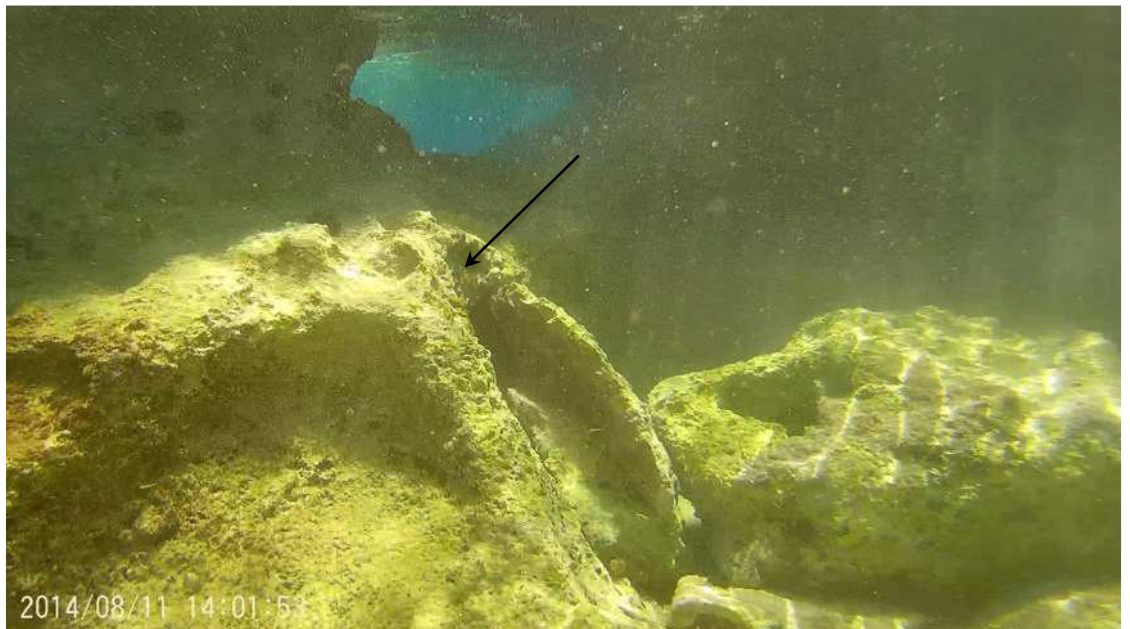


Fig. 167 SE  
separation  
'wall'.



Fig. 168 SW  
separation  
'wall'.



Fig. 169 Submerged tidal notch at the entrance (water-opening) of the fishtank.

## KOUTSOURAS



Fig. 170 LM wall remains at Koutsouras.



Fig. 171 The newly constructed port of Koutsouras (from N).



Fig. 172 The port of Koutsouras (from S).



## MAKRYGIALOS



Fig. 173 LM I Minoan 'villa' at Makrygialos (from NW).

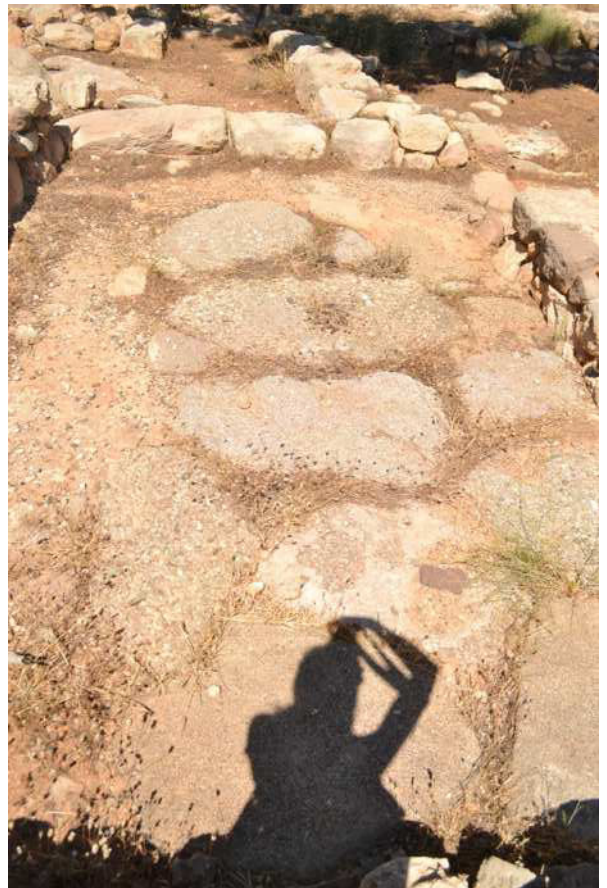


Fig. 174 LM I Minoan 'villa' at Makrygialos, paved road.



Fig. 175 LM I Minoan 'villa' at Makrygialos (from NE).



Fig. 176 Roman villa rustica (from NE).



Fig. 177 Roman villa rustica (from S).



Fig. 178 Hypocaust.



Fig. 179 Open-air *piscina*.

## DIASKARI-LANGADAS



Fig. 180 Diaskari bay  
(from SE).



Fig. 181 Langadas  
bay (from NW).



Fig. 182 Dry well of  
unknown date.

## DIASKARI-LANGADAS



Fig. 183 Location of the LM site of Diaskari (from W).



Fig. 184 Masonry of the look-out post on the hill.



Fig. 185 Current state of the LM site of Diaskari.



Fig. 186 Foundations of an LM circular building (tholos tomb?) (from SW).



Fig. 187 Foundations of an LM circular building (tholos tomb?) (from E).

## GOUDOURAS



Fig. 188 Goudouras bay (from SE).



Fig. 189 Goudouras valley.



Fig. 190 The inaccessible W side of Goudouras cape.



Fig. 191 Lefki from Goudouras cape (from NW).



Fig. 192 The path on the W side of Goudouras cape.



Fig. 193 The path on the W side of Goudouras cape.

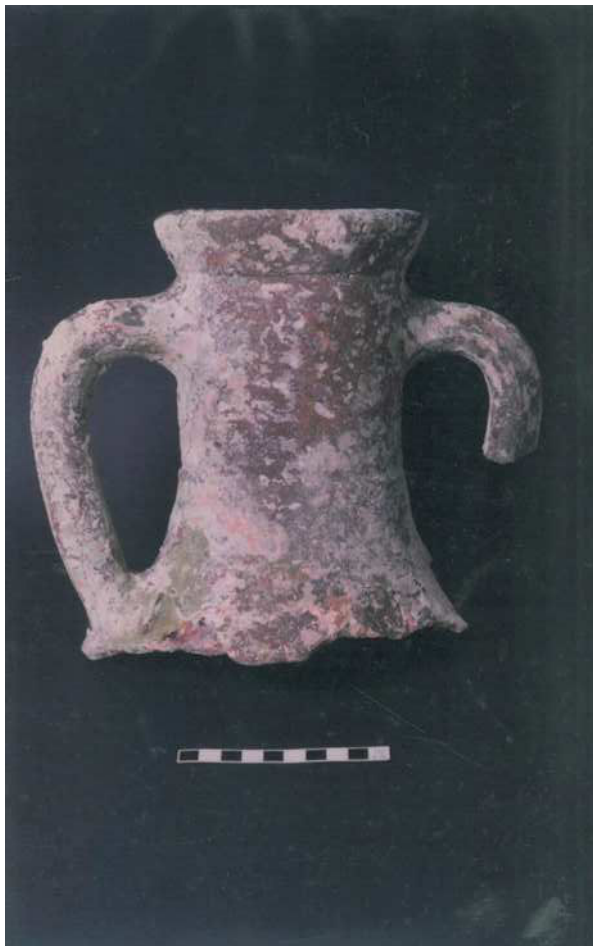


Fig. 194 African amphoras of Roman date. (Photo courtesy: Elpida Hadjidaki)



Fig. 195 African amphoras of Roman date. (Photo courtesy: Elpida Hadjidaki)



Fig. 196 African amphoras of Roman date. (Photo courtesy: Elpida Hadjidaki)



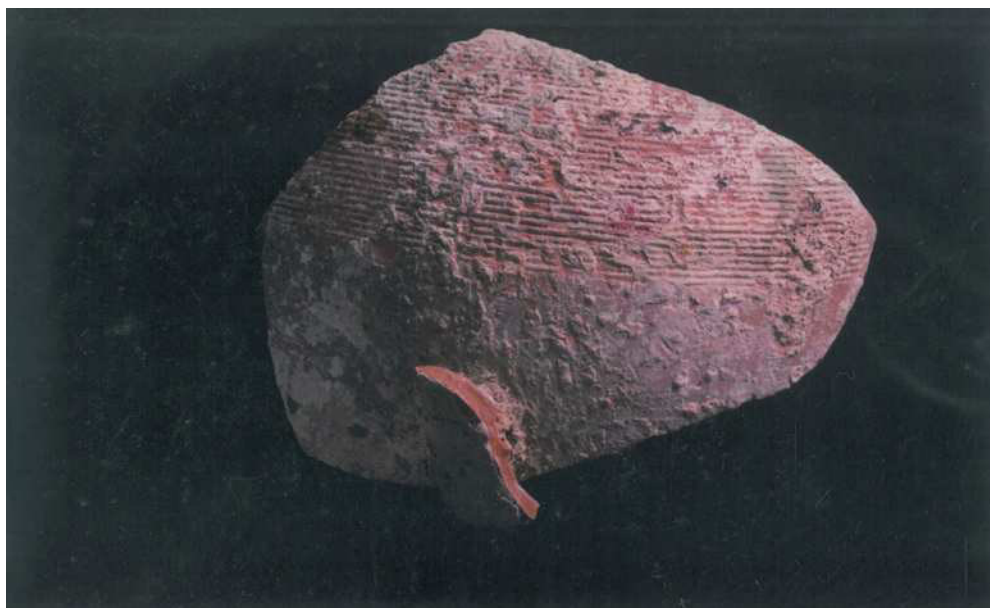


Fig. 197 Wall of a LR5 (?) amphora. (Photo courtesy: Elpida Hadjidaki)



Fig. 198 Neck with handle of an Egyptian Type 3 amphora. (Photo courtesy: Elpida Hadjidaki)



Fig. 199 Marine shells in a beachrock formation. (Photo courtesy: Elpida Hadjidaki)



Fig. 200 Minoan surface pottery. (Photo courtesy: Elpida Hadjidaki)



Fig. 201 Surface murex shells. (Photo courtesy: Elpida Hadjidaki)



Fig. 202 Minoan buildings' remains. (Photo courtesy: Elpida Hadjidaki)



Fig. 203 Atherinolakos bay after the construction of the DEI steam electric station.



Fig. 204 The *koilon* (from NW).



Fig. 205 The *koilon* (from W).



Fig. 206 The *koilon* (from N).



Fig. 207 House 'A'.



Fig. 208 Bath-house.



Fig. 209 Mosaic.

## LEFKI ISLAND



Fig. 210 Marble decoration, House 'B'.



Fig. 211 Submerged building foundations (photo courtesy: Elpida Hadjidaki).



Fig. 212 Submerged building foundations (photo courtesy: Elpida Hadjidaki).



Fig. 213 Submerged building foundations (photo courtesy: Elpida Hadjidaki).



Fig. 214 Vaulted cistern.



Fig. 215 Roman water-channel.



Fig. 216 Roman water-channel.





Fig. 217 The artificial terracing.



Fig. 218 The two fragments of the colossal marble statue.



Fig. 219 The old lighthouse.



Fig. 220 FN bastion. View to Lefki (upper arrow).



Fig. 221 Cave deposit/burial rock-shelter.



Fig. 222 EM tholos tomb cemetery.



Fig. 223 Two-roomed burial building.

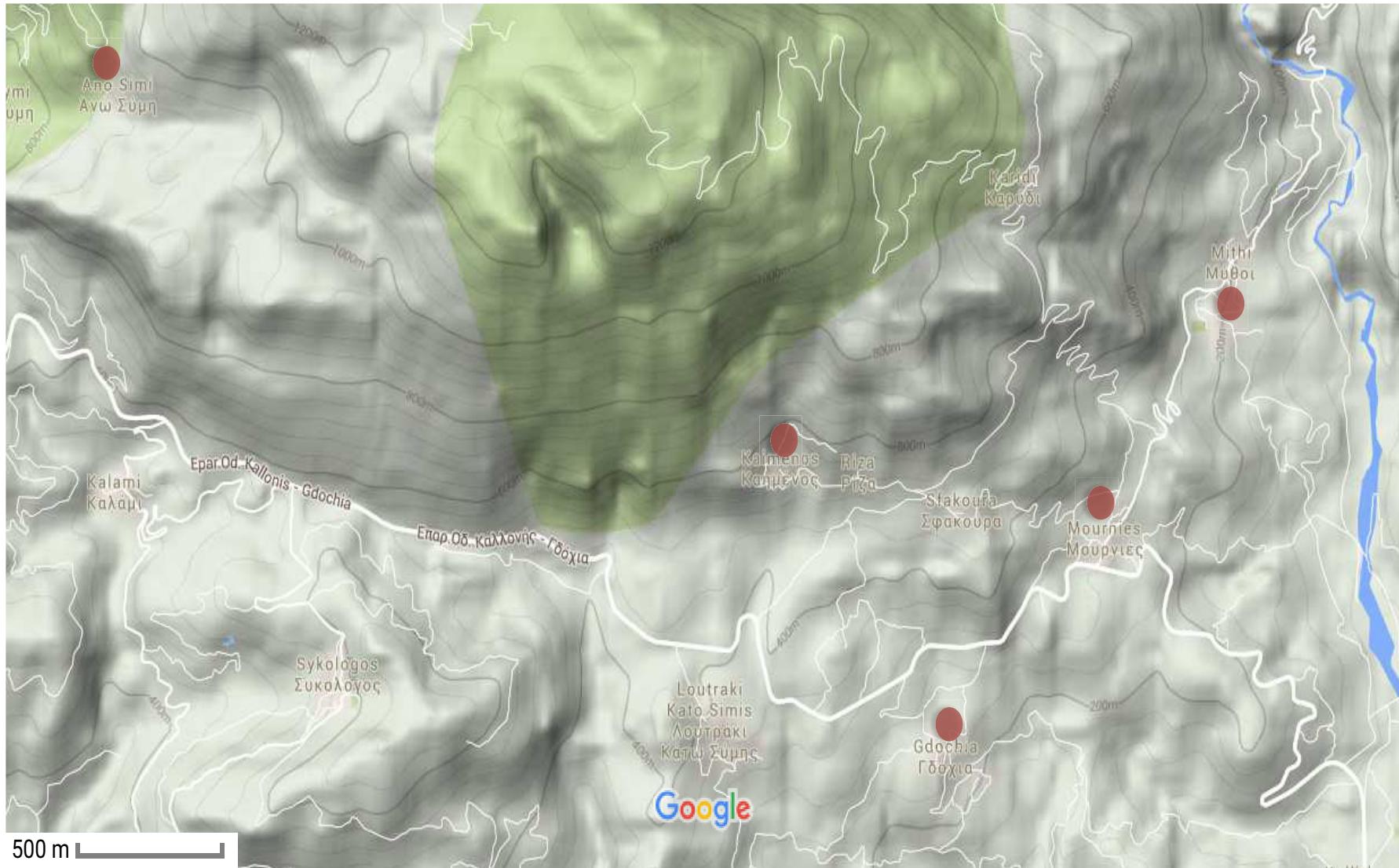


Fig. 224 Settlements' locations at the surroundings of Myrto.

LOCATION	TIDAL NOTCH	BEACHROCK	ARCHAEOLOGICAL INDICATORS
LASSAIA	I -0.80m, II -1.10m, III -2.80m	I -1.40 to -2m x 50m	a. submerged H or R breakwater at max -0.90m, b. submerged breakwater of unknown date at -2m (Chatzi-Vallianou 1978: 382)
LEBENA	I ca. -0.40m	I -1.50 to -2m	submerged (R or H?) building foundations at ca. -1.50m
TRACHILAS	I -0.50m, II -1.20m, IV -3.80m		
AI GHIANNIS-KAPETANIANA		I -1m (Hadjidaki 2004: 53)	
MONI KOUDOUMA		ca. -3m	
INATOS	+0.35m		
ARVI WEST (XEROKAMBOS)		IV -6.10 to 7m x 69m	
ARVI		I ca. -1.50 to 2m, II -2.70m x 68m	
ARVI EAST (FAFLAGOS)		IV -4 to -7.20m x 67m	
SIDONIA		IV -3.90 to -6.25m x 37m	
MYRTOS WEST (VATOS)		II -1.85 to 3.30m x 100m	
MYRTOS		I ca. -2m, IV -5 to -8m x 70m (Fytrolakis and Mourtzas 1988:47)	submerged architectural remains of unknown date at <-10m (information provided by E. Hadjidaki and local residents)
IERAPETRA WEST (STOMIO)		I -1.10 to 3.70m x 28m, III -3.30 to 4.20m x 47m, IV -4.90 to -5.70m x 22m	submerged R bath complex at -1.2m
CHRYSSI		-1m (Spilios bay)	submerged H or R part of an aqueduct at max -1m, quasi-submerged at ca. -0.20m H or R fishtank
IERAPETRA			submerged H or R breakwater at -1.30m
IERAPETRA EAST		I -1.80 to -2.50m x 50m	
IERAPETRA EAST (GIALI)		III -3.80 to -4.25m x 70m	
IERAPETRA EAST (PAPLINOU)		III -2.75 to -3.90m x 65m	
KOUTSOUNARI	II -1.20m		quasi-submerged H or R saltpans and probable salt-boiler at -1.20m
FERMA	I ca. -0.40m (carved on the archaeological indicator), II -1.25m	I -0.50m, (II submerged eroded surface at -1.20, Mourtzas 1988: 1563, II submerged terrace from -1 to -1.40m Mourtzas 2012: 2400) III -3.40 to 4.30m x 80m	quasi-submerged H or R fishtank at ca. -0.50m
MAKRYGIALOS		II -3.50 to -5m x 60m	
GOUDOURAS		I -1.30 to -2.10m x 16m	
LEFKI			submerged H or R architectural remains at -2 to -3m (Dermitzakis 1973: 57-8; E.Hadjidaki pers.comm.)
ATHERINOLAKOS	I -0.50m, II -1.10m, III -2.60m		

Fig. 225 Table with the currently available geomorphological and archaeological SLC indicators for SC and SE Cretan coast. (In black data from Mourtzas et al. 2015, in blue data from personal communications or bibliographical research, in red data from personal observations).

