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# Landscape, natural environment and settlement of prehistoric and ancient Lefkas

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**College of Humanities and Social Science**

**Graduate School of History, Classics and Archaeology**

**Masters Programme Dissertation**

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**Alternative:** Environmental and cultural prehistory of Lefkas

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## **1. Subject**

In this dissertation the natural environment and landscape of Lefkas will be studied in relation to the development of settlements from Palaeolithic period until the Roman conquest. That is to say that the human activity in the environment of Lefkas island will be examined and traces of habitation in the area will be highlighted.

Nature as an historical protagonist means that abiotic and biotic elements may have played a specific role in the way the island was inhabited.

The environment in which a human lived, (for example near water sources, or near the sea, or forests) provided him with the required raw material according to his needs. So in order to explain the existence of settlements in certain sites, it is important to have knowledge of the surroundings of the settlement area.

Having in mind that the reconstruction of a past landscape requires special techniques and methods (which is a separate object of study), some information could be derived from archaeological findings from excavations, published studies concerning the history of vegetation of neighboring regions ( like Voulkaria lake, Epirus or northwestern Greece, etc.)

On the other hand natural phenomena such as earthquakes and tsunamis led to coastal changes are something that cannot be ignored in relation to the way the island was inhabited.

Moreover the geology of the island and its natural characteristic could indicate for example whether a specific kind of soil, hill positions mountainous areas, lowlands or water sources were preferred in relation to habitation.

### **Main questions.**

Why is it so interesting to enrich our Knowledge about the prehistoric environment in relation to settlement? What kind of information do we get from such a study?

In order to study the human culture and civilization, this could not be done without the knowledge of the natural environment within which humans lived and acted. These questions seem to be crucial concerning the choice of this subject.

As human and natural environment are interrelated senses, inextricably linked together, human is initially influenced by the surrounding landscape, the animal and plant species, geological and climatic conditions. Therein within natural framework adapts his life, derives its nourishment and made his home. Every trace of human in the environment is a point of reading and clarification.

I was wondering whether ancient settlements debris, or excavated material “hide” information about the environmental past of the island. All the above will help, in our effort to decode why humans in the past chose this particular place.

1) Why there?

2) Which part of the island was the most significant ( as habitation center) for each period and why? For example the eastern part, the center of the island, the coastal areas ?

3) Which environmental changes can be documented in the area through history and how have they influenced the living conditions?

4) How natural environment affected the habitation of the island? Especially how environmental factors like climate, sea level change, natural disasters like earthquakes or tsunamis, had any relation with settlement of that period. For example the period from 1645-1500 B.C (was the mega event of Thira eruption) spewed volcano ash for kilometers, temperature dropped and led to several years of cold and ruining harvests

5) How did the contacts of indigenous population with other political leagues influence the development of polis, of sanctuaries, of the port and the Lefkas canal?

6) What impact did the development of political leagues during the Post-Classical and Early Hellenistic period have on regional settlement patterns? To what extent do isolated farmsteads occur in Lefkas at this time compared to the other Ionian Islands and Aegean?

7) Did the shift from hunting/gathering groups to agricultural societies follow a different path here than in the rest of Ionian islands?

## **Method**

A method for study all possible factors could be:

1. Intrasettlement archaeology-Boundaries of domestic activity,
2. Intersettlement archaeology- the location of the sites with respect to the qualities of their surrounding physical landscapes with aim to test whether past

peoples selected habitation places because of the proximity of certain types of cultivable or grazing land and mineral or other resources, with references to catchment analysis and to the overall of landscape features.

## 2. Introduction

Human societies in the past were closely tied to variations in the resource potential of the landscape, so that the location and size of ancient settlements closely mirrored the local ecology<sup>1</sup>. Ancient communities with the same way as animals behavior, behaved territorially, by choosing settlement locations which controlled discrete blocks of landscape containing adequate resources to make the new settlement viable. It was suggested that territories in the case of hunter-gatherer sites could commonly be delimited by a circle of radius 10 km around the camp and the same was postulated for settlement of an essentially pastoral economy. For settlements located by historians or archaeologists which relied primarily on agriculture, a smaller territorial radius was proposed of a 5 Km circle. What we call 'catchment analysis' reflected the concept of foodstuffs being channeled into the carefully-sited settlement, in the same way as a stream draws in water from its basin.<sup>2</sup> It is a technique for investigating the relationship between the inhabitant of an ancient settlement and its surrounding landscape, offering the possibility of insights into the past economic practices, population dynamics, soil and crop preferences. It is a method of approaching the past human use of landscapes.

Approaching how people lived in the past could include an intensive study of the layout of domestic residential sites, by plotting of systems of settlements across the countryside,<sup>3</sup> with emphasis on their relationship to the natural environment and land use.

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<sup>1</sup> Vita Finzi C and E. Higgs., 1970, Prehistoric economy in the Mount Carmel area of Palestine : site catchment analysis, *Proceedings of the Prehistoric Society*, 36: 1-37

<sup>2</sup> Bintliff John., 1994, Territorial Behavior and the Natural History of the Greek Polis, In: *Stuttgarter Kolloquium zur Historischen Geographie des Altertums*, (Hrsg. E. Olshausen, H. Sonnabend).4, 207 - 249, Plates 19 - 73

<sup>3</sup> Bintliff John. 2003, Settlement Patterns and landscapes In: *The encyclopedia of the Barbarian world*, 55-64, Charles Scribner/ Gale, New York

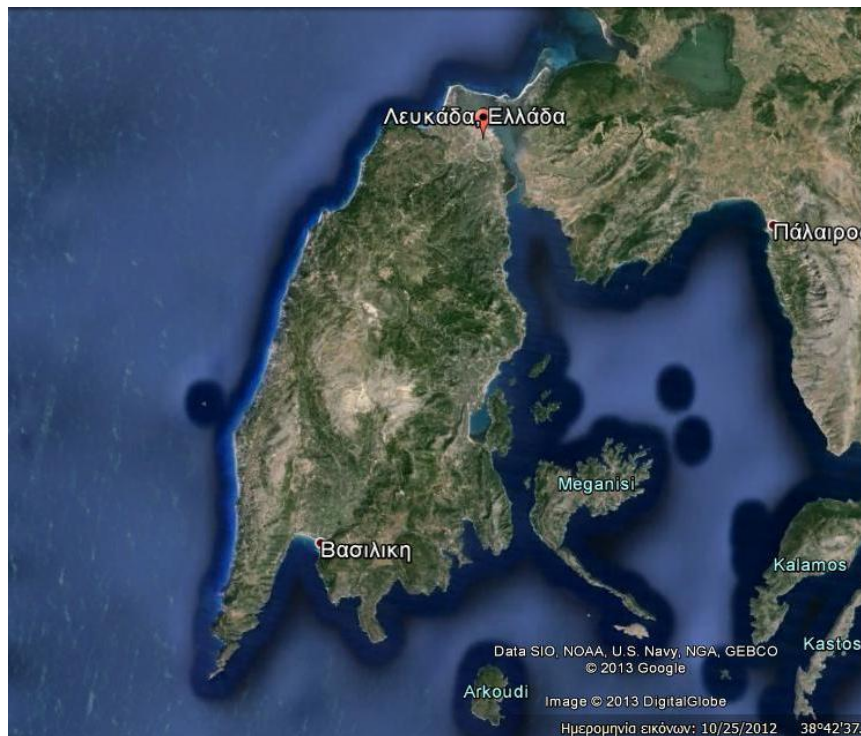


Image 1. Satellite view from Lefkas Island

### 3.Landscape of Lefkas

Lefkas is a mountainous mainly island in Ionian sea with 294,4 km<sup>2</sup> size and 116,7 km coastal length with rich horizontal and vertical distribution. Coastal zone differs along the island according to the tectonic, erosional and sedimentation procedures.<sup>4</sup> It is off the western coast of mainland Greece, from which is separated by a narrow artificial straight in the area of an extended shallow lagoon. The western coasts present linear development while the eastern, northern and southern coasts form many elongated bays. The eastern and south coastal zone is rich in small, natural bays the most significant of which is the enclosed bay of Vlichos southeastern of Nidri plain.

East of the plain, there is a group of small islands called “*prigiponisa*” ( Madouri, Cheloni, Sparti, Skorpis )

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<sup>4</sup> Verikiou E., Vassilopoulos A., Evelpidou N., 2002 Geomorphological characteristics of Lefkas island using GIS , 6<sup>th</sup> Pan-Hellenic Geographical Congress, Thessaloniki, v.1 p., 395-403

The mountainous area of Lefkas is characterized by abrupt slopes, intersected by deep ravines. The highest peak is situated at Stavrota mountain (1.141m). There is a central calcareous area covering one fifth of the total area with an average altitude of 900m. This central area consists of the mountains Stavrota, Elati ( 1084 m ) St. Ilias (1014 m) and Mega Oros (1012m). Other smaller mountains are the Lainaki, Achrada and Sikeron to the South, Skaros to the East, Megali Rachi to the North. The name of ‘Elati’ could possibly be the memory of a destroyed fir forest of the area. There are four big plains, the Nidri plain, the Vasilliki plain, the big plain of Lefkas near the city, Eglouvi plateau, karya plain ( which called Livadi) and some smaller like the Maradochori plain which is an old polje and other small intramountainous valleys.



Image 2. The polje of Karya known as Livadi ( photo: Gazi Anastasia). Due to the fact there is not surface outlet of waters but only “ *Katavothres*” , the autumn rainfalls convert a big part of this plain to a lake until the spring.





Image 3. Nidri plain and in the background “*prigiponisa*” ( photo: Gazi Anastasia)

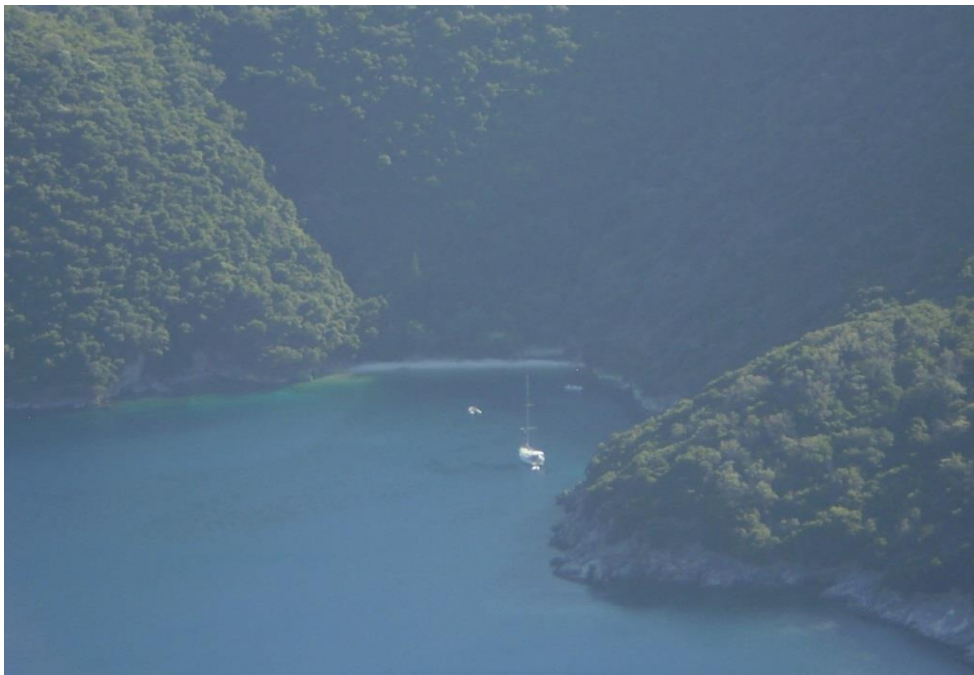


Image 4. Southern leeward protected coast near “Mikros Gyalos” with dense forest vegetation.  
( Photo: Gazi Anastasia)



Image 5. Plain of Lefkas city from the north . ( photo: Gazi Anastasia)

The drainage system consists of torrents, some of which are flowing out in small closed basins or karstic gaps. There are many karstic sew pipes in the calcareous tablelands as well as other karstic formations such as doline and polje.

An old doline seems to be the Maradochori lake near the homonymous village which covers an area of about one hectare. (1 ha)



Image 6. Maradochori lake, with dense hygrophilous vegetation ( photo: Gazi A.)

In modern history, there are sources mostly from European travelers reported that forests in particular on Skaros mountain (oak forest) yielded long and heavy timbers for major structures and ships.<sup>5</sup>



Image 7. Oak-forest of Skaros mountain ( Gazi A.)

Olive trees and wine cultures are very common in Lefkas while lentils of Eglouvi plateau are a famous product.

Of great interest is the northeastern part of the island with the Sound of Lefkada which represents a shallow water lagoon environment and separates the island from the Akarnanian “Plaghia” Peninsula in central Greece. The city of Lefkada lies at the shore of the lagoon at elevations of 1-5 m above sea level and is accessible via an artificial canal which connects the Bay of Drepano with the Bay of Lefkada. North of Lefkada city a narrow beach ridge system closes off the Sound of Lefkada from the open Ionian Sea.<sup>6</sup>

On the southern west part of the island extends the cape of Lefkata, with the wild, sharply cut rocks, known from the Sappho’s jump in the sea.

The landscape of the island was not the same in distant past taking into account that during Palaeolithic years ( see next chapter 6) was not even an island. Earthquakes, sea level changes as an effect of the last glacial period, tsunamis had changed the features of the environment like vegetation, the area of arable lands,

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<sup>5</sup> Gazi Anastasia, *Ενα δάσος θυμάται-Το δάσος των (Σ) κάρων της Λευκάδας, από την επιβλητική θέση του παρελθόντος στην σύγχρονη αφάνεια*, Πειραιάς 2011

<sup>6</sup> Vott A., Bruckner et al., Palaeogeographical aspects of tsunami impacts on the Lefkada coastal zone during the past millennia,  
[http://labtect.geol.uoa.gr/pages/fountoulis/PDF%20Files/125\\_2008%20Lefkada%20Palaeogeographica%20aspects%20of%20tsunami%20impac.pdf](http://labtect.geol.uoa.gr/pages/fountoulis/PDF%20Files/125_2008%20Lefkada%20Palaeogeographica%20aspects%20of%20tsunami%20impac.pdf)

animals transition from one place to another and undoubtedly the morphology of the Island.

It is significant to be reported that the origin of the washover structures in the eastern Lefkada lagoon were dated to classical-Hellenistic times <sup>7</sup> but may also be related to the 365 AD event of Crete earthquake and tsunami.<sup>8</sup>

#### **4.Geology of Lefkas Island**

Generally the main lines of Greek topography were formed in recent geological time with the procedure of Alpine orogeny. In the first period of Palaeogene (40-20 million years) the crustal plates which make up the basal rocks of Africa and Eurasia were crushed together and the bed of *Tethys* was compressed and thrust upwards into high folds. Those marine sediments became folded mountains of limestone. This plate tectonic compression created an arc-formed alignment of Alpine mountains. The Ionian Sea was formed by differential sinking of the lateral parts of the Alpine arc, creating the Ionian islands.<sup>9</sup>

It is also significant to mention that during the current geological era which is called Quaternary (from 2.000.000 years) the earth has been largely enveloped in Age Ices, with regular shorter punctuations of global warming called Interglacials. Holocene is a warm Interglacial episode which began at the end of the last Ice Age 12.000 years ago.

The island of Lefkas presents significant geology for several reasons. First, to the west of the island in the area of the Ionian Sea the Hellenic Trench is bounded by the subduction of the Eastern Mediterranean lithosphere under the Aegean lithosphere. Second, the dominant geological formations of the southwestern part of the island are attributed to the most external geotectonic zone of the Hellenides Mountain belts known as the Paxos Zone or Pre-Apulian Zone. Third, in a great area of the island mainly along its western coasts intense seismic activity has been recorded with numerous submarine active seismic epicenters that have generated

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<sup>7</sup> Vott A., H. Bruckner, M. May, F. Lang, R. Herd and S., Brockmuller, 2008, Strong tsunami impact on the Bay of Agios Nikolaos and its environs ( NW Greece) during Classical-Hellenistic times, *Quatern. Int.*, 181, 105-122

<sup>8</sup> Matthias S. May, A. Vott et al., 2012, The Gyra washover fan in the lefkada Lagoon, NW Greece-possible evidence of the 365 AD Crete earthquake and tsunami, *Earth Planets Space*, 64 859-874

<sup>9</sup> Bintliff J., 2012 *The complete archaeology of Greece- From Hunter-gatherers to the 20<sup>th</sup> century A.D*, Wiley –Blackwell, p., 13 -14

earthquakes of small to medium focal depth with magnitude of  $> 5$  R. Forth, the morphology of the island during the Quaternary presents interest mainly due to its alpine structures and to its post-alpine active tectonics controlled directly from the Hellenic trench area processes characterizing it as an evolving morphotectonic structure.<sup>10</sup>

Two geotectonic zones compose the Lefkas island: Ionian and Paxos. The biggest part of the island is covered by the Ionian zone while Paxos is located in the southwest part of the island in leukata peninsula. Finally there are some Quaternary formations in the south of the island in vassiliki basin, north of the island in the Lefkas plain, in the east around Nidri area and in some isolated positions.

The island includes twenty drainage basins that present significant variety regarding their dimensions and importance based on their morphological characteristics. The Vassiliki basin, is faulted in the south part and erosional in the north. It is formed between the Hortaton-Komiliou are, the Stavrota mountain to the east and Leukata peninsula to the west. It is expanding to the south and reaches smoothly the sea, where a narrow coastal aggrading plain is created. Another basin is situated in the central part of the island between the mountains Stavrota-Elati-Lainaki and a peak which is called St. Iliia Sivrou which meets the Vasilliki basin in the southwest and is possibly a branch of it. Other erosional basins are the “Eglouvi” and “Dimosari” (between the north part of Elati mountain and the south cliff of Skaros mountain). In the north part of the island there is a big plain, a result of the Tsoukaladon fault consisted of alluvial deposits and coastal formations.<sup>11</sup>

Regarding the geological structure of the island Alpine and Post Alpine formations and deposits dominate. Alpine formations include the Paxos zone formations located on the southwestern part of Lefkas ( Late Jurassic to Oligocene carbonate rocks towards to a Miocene sequence of siliceous limestone) and the overthrust formations of the Ionian Zone ( Late Triassic- Late Eocene carbonate formations ) grading into flysch formations. The post Alpine formations include Upper Miocene molassic type formations and Quaternary deposits. The Upper Miocene formations uncomfortably overlie the Ionian Zone formations and are composed of conglomerates, sandstones, marls, marly limestones and breccias-

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<sup>10</sup> Bathrellos G et al., 2009, Morphotectonic characteristics of Lefkas island during the Quaternary, *Geologica Balcanica* 38., p. 23-33

<sup>11</sup> As above Bathrellos G., 2009

conglomerates, while the quaternary deposits are located on the mountainous –semi mountainous basins and on the coastal area mostly at the eastern coastal zone.<sup>12</sup> The limestone provided good quality flint for the Stone Age population.

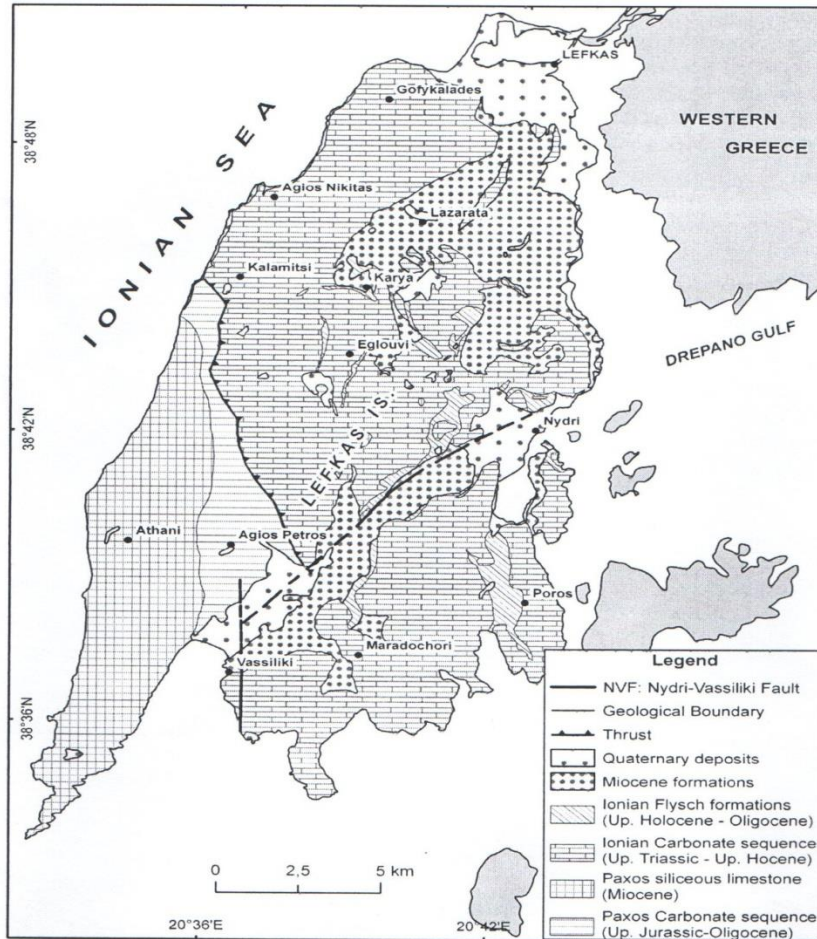


Image 8. Geological map of the island ( Bornovas,1963,1964)

<sup>12</sup> Bornovas J. 1964, Geological study of Lefkas island. Technical Report, *Institute for Geology and Subsurface Research, Geological and Geophysical Research, Athens* 10 (1), p.,142, Stamatakis and Hein 1993, Origin of barite in Tertiary marine sedimentary rocks from Lefkas Island. Greece. *Economic Geology* 88, 91-103, Bathrellos G, et al 2009, Morphotectonic characteristics of Lefkas Island during the Quaternary ( Ionian Sea, Greece), *Geologica Balcanica* 38, 2009, p. 23-33.



Image 9. The polje of Komilio, which during winter months is converted to a wetland ( Gazi A.)



Image 10. The quite sheltered Vlichko bay, the edge of which is marshy ( Gazi A.)

## 5. Sea-level change and Coastlines

Sea level was totally different towards the end of the most recent glacial period (from 110.000-10.000 years ago). The accumulation of ice on the continents removed enough water from the ocean to lower sea level by more than 100m. As a result much land that is today submerged on the continental shelves was exposed. Islands became attached to the mainland and coastal plains existed almost everywhere because continental shelves are usually level<sup>13</sup>. From the point of view of human archaeology it falls in Paleolithic and Mesolithic periods.

The palaeogeographic maps that follow show how large the change between glacial and present interglacial time has been Ca. 9.000 B.P and 18.000B.P.<sup>14</sup> Greece at 9.000 B.P, was much like present Greece in the geography of its coasts but Late Glacial Greece was a very different country. Several lakes existed because the drop in sea level severed connections with the open sea, while the lakes along the Ionian coast were much shallower than those in the Gulf of Corinth or in Lake Marmara.

But mid-Holocene times circa 4.000 B.C when the earth's warming reached its natural Interglacial peak, sea levels were above present. Subsequently they lowered, some meters only.<sup>15</sup>

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<sup>13</sup> Tjeerd H. Van Andel and Judith C. Shackleton, 1982, Late Paleolithic and Mesolithic Coastlines of Greece and the Aegean, *Journal of Field archaeology*, Vol. 9, No4.

<sup>14</sup> Times Atlas Vol. 4, " Greece, 3: Regional Geography," Geographical Handbook Series Naval Intelligence Division ( London, 1945)

<sup>15</sup> Lambeck K., 1996, Sea level change and shoreline evolution in Aegean Greece, since Upper Palaeolithic time, *Antiquity* 70, p., 588-611



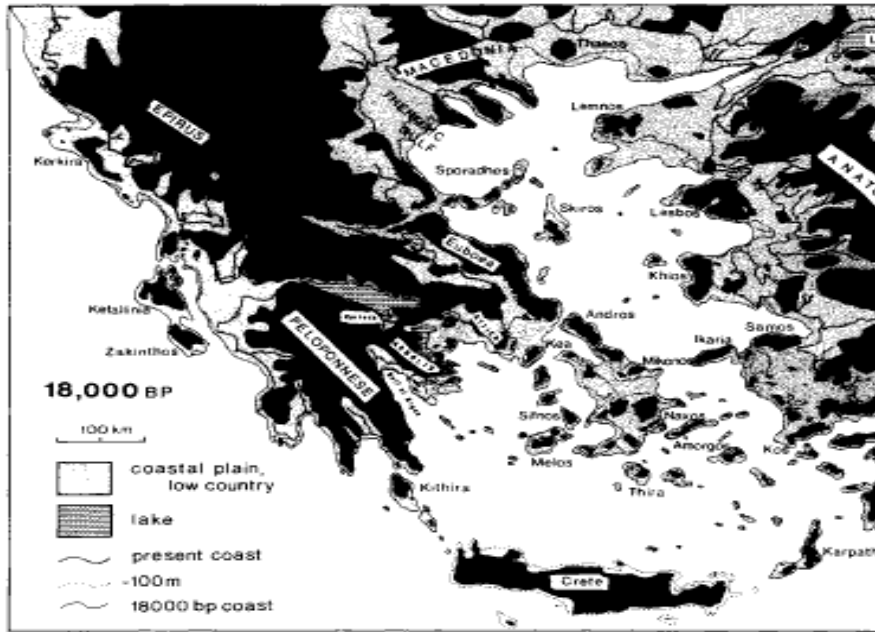


Image 11. Coastlines during the low stand of the sea at the last Glacial maximum and at 9,000 B.P near the end of the rapid part of the post-glacial sea-level rise. ( source: Tjeerd H. van Andel and Judith C. Shackleton, 1982, Late Paleolithic and Mesolithic Coastlines of Greece and the Aegean, *Journal of Field archaeology*, Vol. 9, No4 )

According studying of the late Quaternary geological evolution of Ionian Islands<sup>16</sup>, the reconstruction of the palaeo-shoreline position and configuration was compiled for the following time windows of human cultural evolution:

The Lower/ Middle Palaeolithic transition ( 100 Ka BP)

The Middle/Upper Palaeolithic transition ( 30 Ka BP)

The Upper Palaeolithic/Mesolithic transition (10 Ka BP) and

The Mesolithic/Neolithic transition at around 8 and 7, 5 Ka BP

These dates are considered as a good average approximation of the time that all the cultural transitions mentioned above occurred, since these transitions did not take place simultaneously in the Balkan and the Eastern Mediterranean.

Lambeck's sea level curve at the above mentioned time-slices, the sea level saw standing at -20, -60, -50 and -20 m below the present one respectively.<sup>17</sup> Furthermore the palaeo-shoreline configuration was compiled at a) the Tyrrhenian Interglacial at 125 Ka BP when the sea level was standing at approximately the same level as at present b) towards the termination the First Glacial maximum when the sea – level was at -80 m of and c) the Last Glacial maximum at 18 Ka BP when the sea level was at – 120 m. This information was chosen as the best available as there is not a sea-level curve within the area under examination.

During the First Glacial maximum and the Last Glacial maximum the island of Lefkas was a peninsula.

Ferentinos *et al*<sup>18</sup>, suggest that the regional palaeo-shoreline configuration was the major factor that motivated the Middle and Upper Palaeolithic hunter-gatherers to develop seafaring capabilities in order to reach the islands. The configuration of the Greek mainland and Ionian Islands coast, gives the impression of an almost continuous landscape interrupted by short water gaps which provides the perception of easy accessibility, thus creating ideal maritime “nursery” conditions for experimentation seafaring.<sup>19</sup>

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<sup>16</sup> Brooks and Ferentinos 1984, Tectonics and sedimentation in the Corinth gulf and the Zacynthos and Kefallinia Channels, Western Greece, *Tectonophysics* 101, 25-54

<sup>17</sup> As above Lampeck K. 1996,.

<sup>18</sup> George Ferentinos, Maria Gkioni, Maria Geraga et George Papatheodorou, 2012, Early seafaring activity in the southern Ionian islands, Mediterranean sea, *Journal of archaeological Science*, XXX, p., 1-10

<sup>19</sup> Broodbank C., 2006, The origins and early development of Mediterranean maritime activity, *Journal of Mediterranean Archaeology* 19(2), p., 199-230.

The presence of human occupation from Middle Palaeolithic to Mesolithic in Epirus and in Peloponnesus, in the southern Ionian islands of Lefkada<sup>20</sup>, Kefallinia and Zakynthos suggests that there was mobility between the Greek mainland and these islands during that period.

Another indicator for sea-level change is the ancient harbor mole at Lefkas that was revealed during snorkel surveys, which was used as a breakwater and loading dock for the southern side of Lefkas and due to the fact that blocks still preserved in situ on the mole's surface indicates that since its original construction sea-level has changed relative to the mole + 3,35m.<sup>21</sup>

## 6. Paleoseismic events and tsunamis

The eastern Mediterranean is well known for its high seismo-tectonic activity. Earthquakes and plate movements are mostly bound to the Hellenic Arc between Cyprus, Crete and the Ionian Islands where the African Plate is being subducted and overridden by the Eurasian Plate.

Tsunami landfalls between the cities of Preveza and Lefkada were dated to the time periods 2870-2350 cal BC, around 1000 cal BC, 395-247 cal BC and around 430 cal AD, 840 cal AD and 1000-1400 cal AD.<sup>22</sup> As the island belongs to the most active seismically regions in the eastern Mediterranean, it is possible to show a higher tsunami risk too. Based on the analysis of Holocene deposits from the Sound of Lefkada show that oldest tsunami traces may go back to the 6<sup>th</sup> millennium BC. Another data indicates that a tsunami event affected the site shortly before 2842-2690 cal B.C. This age is consistent with the time period of 2870-2350 cal B C for which was found strong tsunami influence on Actio headland. Seed weed remains (from the upper core section) yielded an age of 1746-1606 cal BC predating strong tsunami influence on the site. Two younger dates analyzed from other samples as well as

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<sup>20</sup> Douzougli A., Palaeolithic Lefkas In: Bailey G.N. , Adam E., Panagopoulou E., Perles, C. Zachos, K., (eds) The Palaeolithic archaeology of Greece and adjacent Areas, *Proceeding of the ICOPAG Conference Ioannina, September 1994. British School at Athens*, London Studies, 3, 1999, pp. 288-292

<sup>21</sup> Murray M. William, 1986 The ancient harbor mole at Lefkas, Greece, A.Raban (eds), *Archaeology of coastal changes, Proceedings of the first International symposium " Cities on sea-past and present" Chaifa p.*, 101-118

<sup>22</sup> Vott A., May M. *et al.*, 2006, Sedimentary evidence of late Holocene tsunami events near Lefkada Sound ( NW Greece), In: Scheffers A., Kelletat D, ( eds.), *Tsunamis, Hurricanes and Neotectonics as Driving Mechanisms in Coastal Evolution*, *Zeitschrift fur Geomorphologie N.F, Suppl. Vol. 146*, p., 139-172

ceramic fragments found at 5.28 and 2,79 m below sea level indicate a ( post- or ad-) Classical and pre-Roman tsunami and that at least one of the two younger extreme events occurred during Roman times after 183-58 cal BC.<sup>23</sup>

It seems possible that the Corinthians known to have excavated a navigable waterway in the 7<sup>th</sup> century BC to just have re-opened or widened a natural tsunamigenic channel which has been repeatedly choked with tsunami sediments in the course of the following centuries.<sup>24</sup>

Along most of the coasts of Lefkas, the lithology is unfavorable to the preservation of elevated shoreline marks but some elevated notches near “Agios Ioannis ” are remnants of a slightly higher sea level.



Image. 12 Picture from Agios Ioannis area, where the slightly elevated notch (source: Pirazzoli P.A et al., 1994)

In short, up and down tectonic movements of one to a few meters were responsible for late-Holocene relative sea-level changes at least in the northern part of Lefkas Island submergence of at least 2,5 m occurred since 2400 years ago. Archaeological data regarding submerged sites on the mainland at Palairos and Myticas suggest that rapid possibly spasmodic subsidence movements happened in approximately 350-300 BC and 500-700 AD.<sup>25</sup>

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<sup>23</sup> Vott A., *et al.*, 2009, Traces of Holocene tsunamis across the Sound of Lefkada, NW Greece, *Global and Planetary Change* 66 pp. 112-128

<sup>24</sup> As above p, 126

<sup>25</sup> Pirazzoli P., *et al.*, 1994, Late-Holocene shoreline changes related to palaeoseismic events in the Ionian Islands, Greece, *The Holocene*, 4, pp. 397-405

Factors such as seismic events and tsunamis are significant parameters that may affecting settlement cause identifies the degree of secure that humans need after a strong natural disaster.

## 7. Vegetation- Climate

The west part of the island is covered with *Pinus halepensis* while in the east part dominates maquis vegetation like *Pistacia lentiscus*, *Myrtus communis*, *Quercus ilex*, *Ceratonia siliqua* evergreen shrubs and broadleaves, olives and cupresses. In 20<sup>th</sup> century when livestock was gradually abandoned for touristic activities there is a regeneration of oak species. ( *Quercus pubescens*, *Q. fraineto*, *Q. ilex*). In the Scaros mountain still remains on the central peak a primeval oak forest with *Q. aegilops* is a kind of oak that one can see in the opposite site of Acarnania which forms extended forests.

The name of mountain Elati southeastern of the island, let us suppose that fir existed in the near past, taking into account that fir still exists in adjacent areas of kephallenia or Epirus with the same geographical width. This view is also supported by Ursula Hofmann who studied carefully the vegetation of the island in 1965.<sup>26</sup>

At the archaeological museum of Lefkas, one can see golden wreaths with leaves of oak species ( among them the leave of *Q. aegilops*) and olive leaves from the burials of Hellenistic years. It is an indicator of the vegetation of the past environment and one can conclude that there were the same species then, as today.

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<sup>26</sup> Hofmann Ursula 1968, Untersuchungen an Flora und Vegetation der Ionischen Insel Levkas, *Vierteljahrsschrift. Natursf. Ges. Zurich* 113 (3), p., 233



Image 13., Golden wreaths with oak leaves, maple leaves and olive leaves from burials of Hellenistic time. (Archaeological Museum of Lefkas)

Palynological investigation in the lake Voulkaria ( a region close to Lefkas island ) showed that deciduous oaks dominated the natural vegetation of the area throughout the Holocene. Until ca 7000 B.C, *Pistacia species* occurred abundantly, while other evergreen woody taxa were rare. At ca. 6300 B.C, an expansion of *Carpinus orientalis* /*Ostrya* observed. Around ca 5.300 B.C, spreading of *Erica*, indicates a change to a drier climate and/or first human impact. Since 3.500 B.C an increase of evergreen shrubs indicates land-use. The deciduous *Quercus species* recovered when human impact decreased in the area and lasted until modern times. A large increase of the *Phillyrea* values and evergreen oaks is dated at 800 BC. This can be interpreted from human presence and human activity in the area. After the end of this *Phillyrea* period regularly occurring *Juglans* pollen and high values of *Olea*.<sup>27</sup>

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<sup>27</sup> Jahns S., 2005 The Holocene history of vegetation and settlement at the coastal site of Lake Voulkaria in Acarnania, Western Greece. *Veget. Hist. Archaeobot* , 14 p., 55-66



Image 14. Scaros mountain, south –east view (photo: Gazi A.)

The temperatures according to Hellenic Meteorological Service, vary between a January 13° C average and a July one of 28° C, the precipitation is more than 940 mm annually, high for Greece. The prevailing winds have north, north-west direction, humidity is more than 70%.<sup>28</sup>

Climate and climatic variability define the level of subsistence risk and influence the decisions of individual farmers with respect to which crops they grow and where they grow them. The major subsistence crops wheat, legumes and potatoes require between 300 and 500 mm of annual moisture, so it would seem that the island is well supplied. While the climate does play an important role in agriculture, it does not influence human behavior in a manner likely to leave traces in the archaeological record.<sup>29</sup>

## **8. Palaeolithic Lefkas –sites**

*Palaeolithic era 300.000-400.000 years B.P to 9.000 B.C*

*Epipalaeolithic/Mesolithic 9.000 B.C-7000 BC*

Prehistory in Greece concerning the presence of human (*Homo neanderthalensis*) starts in the Middle Paleolithic (according to recent findings until present time). That era existed only hunting shelters where the hunter-gatherers were

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<sup>28</sup> Data from Hellenic National Meteorological Service

<sup>29</sup> Gallant Thomas, Background noise and site definition : a contribution to survey methodology, *JFA* 13, p., 403-418

resting or were repairing their weapons. The later Paleolithic period 33.000 -10.000 B.C was characterized by the presence of *Homo sapiens* and the permanent habitation of caves.

From 10.000 BC, climate conditions improved, the glaciers began to recede and the climate became friendlier.

In 1967 the Pre-historian Augoustos Sordinas found plenty of flint stone tools of Middle-Paleolithic period, scattered all around the island. (cape of Agios Nikitas, Kollivata village and Alexandros village, Choirospilia cave, etc).<sup>30</sup> West of Tsoukalades village in a small plateau with terra rossa soils towards the Ionian sea and with natural springs was found flintstone's tools, as well as at the cape of Agios Nikitas, near the sea and near springs.<sup>31</sup>

According to Douzougli<sup>32</sup>, Palaeolithic sites on Lefkas island are found in a variety of settings, ranging from the present-day coast, to the inland poljes of the mountainous interior and from the north part of the island to its most southwest point (Cape Dukato). Cape Doukato northern site is a large basin with a pseudomacchia vegetation cover and a terra rossa fill, now dried up and deeply incised by erosion. The basin is a typical degenerated polje deformed and lifted 100-120 m above sea level by the active motions of the continental plates along the Ionian coast.

This spatial distribution of sites reflects a pattern of exploitation of all the natural resources that were available in the region, and thus a highly mobile lifestyle. A clear pattern that emerges is that there was an association of Paleolithic finds with polje deposits and terra rossa deposits on karstic surfaces. Poljes are landscape features in which resources crucial to the survival of Paleolithic groups were concentrated (such as water, game and flint). Human activity during the Middle Paleolithic can be explained in terms of exploitation of the resources available in polje environments.

In the area of Karyotes near the coastal zone of the North cemetery of the ancient Lefkas during the excavation of the tombs was revealed at various sites, made of yellowish-brown flint which is opaque and dull yet finegrained and homogenous in texture. The fact that these remains were exceptionally preserved makes likely that the horizon that contained them represents one or more episodes of debris flow prompted

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<sup>30</sup> Sordinas Augoustos, 1968, *The Prehistory of the Ionian islands: The flints and Pottery*. ( Phd., dissertation) ,Harvard University

<sup>31</sup> Ροντογιάννης Π., *Ιστορία της νήσου Λευκάδος*. Τόμος, Α',1980

<sup>32</sup> As above Angelika Douzougli, BSA studies 3,1999 Palaeolithic Lefkas



by erosion of the limestone slopes to the west of the site.<sup>33</sup> The presence in the Karyotes collection of the various stages of the reduction sequence, along with large nodules of raw material, makes it likely that the collection derives from a flint-knapping area, perhaps associated with a source of flint and visited repeatedly over time.<sup>34</sup>



Image 15. Handaxe of Achelaian technology from local flint from Karyotes area. (Archaeological Museum of Lefkas, AE 2846)

The use of this space indicates the existence of good quality raw material. Furthermore is an index of the tectonic activity of Paleolithic era.

Near the Tsoukalades village almost 100m above the present sea level, in a terra rosa layer were found tools from flintstones.

At Eglouvi plateau, called Livadi which it is believed that it was a close a closed wetland (polje)<sup>35</sup> were spotted some findings. During the Pleistocene, the area must have been a marshy ecosystem with the potential to sustain plants and wildlife. There, at the edge of the plain in n terra rossa layers, which still reserve, were collected flint cores and one Levallois core.

Today, in the area existed around 150 Voltoi , traditional stone-built shacks in a shape of an arched oven, (mostly for animals & crops), with its stone houses.

Another site which shows cave habitation is the Choitrotripa cave of Apolpaina. The strategic place of the cave, from which one could have an extended view of the area,

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<sup>33</sup> Douzougli Aggelika- C. Zachos, Palaeolithic Lefkas- *Kathimerini newspaper*, of 26<sup>th</sup> of January 1997

<sup>34</sup> Douzougli A., as above, Paleolithic Lefkas

<sup>35</sup> Polje means in palaeoenvironment terminology depressions created by local faulting and other forces. The red clays that fill the poljes are in part derived from eroded limestone .The clays accumulated in the poljes after the natural drainage was blocked by erosion. Seasonal and ephemeral lakes and swamps may at times have filled these depressions.

its orientation (the hall of the cave satisfied the need for sunshine during the strong climate conditions), and its appearance ( it was not easy to be found) protected the Paleolithic residents of the cave from carnivores and other daily dangers. Additionally, if we take into consideration that, during that time Lefkas was connected with Acarnania, it was a great place for approaching the nearest recourses of flint, or hunting areas.<sup>36</sup>

Increasing evidence identifies locations preferred by Neanderthal hunter-gatherers in choosing where to camp, temporarily or for longer periods, within a seasonal round of several sites.<sup>37</sup> Riversides, coastal marshes and estuaries are selected, whilst many Middle Palaeolithic sites associated with terra rossa sediments “Red beds” were formerly seasonal lakes and marshes, where sediments accumulated during the Pleistocene within limestone (karst) depressions possessing underground drainage. Locations where the movements of game herds could be monitored without disturbing them such as rockshelters were preferred. From the sea came fish and thus could easily be caught even in the Palaeolithic.

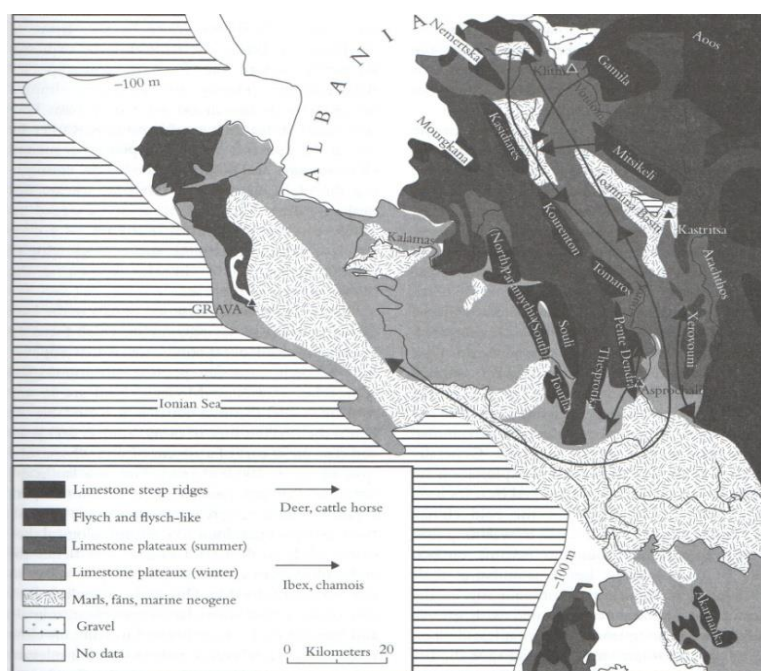


Image 16.G. Bailey (ed)., Klithi: *Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*, vol. 2, Gambridge University Press 1997. Fig. 30.25

<sup>36</sup> Douzougli A., C. Zachos, *Ιστορική- αρχαιολογική επισκόπηση μέσα από τα εκθέματα του αρχαιολογικού μουσείου*, Υπουργείο Πολιτισμού ΙΒ' Εφορία Προϊστορικών και κλασικών αρχαιοτήτων, Αθήνα, 2003, σελ., 23

<sup>37</sup> Papagianni D., 2000, *Middle Paleolithic occupation and technology in Northwestern Greece. The Evidence from Open-Air sites*. Oxford: BAR Int. Series 882

Until now, we have not specific information from Lefkas concerning the game caught, but we could use data from the adjacent Epirus region-Klithi cave, since the cave was used in the final Glacial era 16.500-13.000 years B.P when Lefkas was connected with Acarnania and made easy access from and towards the Epirus region. Game caught was open rugged landscape fauna, ibex and chamois. The main activity carried out from Klithi was killing these animals and converted their carcasses into food, artifacts and clothing. Length of stay in these uplands (except winter months) concerning the use of the cave and the population is a key factor so that the lower estimate would fit a stay of 6-9 months, the upper of 3-6 months. The ideal time to be in these mountains would be spring and autumn when animal herds moved to higher and lower ground<sup>38</sup>. So most hunter- gatherers lived in the lowlands with plenty of plants and animals and used the uplands seasonally. Such lowlands would also exist in the Lefkas plains and in the land now lost that once joined them to the Mainland.



Image 17. Terra rossa soil, near cape Doukato where was found plenty of palaeolithic tools, cortical flakes, simple and Levallois cores and flakes, blades, blade cores, Mousterian points, endscrapers and single and double sidescrapers.

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<sup>38</sup> Bailey G.,(ed), Klithi: *Palaeolithic Settlement and Quaternary Landscapes in Northwest Greece*, vol. 2, Gambridge University Press 1997.

## 9. Neolithic Sites ( 6.800-3.200 B.C)

Neolithic era was characterized by three main features, the permanent establishment, the cultivation of cereals and the animals breeding. Geomorphology of Lefkas island with limited agricultural regions, was not an attractive place for the first farmers. Neolithic communities seem from the beginning to have lived in permanent villages. In Lefkas there is not until today,, information concerning the existence of settlement in open sites in the island ( except the “Sotiros” place) .

The most important sites for Neolithic settlement seemed to be:

- Choirotripa cave, southwestern of the modern city of Lefkas ( apolpaina)
- Asvotrypa cave above the coastal region south and west of the modern city of Lefkas ( Fryni)
- Choirospilia cave at Eugiros above the Maradochori plain
- Cave at Kavalos, in the central mountainous innerland
- At Sotiros of Nidri plain (open site)



Image 18 . Choirospilia Cave ( German Archaeological institute of Athens)

Choirotripa and Asvotripa caves are located above the fertile plain of Lefkas city, suitable places for land pasturing and agriculture.

Choirospilia cave is located near the Maradochori plain, where there is a small physical lake and lot of springs. It is not district and also well protected site. The cave was excavated by Wilhelm Dorpfeld and it was believed to be the Homeric region of Eumaios. In the cave plenty of lithics, pottery and bone tools were found which represents the existence of a flourishing community in the nearby fertile plain which used the cave for its activities.<sup>39</sup>



Image 19. Choirotripa cave with the two entrances, the main entrance on the right, ( source: Άννα Πετροχειλίου, *Σπηλαιολογικές έρευνες στις περιοχές Χοιρότρυπα Απολλπαινης και Αγ., Ιωάννου Λευκάδας*, Αριστοτέλειο Πανεπιστήμιο Θεσσαλονίκης, ψηφιακή βιβλιοθήκη Θεόφραστος)

Most of the tools such as punches, needles etc, were made of animal's bones such as goat, sheep and cow<sup>40</sup>.

<sup>39</sup> As above, Douzougli A. C. Zachos, 2003, *Ιστορική- αρχαιολογική επισκόπηση μέσα από τα εκθέματα του αρχαιολογικού μουσείου*

<sup>40</sup> Dorpfeld W., *Alt Ithaca, Ein Beitrag zur Homer-Frage* Richard Uhde, Munchen-Grafelfing 1927, μετάφραση στα ελληνικά στο: *Λευκάς Η ομηρική Ιθάκη ( Η θεωρία του Dorpfeld W. )* Απόδοσις του έργου Alt Ithaca και σχόλια υπό Βασ. Φραγκούλη, Εταιρεία Λευκαδικών Μελετών Επετηρίς Τόμος Β' 1972, ( Αθήνα 1973). p., 246

There was spotted manual mill (now at Archaeological museum of Lefkas) which shows the use of grain. This is an indicator that Neolithic population exploited the near plain for food.

It is also possible some habitation at “ Sotiros ” site due to the discovery of Neolithic pottery with different decoration from those found in Choirospilia cave.



Image 20. On the right side the Neolithic manual mill. AE 3023,3024 ( archaeological museum of lefkas)

The absence of life in open air sites could be interpreted by the absence of intensive survey. So in order to proceed to safe conclusions it is undoubtedly necessary to study more the island towards that direction.

Concerning the way of life in Neolithic, must have been fishing, hunting, agriculture, trade and farming, as it was elsewhere in Greece<sup>41</sup>.

## 10. Bronze Age sites

*Early Bronze Age 3500/3200 BC to ca 2100/1900 BC*

*Middle Bronze Age 2100/1900 BC to ca 1700 BC*

*Late Bronze Age 1700 BC to 1200/1100 BC*

Renfrew<sup>42</sup> highlighted the ‘high cultures’ of the Early Bronze Age as preparatory to the true civilization which followed in Middle and late Bronze Age times. The indicators of this transformation were the rise of a more productive agricultural economy based on cereals olive oil and wine, the impact of bronze metallurgy, the appearance of central places dominating local settlement clusters and

<sup>41</sup> As above, Ποντογιάννης Π., 1980 σελ, 37

<sup>42</sup> Renfrew A.C., 1972, *The emergence of Civilization. The Cyclades and the Aegean in the Third Millenium BC*, London. Methuen.

by the end of the period the localized appearance of nucleated town-like settlements with elaborate fortifications.<sup>43</sup>

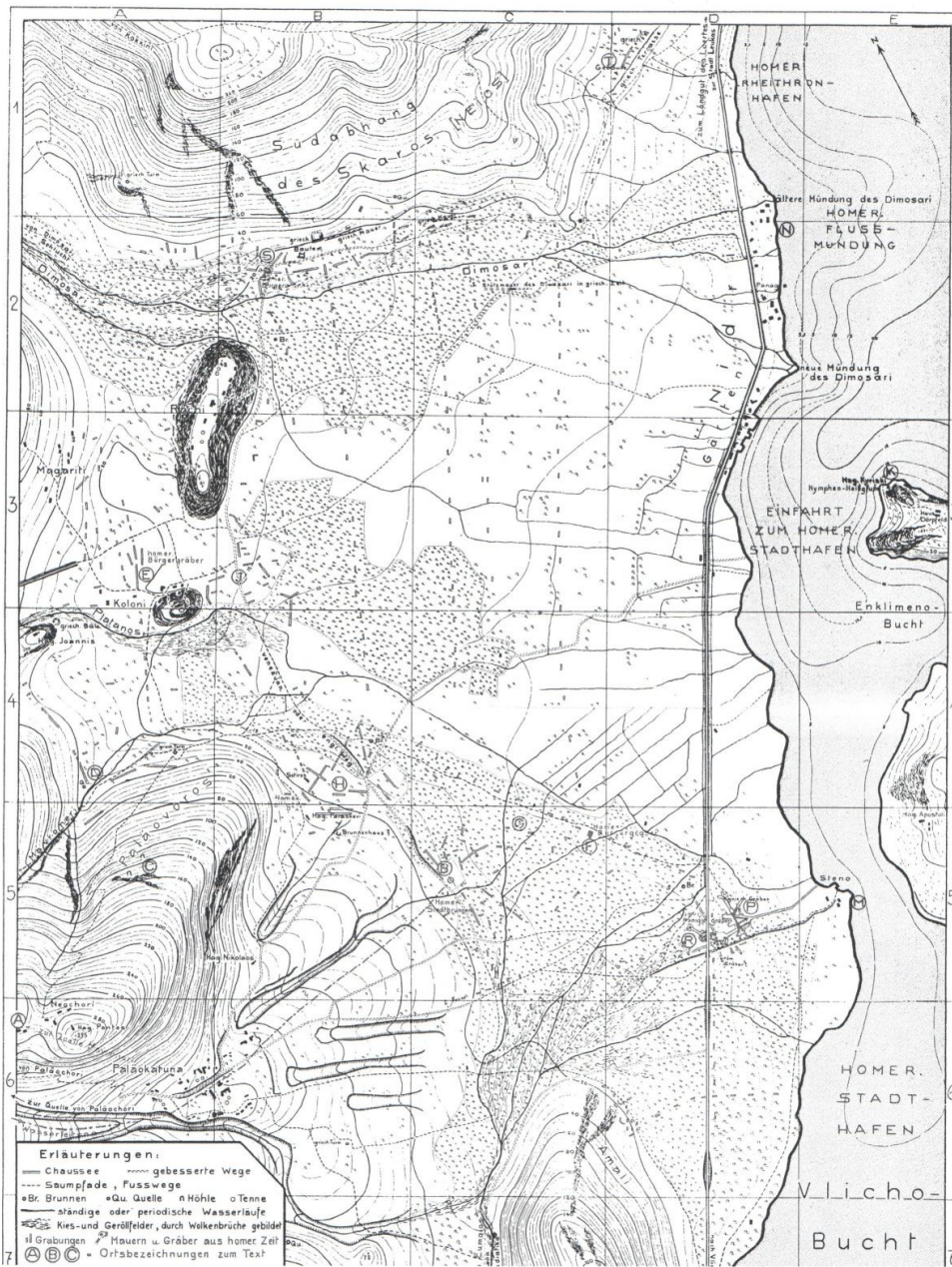


Image 21. Map of Dorpheld excavations in Nidri plain, Alt-Ithaka

<sup>43</sup> As above, Bintliff J., 2012 The complete archaeology of Greece, p., 83

## 10 a. Early Bronze Age

It seems that Early Bronze age settlement comes mostly from the Nidri plain and its surroundings. The natural harbor of Nidri to the east and the ring of mountains surrounding this region make it a very desirable area for settlement. Furthermore the affluence of water from Karstic springs is also an advantage. The coastal plain of Englimenos (Nidri) on the eastern part of the island is surrounded by hills, there flows the torrent of Dimosari, there are lot of spring waters and wells. It is an idyllic landscape, with prigionisa, and a leeward bay. The plain is overgrown with olive trees. There, Dorpfeld made a large number of soundings and found in several places prehistoric shreds and remains which came to light at depths varying from 3 – 6 m. The depth could indicate us intensive sedimentation processes from that era till present days. Dorpheld's desire was to discover in this plain the Homeric palace of Odusseus.

At the north-eastern foot of Paleovoros mountain in a place which called “ tou Sotiros” may have been a small settlement as at Vlichos. But **the only evidence of stone structures was brought to light at Steno (structure P) and on the slopes of mountain Amali. The preserved part of structure P<sup>44</sup> consisted of a 40m long wall constructed with large flat stones.** There was spotted a clay cylinder. Dorpfeld <sup>45</sup> concluded that this structure was “the palace of the Kings” buried in the R-Graves cemetery. The identification of this wall as part of a dwelling is not at all certain.<sup>46</sup>

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<sup>44</sup> As above, Dorpheld W., *Alt Ithaca, Ein Beitrag zur Homer-Frage* Richard Uhde, *Munchen-Grafelfing* 1927, μετάφραση στα ελληνικά στο: *Λευκάς Η ομηρική Ιθάκη ( Η θεωρία του Dorpheld W. )* Απόδοσις του έργου *Alt Ithaca* και σχόλια υπό Βασ. Φραγκούλη, Εταιρεία Λευκαδικών Μελετών Επετηρίς Τόμος Β' 1972, ( Αθήνα 1973). p., 196-200

<sup>45</sup> As above, Dorpheld W., *Alt Ithaca*, p., 284

<sup>46</sup> Souyouzoglou-Haywood C., *The Ionian Islands in the Bronze age and Early Iron Age, 3000-800 B.C.*, Liverpool, 1999, p., 19





Image 22. The structure P, at Steno area ( photo from Alt-Ithaka)

The twelve structures on the slopes of mountain Amali were only partly preserved. Near the hill of Amali which lies south of the plain of Englimenos and skirts the western coastline of the bay of Vlichos Dorfelfeld uncovered walls belonging to several elliptical houses. They were associated with prehistoric pottery which included handles, lugs, bases of handmade vessels and clay spools. South of the village of Vlichos Dorfelfeld found shreds and two thin walls or irregular stones, though to have belonged to a prehistoric house.

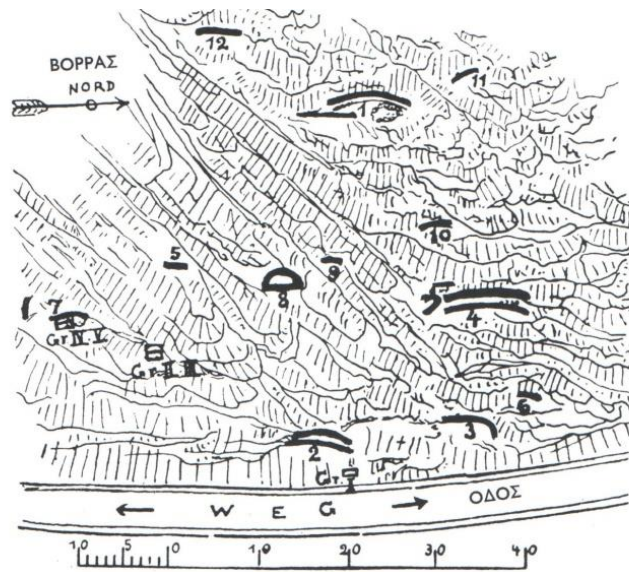


Image 23. Settlement structures at Amali slopes (Alt-Itaca)



Image 24. Source at Syvros, D-DAI- ATH- Lefkas 84 1901

Burials for archaeologists are a significant tool to estimate social and political complexity in Early Bronze age culture. The evidences comes from two different sites the cemetery of tumuli ( R-graves) at Steno and the two ossuaries at Syvros.



Image 25. The plain of Nidri, Steno and in the background Paleokatouna and mountain Elati.  
D-DAI-ATH-Lefkas 587 1908

The **tumuli at Steno** represent the **earliest manifestation of this type of monument for burial in Greece. Thirty – three round tumuli were excavated.** They would originally have formed one group but were revealed in three clusters. Sixty burials of adults and children were excavated in fifty-six graves of different types within or outside the tumuli. The grave goods included pottery, weapons of copper and jewelers of gold and silver. Five different types of graves were used: pithos grave, slab cist, stone-lined/build cist or chambers and pit grave.

Burials in big “pithoi” could be connect this structure of pithos as a storage for oil or wine, that is to say with oil or wine production.

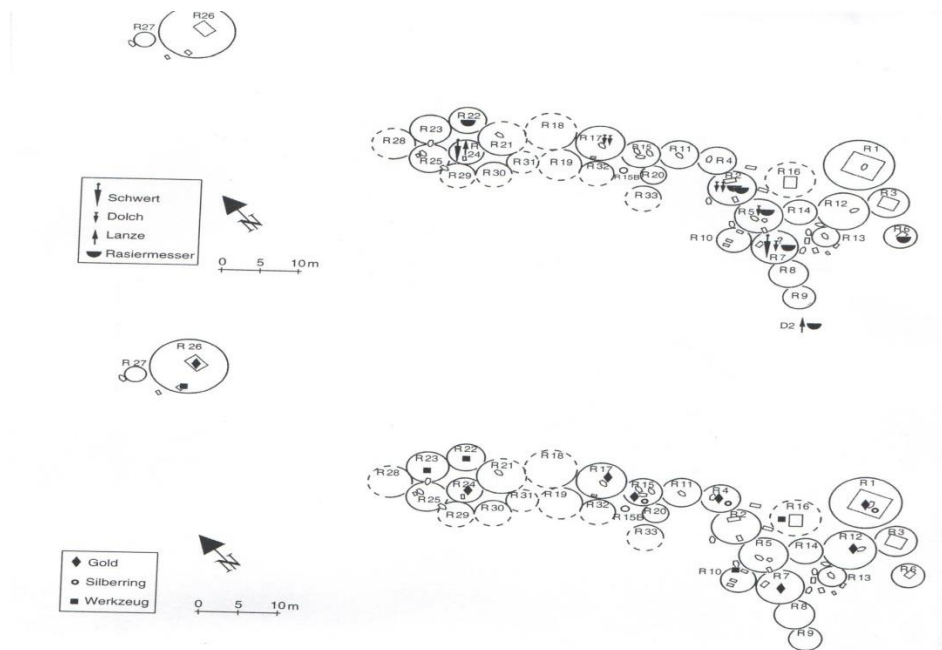


Image 26. Kilian-Dirlmeier, *Die Bronzezeitlichen Gräber bei Nidri auf Lefkas*, Bonn 2005, Abb. 95-96. Courtesy of Romisch-Germanischen zentralmuseums Mainz.

Kilian – Dirlmeier’s research on these burials, show the existence of elite with their followers or extended clan. According to her theory, the source of power on Lefkas without mineral resources and with unexceptional agricultural potential, has to do with its location on Greece’s western periphery might make it a stopping-off point for trade between Italy and the Adriatic coasts and Greece and further east. Perhaps elites on the island offered merchants a harbor, food and ship-repair possibilities and security from piracy. In return came objects and materials. Voyages from the Aegean would have been a series of innumerable short trips and stopovers on beaches, requiring almost as many such local negotiations. And a significant western trade-network has yet to be demonstrated.

The defensive wall which Dorpfeld found for a contemporary harbor settlement near the R- graves (or else structure P), allow Kilian-Dirlmeier to argue for a defended settlement and rich graves in Nidri Bay, potentially providing closer parallels to contemporary Aegean island towns.<sup>47</sup>

This kind of tumulus burials appear very rarely in other peripheral parts of Greece. The increasing importance of burial and other artificial mounds shows important

<sup>47</sup> Kilian-Dirlmeier, I 2005., *Die Bronzezeitlichen Gräber bei Nidri auf Lefkas*, Bonn: Rudolf Habelt Verlag.

continuity into the following Middle Helladic culture, where it is a common monument for containing single and collective burials.<sup>48</sup>

Renfrew and Branigan<sup>49</sup> have concluded that the socio-political organization at Steno was that of the chiefdom which according to Service's evolution of socio-political systems lies between the tribe and the state. The most distinctive features of chiefdoms are the office of the chief, which is linked to specific functions and privileges and a hierarchically organized elite. From among the graves with weapons, Branigan distinguished some ( R7,R17,R24) as those of chieftains and others with weapons but no gold which regarded as those of retainers. Like the weapons, gold and silver jewellery was restricted to a few graves and this would confirm their symbolic character as objects or materials of high status.

Since all the imported metals and finished products of copper, gold and silver were restricted to a few tombs, it seems likely that only the top echelon of the elite had access to important resources and luxuries, possibly through direct involvement in and control of trade.<sup>50</sup>

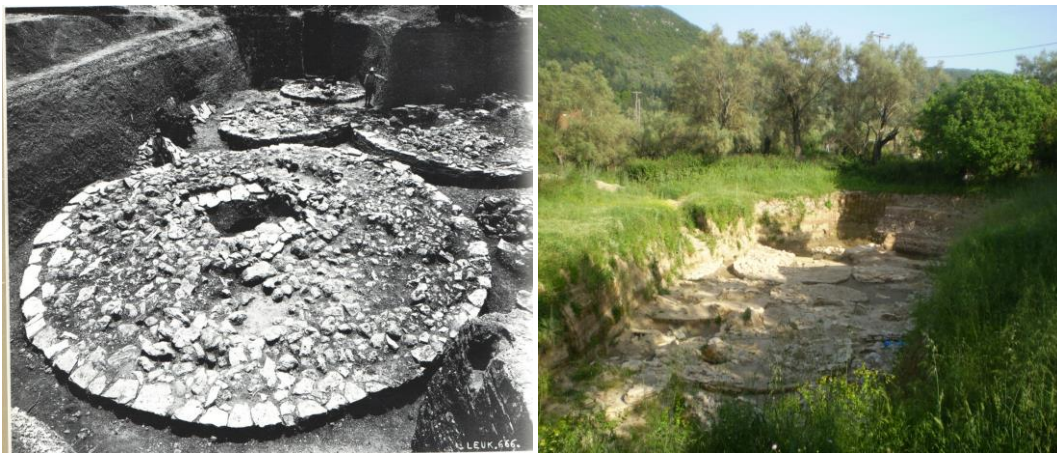


Image 27. R- graves at Steno today. In the picture it is distinct gravel alluvial deposits. ( photo: Gazi Anastasia)

Near the slopes of “Rachi” and “Koloni” on the western edge of plain of Englimenos (Nidri), were discovered prehistoric coarseware shreds. South-east of Koloni came to light a prehistoric stone wall. In the place called “ tou Sotiros” was found sherds, while in Karou cave, on the northern side of mount Paleovoros below

<sup>48</sup> as above, Bintliff J., 2012, The complete archaeology of Greece.

<sup>49</sup> Branigan K., 1975. The round graves of Levkas reconsidered, *BSA*, 70, p., 37-49

<sup>50</sup> as above, Souyouzoglou-Haywood, 1999, p., 25

the village of Neochori and 150 m above the plain, Dorpfeld reported findings of Greek and Archaic coarse mat painted pottery.

Apart from Nidri area, some traces of occupation including burials on the hill of Syvros, show that there was Early Bronze Age habitation in the region of Vasilliki. A number of caves in all parts of the island ( Evgiros, Phryni, Choitrotripa) were also used during this period most likely by shepherds.<sup>51</sup>

### **10.b Middle Bronze Age**

Some Middle Bronze Age habitation is quite certain on the southern foot of scarus mountains.. Dorpheld's excavations produced fragments of prehistoric walls, sherds, clay spools, weights and spindle-whorls, all compatible with domestic deposits. Mountain Amali may have been used during this period. The six cist graves from the foot of Skaros and the neighborhood of Koloni may be of MBA date as well as the *Familiengrab S* tumuli west of the graves and other vestiges of occupation.<sup>52</sup> In S4 were founded three pieces of boar's tusk, which declares hunting skills and is also an indication for wild fauna in the area.

In Nidri plain was found burial structures unique because of its rectangular precinct wall and the use of orthostats, given the name *Familiengrab F*.

In comparison with R-Graves, *Familiengraber S* and F reflect societies where the emphasis appears to be more on the social unit, whether Kinship or other corporate group, rather than on the individual as in the case of the R-Graves.<sup>53</sup>

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<sup>51</sup> As above, Souyoudzoglou-Haywood, 1999, The Ionian islands in the Bronze Age and Early Iron Age 3000-800 BC, Liverpool University Press p., 20

<sup>52</sup> The same Souyoudzoglou-Haywood, p., 30, and Dorpfeld W., Alt Ithaka

<sup>53</sup> As above Souyoudzoglou-Haywood, p.,32

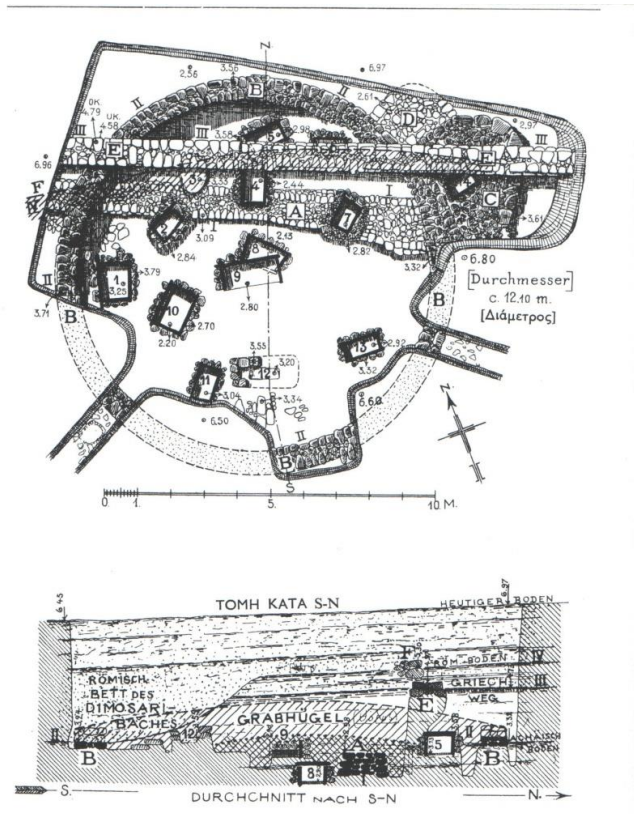


Image 28. Graves type S ( Alt-Ithaka)

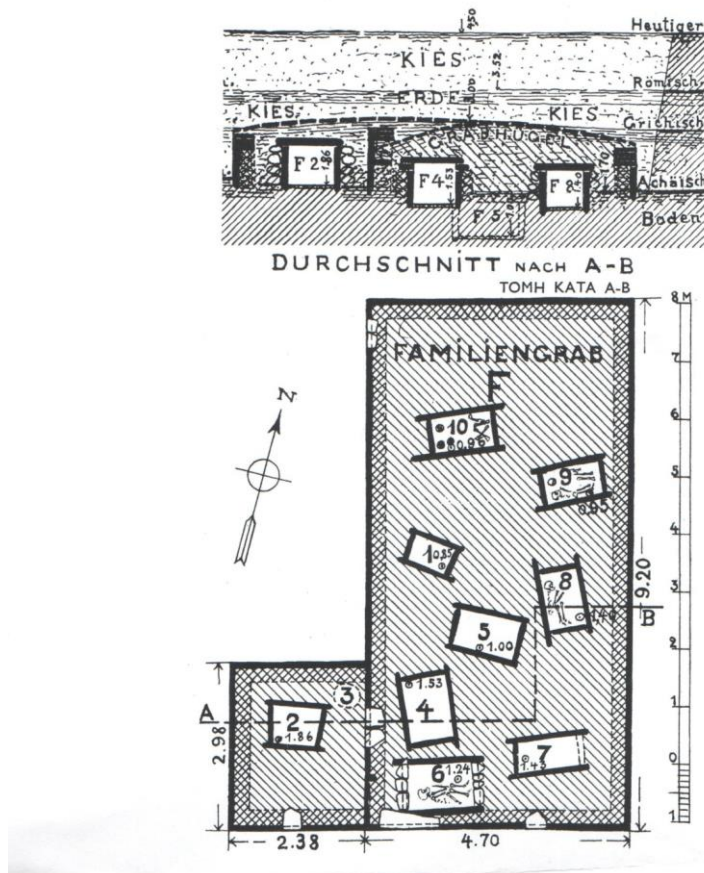


Image 29. From this period are the *Familiengrab F* burial structures from Nidri.

Finally near Dimosari torrent on the southern part of Scaros mountain, were spotted a cemetery of Early Helladic- Middle Helladic years.<sup>54</sup>

### 10 c. Late Bronze Age

No Late bronze Age settlements have been identified on the island. The isolated Mycenaean sherds from Skaros and ancient Lefkas are proof of some activity there. Most of the evidence for LBA occupation comes from two caves: Evgiros and Karou where the painted Mycenaean-type sherds is not negligible.<sup>55</sup>

Hundred years after the research of W. Dorpheld in the island, were revealed the first indicators for Mycenaean Lefkas. One Mycenaean tomb was discovered at the edge of the street which leads to the village of Saint Nikitas towards the junction of Kathisma beach. The tomb dated in Late-Helladic period during 14<sup>th</sup> and 13<sup>th</sup> century B.C. There were collected different items of personal use, vessels and two steatite seals.<sup>56</sup> Also residential remains have been found in Poros area and Meganisi<sup>57</sup>.



Image 30. Mycenaean tomb near Agios Nikitas village. Picture from [www.yppo.gr/olanaskafes/pds/LST\\_EPKA.pdf](http://www.yppo.gr/olanaskafes/pds/LST_EPKA.pdf)

<sup>54</sup> LST Ephorate of Prehistoric and Classical Antiquities, [www.yppo.gr/olanaskafes/pds/LST.EpKA.pdf](http://www.yppo.gr/olanaskafes/pds/LST.EpKA.pdf)

<sup>55</sup> As above, Souyoudzoglou-Haywood, 1999, *The Ionian islands in the Bronze Age and Early Iron Age 3000-800 BC*, Liverpool University Press.

<sup>56</sup> [www.yppo.gr/olanaskafes/pds/LST\\_EPKA.pdf](http://www.yppo.gr/olanaskafes/pds/LST_EPKA.pdf), Σταυροπούλου Μ- Γάτση, Μυκηναϊκός θολωτός τάφος στον Άγιο Νικήτα Λευκάδας στο: Χ. Παπαδάτου- Γιαννοπούλου ( επιμ) *Διεθνές Συνέδριο αφιερωμένο στον W. Dorpheld*, Λευκάδα 6-11 Αυγούστου 2006, Περί τεχνών, Πάτρα 2008

<sup>57</sup> Γιαννόπουλος Θ., 2013, *Πόθεν και πότε οι Έλληνες ; οι υπεύθυνες απαντήσεις της επιστήμης και η παρούσα κατάσταση της έρευνας για την πρώτη αρχή του ελληνικού πολιτισμού*, Πανεπιστημιακές Εκδόσεις Κρήτης, Ηράκλειο, σελ 270, σχόλιο 548.



The collapse of Palatial civilization at the end of the Bronze age ( 1315-1190) occurred in different places at different times over the course of two centuries. Many of these destructions have been attributed to human-causes. At the Aegean region the following 350 years are known as the Greek dark Ages where low population level led to little archaeological visibility. While economic systems collapse, climatic explanations have also been proposed concerning the collapse of Palatial Civilization. Stable carbon isotope data in pollen cores from lake Voulkaria record a drop in <sup>13</sup> C discrimination during this period<sup>58</sup>. A series of Mediterranean sediment cores, record a drop in surface sea temperatures ( SST).<sup>59</sup> Ionian SST value indicate a decline of 3°-4°C during the time period of the hypothesized and period following the Late Bronze Age collapse, reaching its coldest point in the Holocene. This climatic change could have influenced the systems collapse of complex society in the Eastern Mediterranean, as well as influence the population declines, urban abandonments and long distance migrations associated with the period.<sup>60</sup>

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<sup>58</sup> Drake Brandon, 2012, The influence of climatic change on the Late Bronze Age Collapse and the Greek dark Ages, *Journal of Archaeological science*, XXX, p., 1-9

<sup>59</sup> Emeis et al, 2000, Temperature and salinity variations of Mediterranean Sea waters over the last 16.000 years from records of planktonic stable oxygen isotopes and alkenone unsaturation ratios. *Palaeogeography, Palaeoclimatology, Palaeoecology* 158, 259-280

<sup>60</sup> As above Drake Brandon,2012

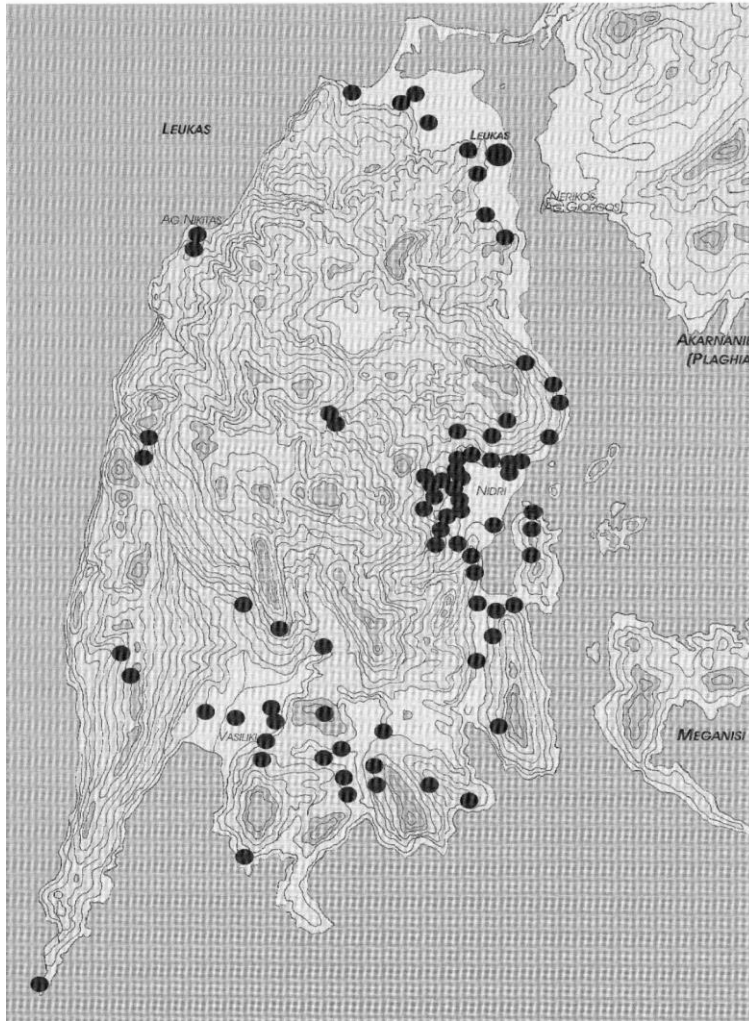


Image 31. The above map indicates the sites that was found settlements foundations from geometric period till Roman period according to Manuel Fiedler Nicht nur Homer: Wilhelm Dorpfelds Forschungen zum antiken Lefkas p., 284 In : *Διεθνές Συνέδριο αφιερωμένο στον Wilhelm Dorpfelds, πρακτικά Συνεδρίου Λευκάδα 6-11 Αυγούστου 2006*, Εκδόσεις περί τεχνών

## 11. Classical city of Lefkas- archaic era (8<sup>th</sup> century B.C)- Size, population, rural settlements

The limited artwork and minor participation in Mediterranean trade systems of the Protogeometric to Middle Geometric periods, gave way (8<sup>th</sup> century-Late Geometric era) in commercial expansion, significant ceramic and architectural works. Population rise, political structure was transported abroad through contemporary Greek colonial foundations around the Mediterranean and Black Sea. Essentially it

signifies a form of state dependent on a single urban center, normally with villages and farms surrounding the latter as rural satellites.<sup>61</sup>

Strabo<sup>62</sup> and Pseudoskylax<sup>63</sup> give the first information about the colonization of Lefkas. Ancient written sources report another two townships Phara<sup>64</sup> and Ellomenon<sup>65</sup> but they have not been testified with archaeological findings. What it is believed is that Phara was an ancient town around southwestern plain of modern Vasilliki. The information for the existence of three ancient cities could be estimated as a hypothesis with great chances since in these areas from a geomorphological point of view are included the three big plains of the island ideal for agricultural activities, farming and animal husbandry activities.

Compared to other Ionian islands, in Kephallenia was found 4 ancient townships ( Pronnoi, Sami, Poros and Krani)<sup>66</sup>, in Zacynthos island one ancient town and in Corfu one. Kephallenian's four cities could be related to its size and its morphology since it is a big island with lot of arable lands.

The ancient city of Lefkas was founded in the end of the 7<sup>th</sup> century B.C as a Corinthian colony. It was located on the north-eastern part of the island of Lefkas at a distance of 2.5 Km from the modern capital of the island. The urban area was surrounded from fortification.

The site of the ancient city from one hand and the opening of the canal from Corinthians, was of great importance because it was chosen there so the port of the city was able to control in this way the narrow sea passage between the north-eastern coastline of the island and the Acarnanian coast and thus the navigation towards the Ionian and the Adriatic Sea.

In this way was ensured the connection across the Ionian sea where existed the network of Corinthian colonies Ambrakia, Sollio, Anactorio, Apollonia. Through this canal in the past were moved from Epirus cereals<sup>67</sup> and was also a passage for

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<sup>61</sup> As above, Bintliff J., 2012, The complete archaeology of Greece., p.,234

<sup>62</sup> Strabo, 7.7.6 , 10.2,8

<sup>63</sup> Periplus, Pseudoskylax 34/F.H.G Muller . I, 15-96, “Μετά δε Αμβρακίαν Ακαρνανία ἔθνος ἐστί και πρώτη πόλις αὐτόθι Ἄργος το Αμφιλοχικόν και Ανακτόριον και λιμὴν και ἐξω του Ανακτορικού κόλπου αἶδε. Ακτὴ και πόλις Λευκάς και λιμὴν.....Αὕτη δ’ ἐστὶ νυν νήσος τον Ισθμόν αποτεταφρευμένη. Μετά δε ταῦτα πόλις Φαρά και κατά ταῦτα Νήσος ἐστὶν Ιθάκη και πόλις και λιμὴν»

<sup>64</sup> Pseudoskylax 34.

<sup>65</sup> Thucididis, *Historia* III. 94.1,

<sup>66</sup> Kephallenia project, *Acta Archaeologica*, (ed) Klavs Randsborg, Vol: 1,2, Blackwell Munksgaard, 2002

<sup>67</sup> Λυκούργος, *Λόγος κατά Λεοκράτους*, 26

individual travelers who followed this route.<sup>68</sup> The canal was used from the fleets so to escape to the open sea from their enemies.<sup>69</sup>

In the 5<sup>th</sup> century B.C, Corinthians built the so called “mole of the Corinthians” as the southern end of Lefkas sound. The remains of the mole are well preserved and today can be found in water depths of at least 1.4 m below the present sea level. This is an indicator of the considerable relative sea level rise during the past 2500 years.<sup>70</sup> Northern of the mole, a lithic bridge of 750m with openings for the border of the ships connected the island with Acarnanian coasts.<sup>71</sup> Strabo, reported that the bridge was erected during Hellistic era when Lefkas had a great political significance as head of the Acarnanian League and this reference could be a terminus ante quem concerning the time of construction of the bridge.<sup>72</sup> A second port connected with elongated walls was located in the northern coast of the island, probably at the bay of Agios Ioannis.<sup>73</sup>

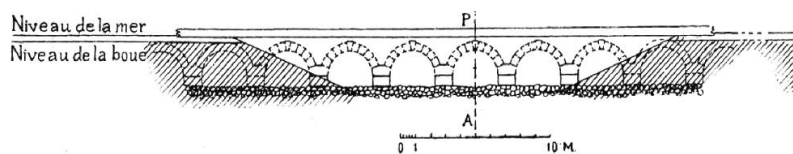


Fig. 7. Le pont antique de Leucade.

Image 32. The hypothetical reconstruction of the bridge.( Negris, 1904).

The ancient cemeteries, as in the case study of Leucada, were spread out on the outskirts of the settlement so to be easily accessible from the residents.<sup>74</sup>

The ancient city extends between the modern settlements of Kalligoni to the North and Karyotes village to the south, while the western part reach the hill Koulmos and the eastern offshore plain. On the northern part at Kalligoni flowed the water from “Megali Vrissi” ( natural spring) while on the southern part at Karyotes there was the big spring of “ Spasmeni Vrissi ”. The land that surrounded the walled city, north and

<sup>68</sup> Cicero, *Ad familiares*. XVI, 2-5

<sup>69</sup> As above, Thoukididis III, 81,1, IV, 8.1

<sup>70</sup> As above, Vott A., Bruckner H., et al., *Palaeogeographical aspects of tsunami impacts on the Lefkada coastal zone during the past millennia*

<sup>71</sup> Thoukididis, III, 94,2, Fiedler M., *Zur Topographie der Polis Lefkas*, In: P. Bertold, J. Schmid,Chr. Wacker, *Acarnanien, eine Landschaft im antiken Griechenland*, Wurzburg 1996,p., 157-168

<sup>72</sup> Strabo I.3 18, X 2,8

<sup>73</sup> J. Partch, 1889, *Die Insel Lefkas, eine geographische Monographie* p., 8-10, W. Murray *The coastal sites of western Akarnania: A Topographical-Historical survey*, 1982, p., 186-190

<sup>74</sup> Ντούζουγλη Αγγελική, Παρατηρήσεις στα νεκροταφεία της αρχαίας Λευκάδας, στο: Πρακτικά Δ' Συμποσίου Εταιρείας Λευκαδικών Μελετών 2001, *Οι πρωτεύουσες της Λευκάδας, Αρχαία Λευκάδα-Νήρικος, Κάστρο Αγίας Μαύρας, Αμαζική*, Αθήνα 2001

south provided the appropriate arable land for the population. The same plain was a significant production area until the end of 2th century. The most part of it is covered with olive grove while the southern coastal areas called “ Perivolia”. The location that was chosen ensures sufficient arable land for the population. The dimensions of the plain are 4 km in length and 1-2,5 km in width.<sup>75</sup>

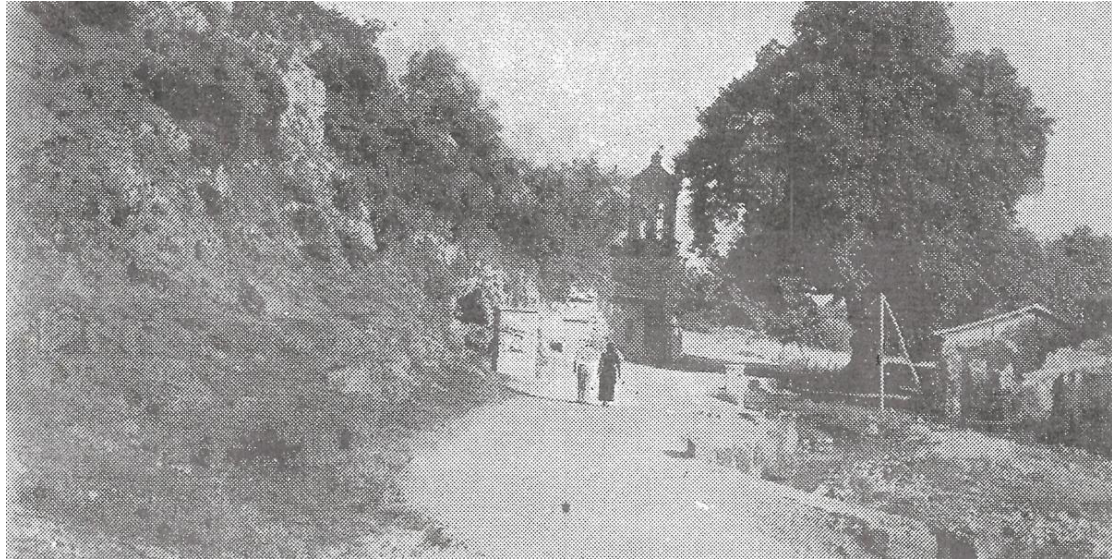


Image 33. From “Orfeas” album with title : “Lefkas”, 1954, The site, “Megali Vrissi” at Kalligoni

Through the use of geophysical survey and GIS techniques it was possible to collect information which can be used to clarify the city plan of the ancient city of lefkas. A detailed plan of subsurface anomalies was identified enhancing the information context of the up to date excavations and offering an integrated image of the southern section of the ancient city. The perimeter of the ancient wall is 4,5 km while at the south-east section of the ancient city there is an area of about 80.000 square meters surrounded by visible architectural parts according to geophysical investigations, magnetic and soil resistance measurements<sup>76</sup>

During classical times the area was active in the Peloponnesian War as an ally of its mother city and enemy of Athens<sup>77</sup> . In the 4<sup>th</sup> century it remained loyal to Corinth until 368 B.C and fell to Macedon with Athens after the battle of Chaironeia in 338

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<sup>75</sup> Partch J., *Η Νήσος Λευκάς –Γεωγραφική Μονογραφία*, Fagotto books, σελ.,29

<sup>76</sup> Sarris A., Topouzi S., Triantafyllidis F., Soetens , 2003, Application of near –surface geophysical tools and GIS for mapping the ancient city of Lefkas, *Proceedings of the 4<sup>th</sup> Symposium of the Hellenic Society for Archaeometry, national Hellenic Research Foundation*, Athens 28-31 May 2003

<sup>77</sup> Thuc. 1.46, 2.85-92, 3.69-81,94

B.C Thereafter part of Acarnania, Lefkas was capital of the Akarnanian League from 230 to 189 B.C<sup>78</sup> and sided with Macedon against Rome.

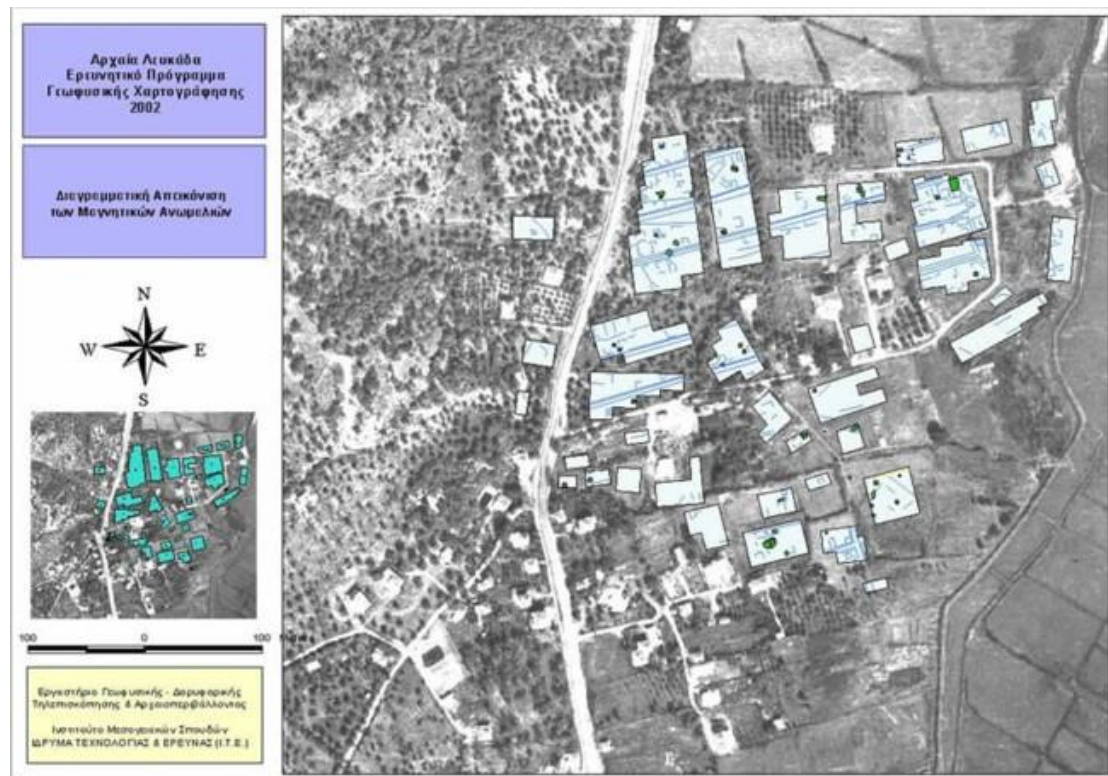


Image 34. Ancient Lefkas- Research program of Geophysical mapping 2002 showing the magnetic anomalies, Sarris A., Topouzi S., Triantafyllidis F., s Soetens , Application of near – surface geophysical tools and GIS for mapping the ancient city of Lefkas, *Proceedings of the 4<sup>th</sup> Symposium of the Hellenic Society for Archaeometry, national Hellenic Resarch Foundation, Athens 28-31 May 2003*

<sup>78</sup> Polyb. 5.5, Livy 33.17.1

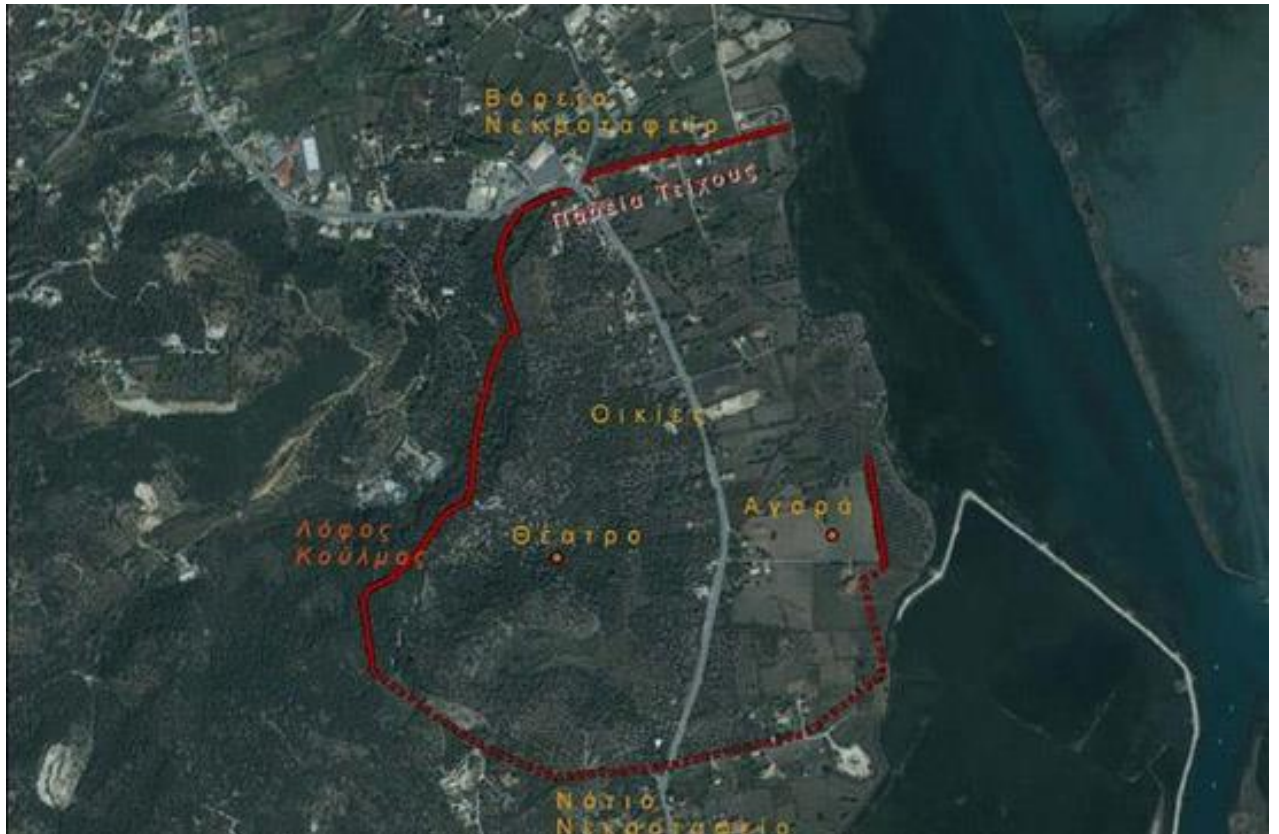


Image 35. [www.diazoma.gr](http://www.diazoma.gr) aerial photography indicating the boundaries of the ancient city



Image 36. Ruins of ancient city of Lefkas ( photo: Gazi Anastasia)

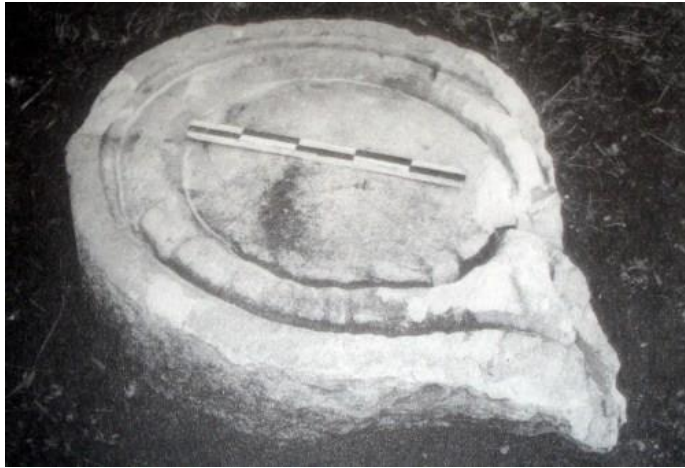


Image 37. Basin compression with two parallel grooves in the periphery,. Diameter: 0.96 m, height 0.25 m, distance between inner and outer groove 0.10m is of an olive press that was found in the street philosphon in Lefkas.. Source: Γεωργία Πλιάκου, Κρασί, λάδι και πορφύρα. Μαρτυρίες για τις παραγωγικές δραστηριότητες στην αρχαία Λευκάδα, *Πρακτικά 7ου Πανιονίου Συνεδρίου, Λευκάδα 26-30 Μαΐου 2002*, Τόμος II, Αθήνα 2004.

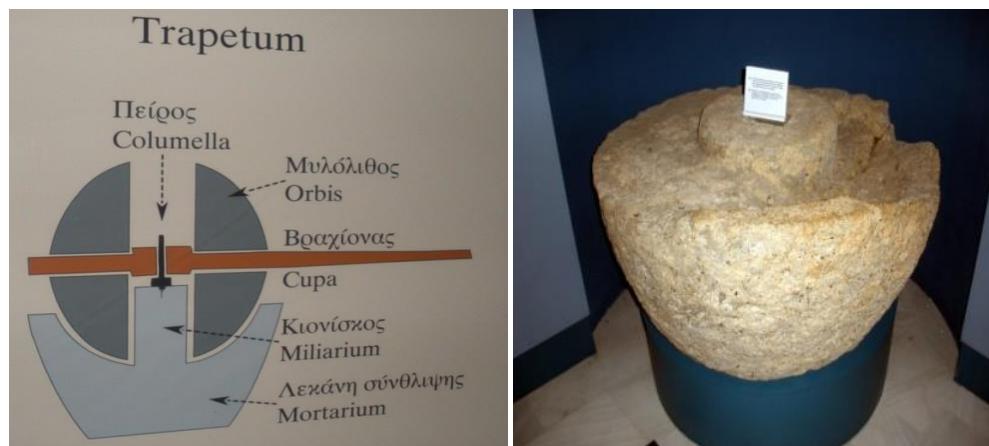


Image38. Source: Archaeological Museum of Lefkas Unfinished basin crushing olives (mortarium) for olive press release trapetum. Found in Kalligoni Koulmos-hill, in the walled-in area north of the city of Lefkada. It's not sure its original position.

Concerning the population of the city during the 5<sup>th</sup> century B.C, according to Belloch's calculations<sup>79</sup> was estimated at around 3000, while Goodisson<sup>80</sup>, estimated the population of the ancient city according to the size and population that the city had in 1820, approximately at around 15.000-20.000. He reached at the same conclusion too, by comparing the perimeter of the ancient walls with those of Thebes.

<sup>79</sup> Belloch, *Die Bevölkerung der reichisch-romischen velt*, Berlin 1886, p. 190

<sup>80</sup> Goodisson W., 1822, p. 23



Rondogiannis view<sup>81</sup> was that if at 3000 of Belloch estimation, be added , the female population of the same age and male population up to 18 years old, female of the same category, the slaves, the servants and foreigners who inhabited the place, it is possible that the population of the island was around 16.000 -18.000.

At a distance of 2 Km from the ancient city and close to the northern ancient cemetery was revealed (for the configuration of Philosopher's street) an elongated outwork which protected the rural site of the ancient city.<sup>82</sup> Most city residents in close packing cities and satellite village-towns in the Aegean allowed most city residents to commute daily into their landscape to cultivate their estates and graze their stock over traveling distances generally of half an hour or rarely one hour (2-3 and 5-6 Km radius respectively).<sup>83</sup> The farmhouses outside the walls in the countryside of ancient Lefkas, are dated mainly to the 4<sup>th</sup> and 3<sup>rd</sup> century B.C. In pre-existed Hellenistic farm houses were founded early roman extensive building complexes. Those complexes are located beside main roads which cross the ancient cemeteries, as well as leading to the city and had at people's disposal organized workshops. There were spotted oil extraction areas, millstones of crushing basins, press beds, carbonized olive pits, wine presses as well as elements of a workshop for the production of the purple-dye.



Image 39. A stater from British museum which shows the Athena with a murex shell, from the mint of Levkas ( the letters «AEY» on the left side, certify the local mint).

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<sup>81</sup> Ροντογιάννης Π, Ο πληθυσμός της Λευκάδας από το απώτερο παρελθόν ως το 1991 μ.Χ., στο: Επετηρίς Τόμος Η', Εταιρεία Λευκαδικών Μελετών 1995, σελ.,83

<sup>82</sup> Πλιάκου Γεωργία , Κρασί, λάδι και πορφύρα.Μαρτυρίες για τις παραγωγικές δραστηριότητες στην αρχαία Λευκάδα, *Πρακτικά 7ου Πανιονίου Συνεδρίου, Λευκάδα 26-30 Μαΐου 2002*, Τόμος ΙΙ, Αθήνα 2004, σελ.,48

<sup>83</sup> As above, Bintliff John, 2012,*The complete archaeology of Greece*,p.,271



Image 40. Philosopher street, Roman rural settlements with winepresses installations, IB' Ephorate of Prehistorical and Classical antiquities, Zachos Konstantinos (2000-2010)

Furthermore the numerous amphora shreds found at the warehouse of the ancient port<sup>84</sup> are indirectly associated with the production of wine and olive oil, so with the trade of agricultural products of the city. The amporeis which were spotted in the ancient agora of the city with stamped handles with various symbols such as the letter “ Λ ” or “ ΛΕΥΚ ” (derives from initial of the greek word ΛΕΥΚΑΔΑ (LEUKADA)), indicates the existence of a local workshop, probably for the needs of the local community concerning the trade of agricultural production of wine and olive oil.<sup>85</sup>

The purple processing seems that was known in the island at least from 4<sup>th</sup> century B.C. A depiction of a shell, on the reverse side of a silver stater of Lefkas town indicates such an occupation.<sup>86</sup> The mint of Levkas began operation around 500 B.C with silver staters according to the Corinthian type. The silver stater was the coin of Corinthos and was adapted from its colonies for political and economic reasons. The observe of the coins bear the Greek letter “ Λ ” indicative of Levkas.<sup>87</sup>

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<sup>84</sup> As above, Murray W. *The Coastal sites of western akarnania: a topographical –historical survey* ( Ph.D Unicersity of Penssylvania) p., 224-253, as above, Murray W.,“ The ancient harbor mole at Lefkas, Greece, A. Raban ( ed), *Archaeology of Coastal Changes, Proceedings of the first International Symposium “ Cities on the sea-past and present”* Chaifa 1986, p.p. 101-118

<sup>85</sup> I. Ανδρέου. « Ελληνιστική Κεραμική Λευκάδας » Β' Επιστημονική Συνάντηση για την Ελληνιστική Κεραμική- Πρακτικά, Αθήνα 1990. Σ. 54-57.

<sup>86</sup> As above, Πλιάκου Γ.2004, p. 56

<sup>87</sup> As above, Douzougli A. and C. Zachos 2003, p., 75

Symbols from ancient coins of Lefkas, are very useful for us, so to synthesize a picture of the city. These symbols include vine, grape, olive, iris, scallop shell, pinna, which testify agriculture, fishing, trade and shipping.

Pliny<sup>88</sup>, give us the information that there was a well-known aromatic oil from a lily plant which called “Leucadia iris”<sup>89</sup>. A stater from British museum shows the head of Athena with this kind of plant<sup>90</sup>. It is probably about *Iris germanica* specie with its flavoring roots of which, in ancient Greece, the wine was flavored and furthermore was produced an essential oil for bad breath.<sup>91</sup>

During the summer season the main beach of Lefkas which called “gyra” is full of *Pangratiun maritimum* a white liliun known from Minoan frescoes.

Pliny reported as well, sard or carnelian (semiprecious stone) around Lefkas<sup>92</sup>.



Image 41. *Pangratiun maritimum* in Gyra beach during the summer ( Gazi A.)

According to archaeological data it is obvious that the ancient city of Lefkas was surrounded by a network of agricultural installations.

Lefkas city was a powerful city during historic times. The archaeological findings in relation to written sources, the agora, the existence of public buildings and theatre, workshops and warehouses, the ancient moles and harbor, indicate a wealthy

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<sup>88</sup> Pliny, *Historia Naturalis* 21-42

<sup>89</sup> “ *Optimum antea irinum Leucade et Elide ferebatur-iam pridem enim et seritur-nunc e Pamphylia sed cilicium maxime laudatur atque e septentrionalibus*”

<sup>90</sup> *Catalog of Greek coins in the British Museum* xii, *Corinths and colonies* ( Head 1889)

[www.snible.org/coins/bmc/](http://www.snible.org/coins/bmc/)

<sup>91</sup> Ελμουτ Μπαουμαν, *Η Ελληνική χλωρίδα στο μύθο, στην τέχνη, στην λογοτεχνία*, μτφ Πέτρου Μπουσαλη, Ελληνική Εταιρεία Προστασίας της Φύσης, Β΄ έκδοση, 1999. σελ., 65

<sup>92</sup> Pline, *Historia Nat.* 37.106

community. The residents of the city occupied with fishing, trade, the production of oil, cereals and wine, the pottery.

The ancient theatre was located at the border of the ancient settlement and in direct relation to this.<sup>93</sup>



Image 42. Ancient theatre, foundations of the wall at the foot of hill Koulmos , D-DAI-ATH-lefkas 162,1891

Claudios Ailianos<sup>94</sup> reported that in the sea of Lefkas there were plenty of fish and that fishing was a prosperous work for them. During the excavations in the ancient city were found in houses bronze hooks and needles for knotting the fish nets and leaden sinkers. These findings confirm the involvement of residents with fishery.

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<sup>93</sup> Πλιάκου Γεωργία, Νέα στοιχεία για το αρχαίο θέατρο της Λευκάδας, μια τοπογραφική προσέγγιση, *Ηπειρωτικά Χρονικά*, 32, 1997 σελ.,37-42

<sup>94</sup> Claudios Ailianos, *De Natura animalium* 13,19

## 12. Classical and Hellenistic years

### The ancient towers

The island has at least fifteen towers in its rural and suburban landscape. ( Poros, Achuriam Kroupam Magemeno, Maranthochori, Kastri, Eglouvi, Skaros, Palaiokatouna, katochori, Neochori,). Most belong to the Classical period and a few are later replacements.

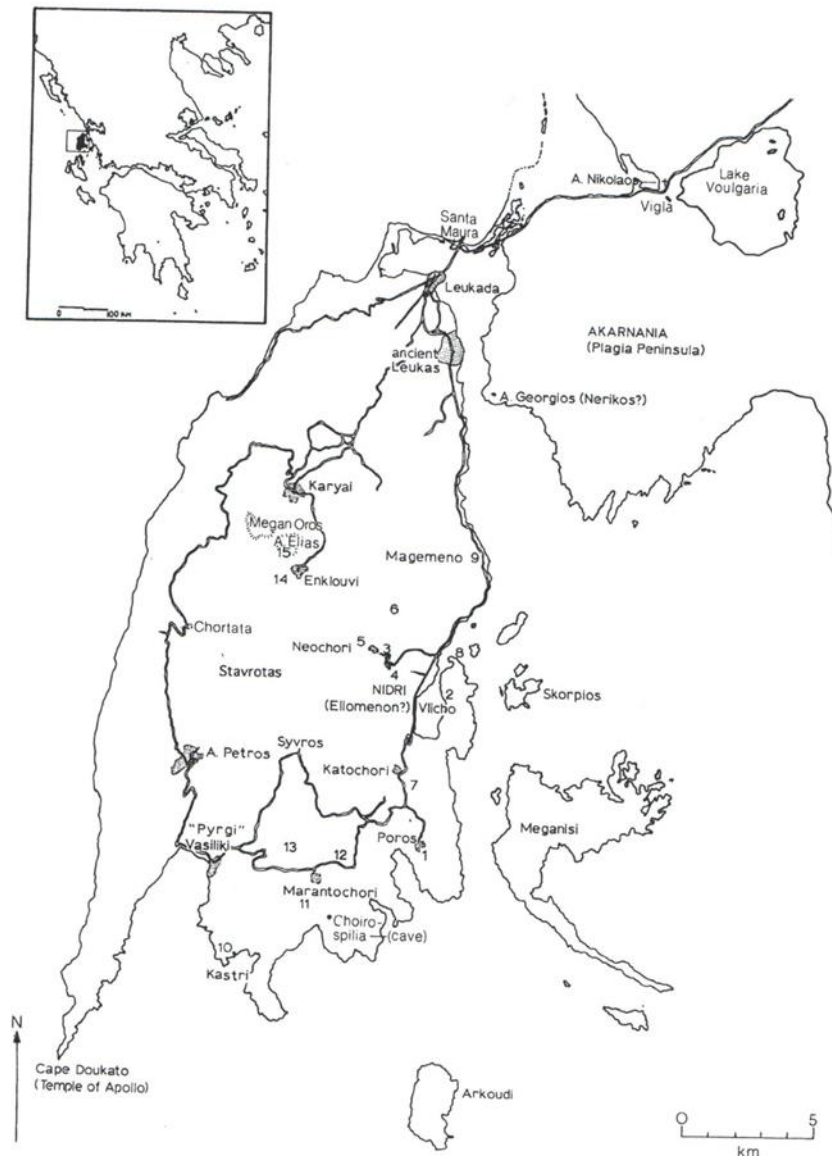


Image 43. Map of Lefkas island according to S. Morris, indicated the areas where being found the ancient towers (Morris S., *The towers of ancient Lefkas: Results of a topographic survey 1991-1992*, *Hesperia* 70, 3, 2001 , p. 285-347)

The tower site at Poros ( known as Pyrgi) lies just above the modern village, about half a km south of the chapel of Agios Nikolaos and west of the modern dirt road that leads south from the village to fields and orchards. Perhaps the round tower stood alone in an early phase of the complex, and was then built into an expanded set of building augmented by a new, square tower.<sup>95</sup> The ancient complex lies at the head of a narrow valley that slopes from north to a steep drop into the sea at the south. This valley lies between the eastern peak of Kastro and the lower western ridge of uplifted layers of limestone that drop steeply to the waters of Rouda bay.<sup>96</sup> The ancient site is hidden from the sea and seems chosen for protection and access to arable land rather than visual communication. This sheltered rather than strategic setting eliminates the likelihood of any reconnaissance or lookout function and is compatible with the domestic and agrarian details of the site that confirm Dorpfeld's identification of a rural residence. The interior of the complex at Poros preserves several modern ground levels separated by ancient and modern walls. At the west there is an ancient olive-oil press bed. Other evidence for ancient agricultural activity at Poros is a wide shallow basin built of flat slabs of marine conglomerate with a raised lip, built against and under the heavy blocks of the western wall. There is also an installation that suggests a wooden vat with stone floor emptying into the adjacent basin perhaps a grape press with basin. (The production of wine was one of the most important activities in classical Lefkas). Locating this kind of activity makes the northwestern quadrant of Poros complex an open courtyard entered at the northwest and protected on the west side. About 10 m east of the square tower a wellhead of ancient blocks still supplies water and seems that no doubt a predecessor tapped an ancient water source. These remains indicate agricultural industries including the extraction of wine and oil, presumably from local produce, took place at the tower complex.<sup>97</sup>

Throughout a life of approximately three centuries these structures served the same function: to house a small group of rural residents, presumably an extended family with servants of slaves rising and processing products for household consumption. In more recent time the same crops are raised here. Although the

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<sup>95</sup> A. Douzougli- S. Morris, Ancient towers on Lefkas, Greece, in : *Structure rurales et societies antiques*, p. 216, Morris S., Πύργοι και αγρουκίες στην κλασσική Λευκάδα: Έλεγχος της υπαίθρου στην κλασσική Ελλάδα, *Πρακτικά 7<sup>ου</sup> Πανιωνίου Συνεδρίου, Λευκάδα 26-30 Μαΐου 2002*, Τόμος II, Αθήνα 2004. σελ.,81

<sup>96</sup> S. Morris, 2001, The towers of ancient Lefkas, results of a topographic survey, 1991-1992, *Hesperia* 70 p., 285-347

<sup>97</sup> As above p.,308, A. Douzougli- S. Morris, Ancient towers on Lefkas p, 216

vicinity of Poros preserves occasional antiquities<sup>98</sup> the nearest large settlements lie at Nidri and Vassiliki. This places the tower site at Poros several km from the nearest ancient town and its isolation helps explain the need for a tower as well as an enclosure wall whose considerable mass and height afforded considerable protection.<sup>99</sup>



Image 44. The wellhead of ancient blocks of Poros rural complex (photo Gazi Anastasia)



Image 45. Buried press stone from Poros complex ( Gazi Anastasia)

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<sup>98</sup> Dorpheld Nidri notebook I, p.16 DAI neg. Leuka rosas 35

<sup>99</sup> As above Morris S, 2001, The towers of ancient Lefkas, p. 310



Image 46. Remains of Poros tower. ( source: A. Douzougli- S. Morris, Ancient towers on Lefkas, Greece, in : Doukellis and Mendoni, *Structure rurales et societies antiques*, Paris,1994)

As far as concerns the other towers on the island, only foundations survive. Near the second major classical city Ellomeno, lies five at least towers, around the plain and the bay of Nidri. ( Vlichos, Palaiokatouna, Neochori, Helleniko, Katochori ). The tower at “Palaiokatouna” is situated on gentle slopes between the homonymous village and the Amali ridge to the south at 65 metres above sea level. Its location among old olive groves is appropriate to its presumed ancient function. Near the village of “Neochori” 359 m above sea level there are the foundations of a tower lie on the north side of the hill above the “Mavroneri” gorge and near the “Mavroneri” stream. At the opposite site above the plain of Nidri on Skaros slope just above the Dimosari stream are the foundations of a tower called “Helleniko” with a commanding view on the plain. Skaros mountain forms the northern boundary and back drop to the plain of Nidri. This natural height 600m above sea level, looms north and east to offer massive protection for the Nidri bay from wind, weather and even visibility.<sup>100</sup> The site attracted settlement since at least the Middle Bronze Age since Dorpfeld’ s “*Burgergraber*” lie at the foot of Skaros where a number of Classical walls and finds were uncovered.<sup>101</sup> About 10m east of this structure was detected a polygonal wall probably retaining walls for a platform or terrace for a structure. Together these features preserve traces of urban occupation on the slopes of the

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<sup>100</sup> As above, Morris S., 2001,p., 314

<sup>101</sup> As above, Dorfeld 1927 *Alt-Ithaca*, p. 207-213



hill<sup>102</sup>. Near the site there is an area called “mandri” today ( means livestock enclosure), so as a farm tower the skaros structure could be linked to this area of terraced, arable land.

The Skaros mountain in more recent years is considered as an area suitable for pasture since the vegetation of the mountain which comprises with oak trees and evergreen broadleaves makes the region appropriate for grazing.<sup>103</sup>

The deep bay of Nidri is formed by a long peninsula running over 2km from south to north along the east and enclosing the harbor whose extreme south end is called Vlichos. It was this long narrow neck of land that protected the harbor and attracted settlement since prehistoric times. In this area on the hill called “ Kroupa” found a round tower and noted classical- black-glazed pottery . The tower’ s location ( point unlikely for a farm) is better situated to support navigation into the vital harbor of Nidri or best understood as some kind of marker to ships entering Ellomeno<sup>104</sup>.

Near the small fertile plain of Marantochori in southern Lefkas exists at least two pairs of towers, two around the cultivated fields below the prehistoric cave site of Choirospilia and two other on the edge of the Bisas plain, near a small natural lake.<sup>105</sup> The plains north and south of Maradochori village consist of absorbent red clay layers ( terra rossa) that retain annual runoff of water and soil from the surrounding hills which periodically drained through the kind of limestone sink-holes called “ *katabothres*” . Elsewhere in Greece identical plains have proved attractive for cultivation and account for numerous towers.<sup>106</sup> It is not surprising to find a concentration of ancient structures relate to agriculture in the island’s most fertile settings.

Also in Eglouvi plateau on high inland plains, lies two towers ( at Ag. Fillipos, Litanophli). It is possible that the lentils be cultivated in antiquity too.<sup>107</sup> These agricultural structures could exist from Hellenistic period<sup>108</sup>. In this plateau, that it was during Paleolithic period a closed wetland (polje), residents continue for centuries the traditional cultivation of lentils. In our days the lentils are sown in the basin

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<sup>102</sup> As above Morris S.,2001, p 317

<sup>103</sup> As above Γαζή Αναστασία, 2001 , *Ένα δάσος θυμάτων*

<sup>104</sup> As reported from Thucididis III.94.

<sup>105</sup> As above, A. Douzougli- S. Morris, Ancient towers on Lefkas, Greece, in : *Structure rurales et societies antiques*, p. 217

<sup>106</sup> Morris S.2001, as above 325, Muller 1982., “MegarikaVIII-IX “ BCH 106pp 379-407, Ipiros

<sup>107</sup> Jane Carter- Sarah Morris, Arch. Delt. 47, 1992, B,1

<sup>108</sup> *Arts and Archaeology*, 102, 2007 p 132-133

formed between limestone rocks now eroded and bare, after the drying of the prehistoric polje due to tectonic movements. There, at the edge of the plain in terrarosa layers, which still reserve, were collected flint cores and one Levallois core. In the region there is an area called “*katapotiras*” west of the plateau where accumulated the waters. This area produces the best quality lentils<sup>109</sup>.

Eglouvi landscape combines many distinct characteristics as: the local way of life, the community based tradition for cultivation and archaeological findings, that’s the reason why it is considered as a monument of modern times and it has a special architectural, social, historical and folkloric importance.



Image 47. A. Remains of the ancient tower at Lithanophli, b. A well preserved Voltos of Eglouvi ( Photo: Gazi Anastasia)

How these structures were connected with their environment and why these towers located to these particular sites is a goal to be explored.

A theory which seems to reflect a possible scenario is that an increase in urban population by the fourth century (according to excavations of northern and southern cemeteries of ancient Lefkas), indicate smaller communities scattered throughout the island. Votive objects decline at caves and peak sites in remote rural Lefkas in the post- classical period, just when population increases in the urban sector. So if funerary and cult activity contracted to an urban nucleus in the late classical period, the same era saw the construction of rural towers perhaps in response to increased distance between urban residence and rural property. Meanwhile location

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<sup>109</sup> Κακλαμάνης Μιλτιάδης, *Εγκλουβή, λαογραφικά, κοινωνικά, εκπαιδευτικά και ιδιαίτερα χαρακτηριστικά των κατοίκων της*. Εκδόσεις Γρηγόρη, Αθήνα 2005

and finds, encouraged by the continuity of modern cultivation in the vicinity of most towers, associate them with agriculture<sup>110</sup>.

The existence of domestic ceramics at all sites, make likely that the towers were built and used as rural residences. The remains of «*pithoi*» at most of these towers, indicate storage of agricultural products for consumption or sale.

The absence of towers in the vicinity of the capital city reinforces the idea that they provided security in isolate areas distant from urban centers.<sup>111</sup>

The overview of rural Lefkas through the study of towers of classical era, indicates an organized system of exploitation of the resources of the island, from few wealthy landowners who could afford to build fortified houses and preserve numerous households. As in other regions like in Attica<sup>112</sup>, such landowners were not resident of rural areas but live in the city. In order to be understood the way of controlling the rural areas in ancient Lefkas, it is prerequisite the knowledge of the prevailing situation in the capital city.<sup>113</sup> What it is known from the excavations in the area of the ancient city (Kalligoni, Kariotes), is the revelation of wealthy houses and burials indicative of a prosperous class.<sup>114</sup>

Findings near the ancient port from building remains of public warehouses, such as fragments of amphoreis and remains of shops for the sale of wine show that the main product of the city was the wine.<sup>115</sup>

According to Pliny<sup>116</sup> Lefkas wine was one of the best of its age. From Athineos “*Deipnosophistai*”<sup>117</sup> we know that Euvoulos stated that wine of Lefkas was sweet like honey. Elsewhere Athineos refers that the wine of Lefkas caused headache because of the plaster that was thrown in it so to achieve a good red color.

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<sup>110</sup> As above Douzougli A- S. Morris, p., 217

<sup>111</sup> As above S. Morris, 2001, The towers of ancient Lefkas, p., 341

<sup>112</sup> *Agriculture in Ancient Greece, Proceedings of the Seventh International Symposium at the Swedish Institute at Athens*, 16-17 May 1990, Stockholm 1992, articles of Jameson M., Osborne R., Foxhall L.

<sup>113</sup> Morris S., Πύργοι και αγροικίες στην κλασική Λευκάδα: Έλεγχος της υπαίθρου στην κλασική Ελλάδα, Πρακτικά 7<sup>ου</sup> Πανιόνιου συνεδρίου, 28-30 Μαΐου *Λευκάδα 2002*, Αθήνα, 2004, σελ., 83

<sup>114</sup> Πλιάκου Γ. Η αρχαία πόλις Λευκάδας., Το άστυ και η ευρύτερη περιοχή του, Α. Ντούζουγλη, « Παρατηρήσεις στα νεκροταφεία της αρχαίας Λευκάδας». Οι πρωτεύουσες της Λευκάδας, Πρακτικά Δ΄ Συμποσίου Λευκάδα 6-8 Αυγούστου 1999, Εταιρεία Λευκαδικών Μελετών, Αθήνα 2001, σελ., 22-43 και 45-84

<sup>115</sup> Ντούζουγλη Α. Ζάχος Κ., « Αρχαιολογικές έρευνες στην Ήπειρο και στην Λευκάδα 1989-1990», *Ηπειρωτικά Χρονικά* 31 (1994) 44-45.

<sup>116</sup> Pliny *Historia Naturalis* XIV, 76

<sup>117</sup> Αθήναιος, *Δειπνοσοφισταί* I.29, α, 1.33, b “Λίγο κρασάκι έχω εδώ απ’ τη Λευκάδα, για πόσιμο, γλυκό σα μέλι.”



Image 48. Staters from Lefkas depicted the head of Athena with grapes.( British museum)

Viticulture, the production of amphora's and the production of wine was not easy activity and moreover required a number of humans, so it is possible this work to be done by the slaves or vines-hired labour. Thus the classical towers of rural Lefkas could be a symbol of the control of the environment through the exploitation of human labor.

Most of rural structures seem to be concentrated in the eastern part of the island, an area without abrupt coastline, more fertile land for agriculture and suitable for pasturing.



Image 49. Eglouvi plateau surrounded by mountains ( photo:Gazi Anastasia)



Image 50. View from Scaros mountain, towards the big grove of Nidri ( photo: Gazi A.)

### 13. Other sites that declares settlement in archaic and classical times

Apart from the ancient city of Lefkas, at Chortata was spotted eight bronze objects ( double handax, pottery sherds of classical times) which declares possible settlement.<sup>118</sup>

Nidri plain is also a site which may be inhabited during the archaic and classical times, since there were found tiles, hellenistic walls from big polygonal stones<sup>119</sup>, which according to Dorphelf theory belongs to ancient city of Ellomenon mentioned by Thoukididis<sup>120</sup>. Futhermore was found graves of 6<sup>th</sup> century and of the beginnings of 5<sup>th</sup> century at Palaiokatouna close to the site ‘ paleovoros’ and ‘ koloni’.

Graves and other findings which probably related with small settlements, was located at Charadiatika, Scaros mountain, above the Syvota area, above the bay of Ammoussa, at the site Pyrgi near Vasiliki, at Poros and Syvros and at cape doukato.<sup>121</sup>

From these findings one can assume that in coastal or near-coastal areas in the east part of the island from the capital city of Lefkas until Vassiliki area, there were

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<sup>118</sup> Alt-Ithaka, 243, Ροντογιάννης Γ., σελ., 185

<sup>119</sup> Dorpheld, Alt-ithaka, 169,242

<sup>120</sup> Thoukididis III, 94,1

<sup>121</sup> Alt-Ithaka 243,244

installations of few families or bigger settlements. The same is likely to occur in all the plains and fertile parts of the island.<sup>122</sup>

#### **14. Sanctuaries and cult-caves of ancient Lefkas**

In the southwestern promontory of the island known as Doukato was the main sanctuary of a Doric temple dedicated to Apollo. Of this structure few remains survive today since in the same place there is today a modern lighthouse<sup>123</sup>.

Dorpheld discovered the foundations of a big doric temple at Rodaki near Maradochori village where exists today the church of Saint Ioannis. Also above Vasilliki plain at “ Goulas ” site, was found building remains of another sanctuary which probably was devoted to Athena. Near Skaros southern slopes was discovered figurines which declare the cult of a female divinity from 6<sup>th</sup> century B.C.

Remains of a sanctuary devoted to a female divinity were spotted also at “Sotiros” place, which operated at least from 5<sup>th</sup> century B.C<sup>124</sup>.

Numerous offerings have been found in caves like Agia kyriaki cave opposite of Nidri plain, in Choirospilia cave, in Asvotripa cave and the cave of Boliatso near kavalos village.

The Asvotripa cave is a cult-cave of Nymphs, Pan, Hermes, Seilini and Satyrs evidenced by the figurines and the relief tablets dated from 6<sup>th</sup> century until Hellenistic times. The existence of similar figurines in many cult-caves devoted to Nymphs and relative Gods leads to the identification with the dance of Nymphs referred by Homer ( Odys. m 316-318)<sup>125</sup>.

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<sup>122</sup> As above, Ροντογιάννης Π., σελ 186

<sup>123</sup> Μαχαιράς Κ., *Η νήσος Λευκάς κατά την Αρχαιότητα*, Αθήνα 1962

<sup>124</sup> As above, Douzougli A- C. Zachos, 2003 p., 103

<sup>125</sup> Χρυσή Τζουβάρα- Σούλη, Ομάδα πήλινων ειδωλίων από το σπήλαιο Ασβότρυπα στο Φρόνι Λευκάδας, στο: *Πρακτικά Δ' Συμποσίου Εταιρείας Λευκαδικών Μελετών 2001, Οι πρωτεύουσες της Λευκάδας, Αρχαία Λευκάδα- Νήρικος, Κάστρο Αγίας Μαύρας, Αμαζική*, Αθήνα 2001, σελ.,85-122



Image 51. Ruins of ancient walls at cape Lefkatas, D-DAI-ATH-Lefkas 290, 1905



Image 52. The temple Agios Ioannis sto Rodaki. In the left side, the doric columns of the ancient temple. ( photo: Gazi Anastasia)

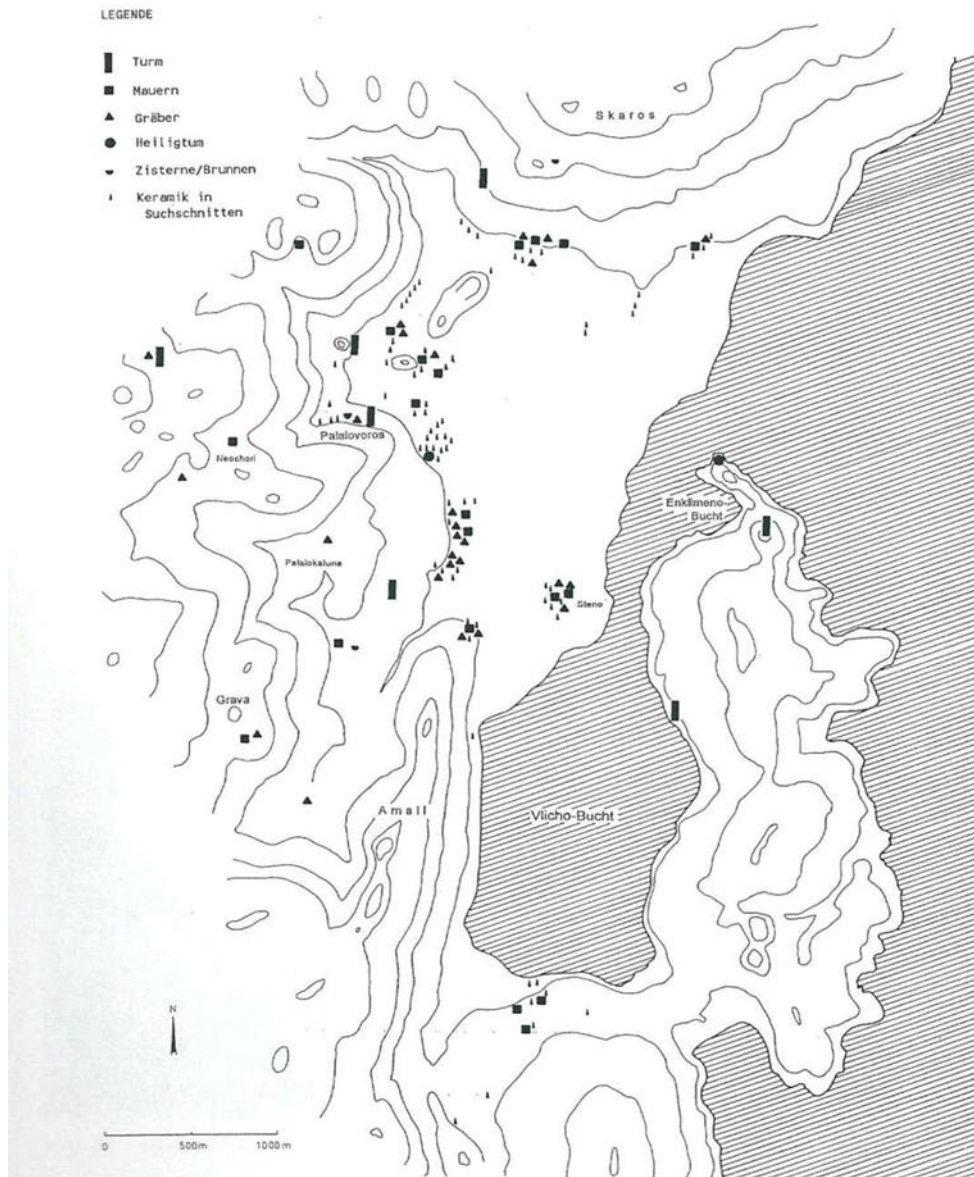


Image 53. Map of the ancient settlement traces in the area of Nidri and Vlicho bay ( from M. Fiedler, Zur topographie der, stadt Lefkas, In: P. Bertold, J. Schmid, C. Wacker, *Acaranien: Eine Landschaft im antiken Griechenland*, Munchen 1996)



## 15. Conclusions

Palaeolithic populations used many sites in the area which declares high mobility through the landscape, in order to be close to all easily accessible raw materials. There is an association of Palaeolithic finds with polje and terra rossa deposits on Karstic surface. Findings in adjacent areas of Epirus comparing with the tools of Lefkas show a relationship. It is quite sure that Neanderthals had sea-faring activities as well.

Concerning Neolithic populations we did not find the typical open settlements in Lefkas due to the absence of intensive survey.

During Bronze Age period Nidri plain seem to be the center of habitation in the Island which remains a remarkable habitation core since Roman times.

The fertile plain in combination with its proximity to the sea offered communication with other areas, facilitated the exchange of local products, and was a safe anchorage.

During the archaic era the ancient city of Lefkas was very powerful, due to its strategic point close to the canal. This period the population increased and the trade along with agriculture, pottery, fishing and navigation seem to be the dominant factors of wealth and prosperity. Rural settlements across the island's more fertile areas reinforce the hypothesis of exploitation of the land from farm owners with slaves.

In the same period Nidri (Ellomenon) and Vasiliki (Phara) had a secondary role concerning settlement patterns. Nidri plain seems to be inhabited in its perimeter, so the arable land of the big plain to remain clear for agriculture without building structures.

Generally speaking residents inhabited every fertile point of the land. So the morphology of the island seem to had a determine role in relation to habitation. The proximity of rural settlements with wells and springs seems to be another determinant factor which affected habitation.

The natural environment of the island led to the habitation during the classical times of the eastern and southern part of the island, due to the fact that in this part there were natural small or bigger bays, easy access to the sea and fertile land, while in the western part the place seemed to be unfriendly for settlements (lack of big plains, lack of natural harbors, existence of steep inaccessible coastline zones).

All our thoughts and conclusions are based on information and data we have until now. Every new testimony, evidence or archaeological finding, which comes to light, gives a new point of view on the subject.

The complicated natural world and the human reaction can make clear how difficult is the relation between human societies and nature. The more we know about human's daily life, the better we understand his choices, his reactions, his movements and his thoughts. The more we learn about both of them, the closer we come to the point of what is the cause that connects them.

This is the mystery that history hides. Especially prehistory leaves our imagination free to create scenarios and different interpretations on a subject since the lack of evidences create theories, different interpretations and speculations. But this is History!

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