

THE ZAKYNTHOS ARCHAEOLOGY PROJECT 2006

Preliminary report of the first season*

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The pilot-survey that was conducted in 2005 on Zakynthos clearly indicated that there were good possibilities for archaeological research on the island.¹ At the same time, the problems for archaeological survey became evident as well. Seismic activity and intensive agricultural practice during a very long period appear to have resulted in a high rate of destruction of archaeological sites and of individual finds. In addition, the lush vegetation on slopes and hills and intensive development for tourism severely limit accessibility to archaeological remains. In order to begin to understand the archaeology on Zakynthos, ways will have to be found to deal with these problems.

The Zakynthos Archaeology Project (ZAP) is an interdisciplinary research programme in which a variety of archaeological and geo-archaeological researches are combined. The aim of the project is to relate the spatial and chronological distribution of archaeological remains to the dynamics of the island's landscape. In order to achieve this, an archaeological pick-up survey will be carried out, which is discussed below. This survey will be supplemented with different types of investigations, such as a more extensive reconnaissance survey and the analysis of satellite images and aerial photographs.² In addition, we plan to carry out geo-archaeological research into the formation of the current landscape of the island.³ Zakynthos seems to constitute an ideal place to investigate in more detail the role of tectonics with regard to the formation of archaeological sites.

* The Editorial Board of *Pharos* regret that some information contained in the illustrations is lost, because it was impossible to print them in colour. The full article with the original colour illustrations can be viewed on the site of the Netherlands Institute in Athens: www.nia.gr/pharos14.htm.

1 Van Wijngaarden *et al.* 2005, 71.

2 The methodology of the reconnaissance survey has been described in Van Wijngaarden *et al.* 2005, 63-64. For the analysis of images, see Stoker 2007; Pieters *et al.* forthcoming.

3 Pieters *et al.* forthcoming.



Figure 1. *The three areas selected for the archaeological survey projected in a geological map*

Methodology of the archaeological survey

The archaeological survey is based on a comparison between three selected areas on the island (fig. 1). Within these three areas, all of the main geological zones are represented. At the same time, they vary substantially in terms of the landscape types and with regard to topography. We plan to map the archaeology in each of these three areas by intensive field survey. Complementary to the pick-up survey, the geomorphology of the three areas will be described and mapped in detail. Subsequently, the spatial and chronological patterns in the distribution of archaeological remains will be related to the landscape through analysis in a Geographical Information System (GIS). The similarities and differences in the archaeological patterns among the three areas will then be analyzed with regard to variations in the landscape.

Within the three transects A, B and C (fig. 1) full coverage of the surface by field walking is aimed at.⁴ Fields are not investigated only when they are clearly built over in modern times (such as car parks), when they are inaccessible due to very thick vegetation or when property owners do not allow field walkers to enter their fields. Fields that are accessible, but show no ground surface due to vegetation cover, are nevertheless, surveyed, sometimes as a so-called *walk-over*: field walkers cross an overgrown field or a wood in erratic order. We expect to need five or six seasons of field walking to cover the three areas.

During the preliminary study of 2005 it had become clear that the archaeology on Zakynthos is characterized by find distributions of a very low density. The methodology of the survey has been adapted to suit the landscape and the characteristics of archaeological artifact distribution. Within each of the three transects, the basic unit is the *tract*, of which the borders have been determined by topographic and geomorphologic features in the landscape.⁵ Tracts that were larger than 50 m. in length or in width were subdivided in smaller units labeled as *clicks*. The subdivision of *tracts* and *clicks* proved too complicated for GIS analysis. After evaluating the methodology, we will in 2007 begin a new tract rather than subdividing larger ones. The maximum size of a tract, therefore, is 50x50 m., but they may be smaller depending on topography and geomorphology.

Within the tracts, field walkers are placed at ca. 5m. intervals. The survey methodology is based on the hypothesis, that field walkers record archaeological finds within a strip of two meters, e.g. one meter to the left and one meter to the right. Within this strip, all archaeological finds are collected.⁶ In this way 40% of the totals of finds in tracts are documented. During the 2006 campaign, the counting of finds and the collecting was done simultaneously: the sherds in the bags were counted at the end of each line. However, field walkers use different ways to collect artifacts.⁷ These different ways, which are mostly personal, and due to physical habits and constraints, create a bias in the number of artifacts that are collected.

Within archaeological survey, the density of finds, based on the quantities counted, are a fundamentally different result than the characterizations with regard to chronology, materials and

4 Cf. the discussion in Casselman *et al.* 2004, 27-29.

5 Cf. Tartaron 2003, 34-37.

6 Due to the very fragmentary nature of pottery and lithic finds on Zakynthos, we do not encourage chronological or typological interpretations in the field to decide whether to collect or not. An exception is made in cases where there is clearly much modern building material and/or plastics. Finds that are obviously not anthropogenic, or too small (< 1 cm²) to be of use for determination, are weighed and counted and then redeposited.

7 Cf. Schiffer *et al.* 1978, 8, 14; Meyer & Schon 2003, 12.

typology.⁸ For this reason, we will, from 2007 onwards, try to separate the counting of artifacts from the collecting: field walkers will be asked to walk a line, while scanning their 2 meter strip and counting the number of artifacts on the surface with the help of clickers. They will return along the same path and collect the finds. Since we will ask field walkers not to bend over or stop while clicking, we hope to have better control of the counting process.⁹

Especially in areas with a relatively thin distribution of finds, as is the case in Zakynthos, visibility of surface soil is an important factor.¹⁰ We have been revisiting a number of representative tracts in seasons when soil visibility, due to vegetation differences, had changed. In October 2006, twenty tracts that were surveyed the previous summer have been revisited, while counting the number of archaeological finds on the surface. In April 2007 these tracts have again been revisited. So far, we have not been able to discover a straightforward relation between the visibility in tracts and find density.¹¹

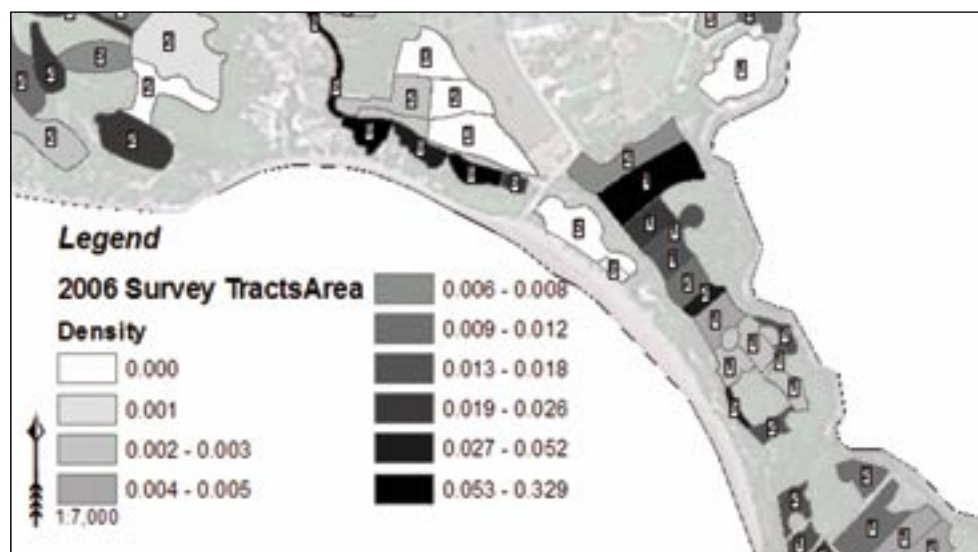


Figure 2. Surveyed tracts in transect C: density of finds (in different shades of grey) in relation to the level of visibility

8 Caraher *et al.* 2006, 12.

9 The differences between the artifacts counted and the number of finds collected may also be used to evaluate a field walkers performance and idiosyncrasies.

10 Schiffer *et al.* 1978, 6-8; Meyer & Knapp 2003, 12.

11 Cf. Cavanagh *et al.* 2002, 45-47; Bevan & Conolly 2002, 127-128.

In figure 2, for example, several tracts with low visibility (indicated by low numbers) nevertheless show a high number of finds. When tracts are inaccessible, or when there is absolutely no visibility, archaeological artifacts are, of course, obscured. Likewise, when fields are freshly ploughed and hardly have any vegetation, they generally show a somewhat higher number of finds than surrounding tracts. For intermediate levels of visibility, however, the revisits showed us that in cases where visibility had remarkably improved, this did not in any case lead to significantly higher densities. Also, fields with good visibility and relatively many finds still yielded significant numbers of artifacts when visibility was less.

Within the Zakynthos Archaeology Project, *visibility* in tracts is indicated in six descriptive levels.¹² Since a clear relationship between visibility and find densities is lacking, we do not statistically correct the number of finds for the visibility. While presenting the results of the survey visibility is indicated as a figure in a tract (figure 2). In future seasons, we will continue to monitor the *bias* that the visibility factor creates in the results of field survey on Zakynthos.

Survey results

The survey campaign in 2006 lasted from 26 June until 29 July. In addition, from 16-21 October, a small team revisited specific tracts, without collecting material. The survey teams worked exclusively in transect C: the peninsula of Vasilikos. The site of Kalogeras, where S. Benton and R. Waterhouse conducted excavations in the 1930's is situated in the middle of the transect.¹³ In addition, A. Sordinas has reported finding hand-made pottery and flint artifacts at Vasilikos and at Cape Gerakas,¹⁴ while G. Kourtesi-Phillipaki had discovered a site with many lithics near Aghios Nikolaos.¹⁵ Geographically, the transect encompassed the foothills southeast of the Daphni mountain-top, the lower plain of Vasilikos and Cape Gerakas, which is subject to severe erosion. The plain of Vasilikos is very fragmented due to a great number of fences and other field boundaries. Building for tourism in the area is progressing in a fast pace. The natural and historical landscape of the island is disappearing at alarming rate, which was the reason that we chose to cover this area first.

Two survey teams were out in the fields, consisting, on average, of five field walkers each. The teams were led by Nienke Pieters (Groningen University) and by Martine Hogervorst (University of Amsterdam), both experienced fieldworkers. During the afternoons smaller teams were led by Vladimir Stissi and Gert Jan van Wijngaarden. Within the difficult circumstances the surveyors were able to cover some 1300 hectares (figure 3). A total of 445 tracts were investigated, which were generally small due to the nature of the terrain. We plan to revisit the area of Vasilikos in 2010.

12 The number 0 meaning no visibility of soil surface at all, 6 meaning freshly ploughed soil without any vegetation.

13 Benton 1931-1932, 213-220; Souyoudzoglou-Haywood 1999, 121; Van Wijngaarden *et al* 2005, 69-71: site 06.

14 Sordinas 1970, 126; see also Kourtesi-Phillipaki 1993, 39: site B-G2.

15 Kourtesi-Phillipaki 1993, 37; site B-G1.



Figure 3. *Artifact densities in the survey area*

The GIS-generated map of densities within the distribution of archaeological finds (figure 3) at first glance does not appear to conform to the conclusions reached during the pilot season of 2005.¹⁶ Whereas off-site densities were very low in the Keri area, the majority of tracts surveyed

¹⁶ Van Wijngaarden *et al.* 2005, 71.

during 2006 yielded significant quantities of finds (recognizable by tracts in light gray shades in figure 3). In addition, there are some clear concentrations visible within the distribution pattern (recognizable by a dark-grey color in figure 3). It should be emphasized that the processing of the finds, which is coordinated by Vladimir Stissi, is still in its initial stages and chronological differentiations within the distribution pattern cannot be made yet. Also, the methodology of field walking used within the pilot survey differed in several respects from the way the survey was conducted in 2006 and all team members were significantly more familiar with the types of material found on Zakynthos. Nevertheless, a preliminary conclusion could be that find densities in transect C exceed those of the Keri area.



Plate I. *Signs of erosion: part of the site at Kalogeras is now at the beach*

Among the tracts with concentrations of finds, Cape Kalogeras clearly stood out in terms of the quantity and quality of the artifacts collected. The tracts surrounding the cape, however, do not show significantly higher densities of finds than other tracts in similar terrain,¹⁷ suggesting that the site did not extend much beyond the actual cape and its headland. An observation that could also be made at Vasilikos is the damage done by erosion, which had progressed significantly since our visit in 2005. In the area where we had conducted cleaning during the pilot season several square meters had eroded away, probably due to earthquakes (Plate I). In the part of the site where a holiday house continues to be build, additional finds were made, among which notable quantities of slag.

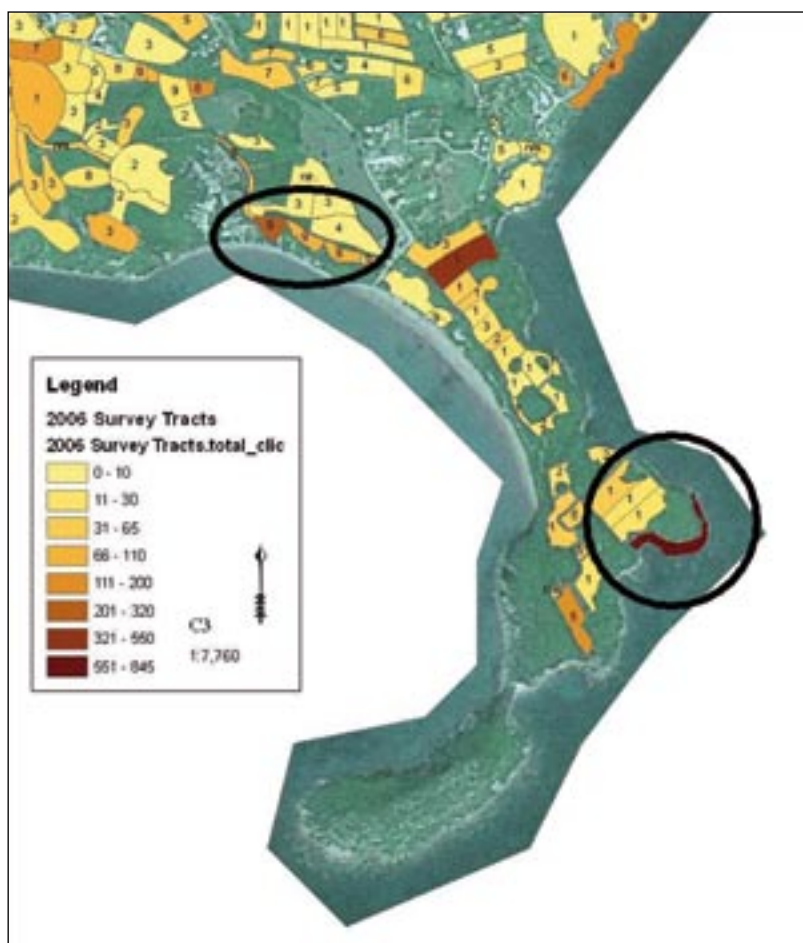


Figure 4. *Gerakas peninsula indicating concentrations of finds*

¹⁷ An exception is tract 2058, where a concentration of unspecified finds were done in small corner of the tract indicating a dump, or some sort of special activity.

The peninsula of Gerakas has long been known as a find spot of lithic artifacts and Neolithic or Bronze Age pottery.¹⁸ Our complete survey of the peninsula indeed resulted in the recovery of many flint objects and of small fragments of pottery that appear to date to prehistoric times. Moreover, several pieces of obsidian were discovered. Particularly interesting were two find spots which could be associated with eroding scarps: tracts 2006 and 3006-3009 respectively (figure 4). At both sites diagnostic types of flint tool such as arrowheads and scrapers were found, as well as obsidian blades and pottery indicating activity in the Neolithic and/or Bronze Ages (Plate II). However, a few objects of *Levallois*-type were also found, suggesting that the (middle) Palaeolithic may be represented as well.

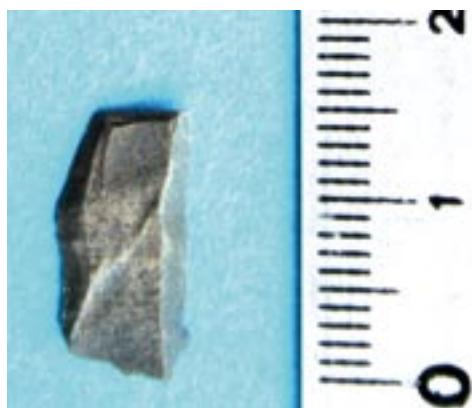


Plate IIA.

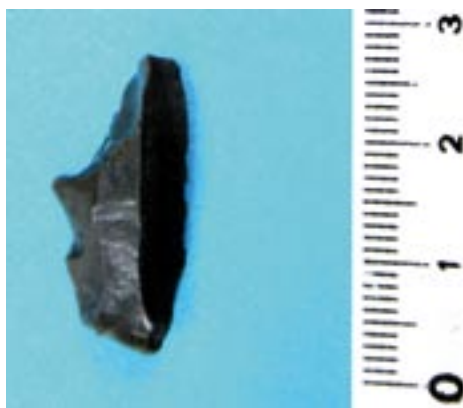


Plate IIB.



Plate IIC.

Plate II. Typical obsidian and flint artifacts from Cape Gerakas

¹⁸ *Op cit.* note 15

The tip of the Gerakas peninsula is no longer accessible by foot, due to the intensive erosion of the coast. In addition, this part of the peninsula is not accessible during the summer due to the protective measures for the *Caretta Caretta* sea turtles. During the October campaign we did have the chance, however, to visit this part of the cape by boat. The area is heavily disturbed by the quarrying of the local limestone during (early) modern times. Finds on the surface confirmed the picture of the cape elsewhere: small quantities of flint (both worked and unworked) occurred everywhere and there were significant quantities of pottery. An interesting discovery was a built structure that has great resemblance to the Mycenaean built tomb near Keri.¹⁹ The general size of the Keri tomb is 1.50 x 0.80 m., with an upper lintel of 0.80 x 0.13 m. The structure at Gerakas has general dimensions of 0.75 x 0.90, with an upper lintel of 0.72 x 0.14 m. Whether the structure really is a built tomb should be confirmed by further investigations.



Plate IIIA.



Plate IIIB.

Plate III. *The built structure from Cape Gerakas (left) and the Keri built Tomb (right)*

Lithics

The relatively thick densities in the distribution of archaeological artifacts are due to a large extent to the abundance of flint and chert finds.²⁰ In almost all tracts lithics were collected, often exceeding the amounts of pottery. As is the case with pottery finds, the repertoire of flint artifacts

¹⁹ Souyoudzoglou-Haywood 1999, 121: site 60; Van Wijngaarden *et al.* 72: site 12

²⁰ The terms chert and flint are used rather loosely here. Both are siliceous sedimentary rocks with, at least, 95% fine-grained silica (SiO₂). In the archaeological literature the terms are often confused or mixed. For a discussion, see Luedtke 1992, 5; Andrejsky jr. 1998, 53-56.

in most survey tracts represents a very broad spectrum of cultural periods. In most cases Palaeolithic chipped stone occurs together with Neolithic, Bronze Age and even later artifacts, notably pottery. Such a broad chronological spectrum suggests that they are part of a background scatter which is formed through the destruction of stratigraphic deposits by post-depositional processes. The broad composition of the lithic repertoire in the Vasilikos area appears to contrast sharply with the deposit of lithics that was investigated during the pilot survey of 2005 near Mouzaki-Brouma.²¹ The latter deposit is intrinsically relatively consistent in terms of raw materials, flaking techniques, artifact sizes and the overall degree of preservation.

With regard to raw material, it should be noted that natural flint, chert and quartzite occurs in significantly large quantities at Zakynthos. The geological survey group has noted a 7 m. thick conglomerate section on the Gerakas peninsula with about 40% flint/chert content in the form of large nodules. (Plate IV). In addition, in river valleys and on beaches flint pebbles have been noted. Both of these sources appear to have been exploited in the past. In general, the original pebbles used as blanks were small-sized (often even smaller than the size of an egg) as is evident from the cores and/or core-tools (small choppers and chopping-tools made on pebbles).



Plate IV. *Section with nodules of natural flint exposing (tract 4006 A)*

²¹ Van Wijngaarden *et al.* 2005, 68-69.

The quality of the flint artifacts from the 2006 survey varies from very fine grained to very coarse grained, the latter having a lot of inclusions. The coarse grained type flint appears to have had undesired characteristics with regard to its fracture mechanics, as is, for example, seen by step fractures on the end-products. Flint colors also vary, the main groups being the following: grey flint (from dark- up to light-grey), greenish-grey with brown veins, beige and pinkish-beige, as well as brown (mostly yellowish-, reddish- and chocolate-brown). The lithic collection as a whole could be characterized as being in very good condition.

Patination of chert and flint obscures not only the recognition of the original color and quality of the raw material but also some techno-morphological features. There is a relatively broad variation with regard to the degree of patina (from light gloss to heavy white), and there exist artifacts with patina on one side only. As a chemical weathering process, patination is still not well understood. Nevertheless, patination is used by Palaeolithic scholars as a characteristic which, coupled with other lines of evidence, can be an indicator of age.²² In general, patinated artifacts are considered to belong to the Pleistocene, whereas unpatinated ones are commonly attributed to the later prehistory (Neolithic, Bronze Age).



Plate VA.



Plate VB.



Plate VC.

Plate V. *Palaeolithic artifacts; a Levallois flake or blade (above) and Mousterian products (below).*

²² Runnels, Karimali & Cullen 2002, 141-142

The majority by far of the objects collected on Zakynthos during 2006 that were attributed on typological grounds to the Middle Palaeolithic show patina and weathering or a slight rolling. Fully diagnostic typo-technological characteristics (such as specific features of the *Levallois* technique) that would definitively assign individual specimens to these periods are lacking. When such features occur, they appear in rather atypical form, or on broken and heavily patinated pieces. Nevertheless, we do have at least one Mousterian point, a Levallois point and a few atypical Levallois flakes, one of which with a faceted platform (Plate V). The abundance of *debitage* products, the high numbers of primary flakes and the presence of cores in an initial stage of *debitage*, all point to the assumption that the first stages of the reduction sequence are represented in many of the lithic concentrations. In contrast, finished tools (*sensu stricto*) are relatively scarce, which may indicate that the tools have been transported elsewhere.

The presence of Palaeolithic materials in the area of the 2006 survey is particularly interesting since on the western part of the peninsula, in the vicinity of tracts 3006-3009, deposits belonging to the so-called Porto-Zorou formation were noted in exposed natural sections.²³ This formation belongs to the Upper Pleistocene and has its type-section at Cape Gerakas, where it uncomfortably overlies the Gerakas Formation. The exposed sections showed several artifacts projecting from the deposits, and these occurrences were associated to the uppermost reddish-brown deposit underlying the topsoil. As to the survey tracks at the eastern part of the Cape, near tract 2006, all lithic scatters were found on top of a terrace which forms the “foot” of the Cape, at its southernmost margin. A preliminary examination of the geomorphology, as well as the comparison of soil samples taken from both find spots (east and west), points to the assumption that the uppermost deposits can be conceivably correlated. If this is the case, then the terrace on the eastern part, and the abovementioned section on the western part of the cape, could both belong to the Upper Pleistocene and represent a marshy environment of an interglacial (Marine Isotope Stage 5?). In any case, the Vasilikos peninsula appears to have the potential to begin to correlate Palaeolithic artifacts to their depositional environment.

A. Sordinas has reported on the similarities of some pebble tools from the Vasilikos area with those found in Sidari (Corfu), as well as the Mesolithic *gallets aménagés* that were found by Leroi-Gourhan and Chavaillon in Kyllini.²⁴ The abundance of flint pebbles, however, suggests that they may have been used as raw materials all through the Palaeolithic period and even in later prehistory.²⁵ The unequivocal evidence of Neolithic stone artifacts in the collection of the Zakynthos Archaeology Project is restricted to two polished axes made on flint pebbles and perhaps also a few retouched blades (Plate VI). Similarly, the Bronze Age period is represented by two obsidian blades and a bifacially retouched arrowhead (Plate VI). Lithic production and use during the Neolithic, Bronze Age and later periods is still not well understood. Hopefully, this can be the subject for further research within the framework of the Zakynthos Archaeology project.

²³ Zelilidis *et al.* 1998, 404.

²⁴ Leroi-Gourhan 1964; Chavaillon *et al.* 1969; Sordinas 1970, 126.

²⁵ Cf. Darlas 1999.

**Plate VIA.****Plate VIB.****Plate VIC.**

Plate VI. *A hand axe, an obsidian blade and pointed arrow head dating to the Neolithic/Bronze Age*

Preliminary conclusions

The first campaign in the Zakynthos Archaeology Project has diversified the archaeological picture of the island that was obtained after the pilot research in 2005. For one thing, find densities in Vasilikos appear to be much higher than they were in the area of Keri. This is only partly due to the higher percentage of lithics that has been collected in 2006.²⁶ The number of clear concentrations of artifacts in the Vasilikos area, however, appears to be lower than in 2005, when we had several clear sites.²⁷ It seems that the distribution of archaeological artifacts in the Zakynthian landscape varies highly according to region, which reconfirms our research strategy to compare different parts of the island.

In summary, the preliminary conclusions of the 2006 season are the following:

1. With regard to survey methodology, there does not appear to be a correlation between surface visibility and the recovery of artifacts on Zakynthos.
2. The nature of the distribution of archaeological artifacts in the landscape of Zakynthos varies highly according to region.
3. Lithic artifacts from the Palaeolithic periods and from later prehistory indicate activities which are most probably related to the presence of substantial resources of natural chert and flint in the area of Vasilikos.
4. Zakynthos appears to be a promising area for research into the stratigraphic deposition of Palaeolithic materials.
5. Erosion of the coastlines in the Vasilikos area is very severe and the shape of the peninsula must have been entirely different in the past.

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²⁶ Whether it is primarily our increased familiarity with the lithic artifacts on Zakynthos that is responsible for the larger numbers of lithics collected will have to be determined during the systematic survey of 2009, when we will revisit the Keri area. It is entirely possible that during 2005 we simply did not recognize the material.

²⁷ Van Wijngaarden *et al.* 2005, 64-67.

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