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Excavations at Chlorakas-Palloures, New Light on Chalcolithic Cyprus

Düring, B.S.; Klinkenberg, M.V.; Pareskeva, C.; Croft, P.; Souter, E.; Sonnemann, T.F.

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REPORT OF THE
DEPARTMENT OF ANTIQUITIES, CYPRUS

ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΠΕΤΗΡΙΣ
ΤΟΥ ΤΜΗΜΑΤΟΣ ΑΡΧΑΙΟΤΗΤΩΝ ΚΥΠΡΟΥ

REPORT OF THE
DEPARTMENT OF ANTIQUITIES, CYPRUS

New Series 1



New Series 1





Εξώφυλλο: 'Paphos Agora Project', γενική όψη των ανασκαφών του Πανεπιστημίου Jagiellonian στη Κρακοβία το 2016 (φωτογραφία του R. Słaboński)

Cover: 'Paphos Agora Project', general view of the Jagiellonian University in Kraków excavation in 2016 (photo by R. Słaboński)

ΚΥΠΡΙΑΚΗ ΔΗΜΟΚΡΑΤΙΑ
ΥΠΟΥΡΓΕΙΟ ΜΕΤΑΦΟΡΩΝ,
ΕΠΙΚΟΙΝΩΝΙΩΝ ΚΑΙ ΕΡΓΩΝ
ΤΜΗΜΑ ΑΡΧΑΙΟΤΗΤΩΝ

REPUBLIC OF CYPRUS
MINISTRY OF TRANSPORT,
COMMUNICATIONS AND WORKS
DEPARTMENT OF ANTIQUITIES

ΕΠΙΣΤΗΜΟΝΙΚΗ ΕΠΕΤΗΡΙΣ
ΤΟΥ ΤΜΗΜΑΤΟΣ ΑΡΧΑΙΟΤΗΤΩΝ
ΚΥΠΡΟΥ

REPORT OF THE
DEPARTMENT OF ANTIQUITIES
CYPRUS

New Series 1

ΕΚΔΟΘΗΚΕ ΑΠΟ ΤΟ ΤΜΗΜΑ ΑΡΧΑΙΟΤΗΤΩΝ ΚΥΠΡΟΥ
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Η *Επιστημονική Επετηρίδα του Τμήματος Αρχαιοτήτων Κύπρου* δημοσιεύεται ετησίως από το Τμήμα Αρχαιοτήτων της Κύπρου από το 1934, με μια διακοπή από το 1949 μέχρι το 1962, και συνεχώς από το 1963. Επικεντρώνεται κατά κύριο λόγο στη δημοσίευση των Εκθέσεων των ξένων αποστολών που ανασκάπτουν ή ερευνούν στην Κύπρο, καθώς επίσης και των ερευνών των μελών του Τμήματος Αρχαιοτήτων. Φιλοξενεί επίσης μελέτες ερευνητών που ασχολούνται με θέματα που αφορούν την Αρχαιολογία, τη Συντήρηση, την Ιστορία, τον πολιτισμό και την τέχνη της Κύπρου.

Την ευθύνη των απόψεων που εκφράζονται στα άρθρα της *Επιστημονικής Επετηρίδας του Τμήματος Αρχαιοτήτων Κύπρου*, έχουν οι συγγραφείς και όχι οι εκδότες του περιοδικού ή το Τμήμα Αρχαιοτήτων της Κύπρου.

Ο Εκδότης της *Επιστημονικής Επετηρίδας του Τμήματος Αρχαιοτήτων Κύπρου* είναι ο εκάστοτε Δευθυντής του Τμήματος Αρχαιοτήτων.

The Report of the Department of Antiquities, Cyprus (RDAC) has been published annually by the Department of Antiquities of Cyprus from 1934, with an interruption between the years 1949 and 1962, and continuously from 1963. It is devoted primarily to the publication of Reports of foreign expeditions excavating in Cyprus as well as excavations by members of the Department of Antiquities of Cyprus. It also welcomes papers from all scholars in the fields of Cypriot archaeology, conservation, history, culture and art.

The opinions expressed in the articles published in the *RDAC* are those of the authors and not of the editors or the Department of Antiquities of Cyprus.

The Editor of the *Report of the Department of Antiquities, Cyprus* is the current Director of the Department of Antiquities.

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Εις μνήμην / In memory of JACQUELINE KARAGEORGHIS



ΑΝΤΙ ΠΡΟΛΟΓΟΥ

Η παρούσα έκδοση της *Επιστημονικής Επετηρίδας του Τμήματος Αρχαιοτήτων Κύπρου* αφιερώνεται στη μνήμη της Δρος Jacqueline Καραγιώργη, η οποία απεβίωσε στις 10 Μαρτίου 2018, σε ηλικία 85 ετών.

Η Jacqueline Girard-Καραγιώργη γεννήθηκε στην Saint Etienne της Γαλλίας αλλά από πολύ νεαρή ηλικία επέλεξε την Κύπρο ως δεύτερη πατρίδα της και εγκαταστάθηκε στο νησί μαζί με τον σύζυγό της, τον γνωστό αρχαιολόγο Βάσσο Καραγιώργη, πρώην Διευθυντή του Τμήματος Αρχαιοτήτων.

Σπούδασε στο Πανεπιστήμιο της Λυών κλασική λογοτεχνία και αρχαιολογία, σανσκριτικά, γαλλική λογοτεχνία, και απέκτησε βαθιά γνώση των λατινικών και των αρχαίων ελληνικών. Η αγάπη της για τον κλασικό ελληνικό πολιτισμό την οδήγησε στα πρώτα βήματά της προς την έρευνα των αρχαίων κειμένων, υπογράφοντας σημαντικές μελέτες στον τομέα αυτό, όπως είναι οι ‘Κυπριακές Γλώσσες του Ησύχιου’.

FOREWORD

This edition of the *Report of the Department of Antiquities, Cyprus* is dedicated to the memory of Dr Jacqueline Karageorghis, who passed away at 85 on the 10th of March 2018.

Jacqueline Girard-Karageorghis was born in Saint Etienne in France but from a very young age chose Cyprus as her second home and settled on the island with her husband, the renowned archaeologist Vassos Karageorghis, former Director of the Department of Antiquities.

She attended the University of Lyon where she studied Classical literature and archaeology, Sanskrit, and French literature, and became quite fluent in Latin and ancient Greek. Her love for Classical Greek civilization led her to take her first steps in the study of ancient texts, publishing significant studies in this field, such as the “Cypriot languages of Hesychios”.

Τα πρώτα χρόνια μετά την εγκατάστασή της στην Κύπρο εργάστηκε ως εκπαιδευτικός διδάσκοντας Λατινικά και Γαλλικά στο Παγκύπριο Γυμνάσιο και στο Παρθεναγωγείο Φανερωμένης και αργότερα στο Γαλλικό Ινστιτούτο Κύπρου. Το εκπαιδευτικό έργο της Jacqueline Καραγιώργη υπήρξε τεράστιο αφού πολλές γενιές Κυπρίων έμαθαν τη Γαλλική γλώσσα και μυήθηκαν στον Γαλλικό πολιτισμό από την ίδια.

Πολυπράγμων και ανήσυχο πνεύμα, παράλληλα με το εκπαιδευτικό έργο, ασχολήθηκε με την θέση της Κύπρου στη γαλλική λογοτεχνία, φέρνοντας στην επιφάνεια λιγότερο γνωστά έργα που τονίζουν όμως τις σχέσεις των δύο χωρών.

Αν και η ίδια δεν υπήρξε αρχαιολόγος του πεδίου, ασχολήθηκε ενεργά με την αρχαιολογική έρευνα στο πλευρό του Βάσου Καραγιώργη συνυπογράφοντας πολλά άρθρα που αφορούσαν κυρίως την κυπρο-συλλαβική επιγραφική και τη νομισματική.

Η σημαντικότερη συνεισφορά της Jacqueline Καραγιώργη στην αρχαιολογία και στη μελέτη της αρχαίας Κύπρου γενικότερα αποτελεί αναμφίβολα το έργο της για την Μεγάλη Θεά της Κύπρου, την Κύπριδα Αφροδίτη. Ύστερα από συμβουλή του Jean Pouilloux, του πρώτου Διευθυντή της Γαλλικής Αρχαιολογικής Αποστολής στη Σαλαμίνα, ανέλαβε την έρευνα για τη θεά που έκανε την Κύπρο διάσημη σε όλο τον κόσμο. Η έρευνα εκπονήθηκε στα πλαίσια διδακτορικής διατριβής που υποστηρίχθηκε στο Πανεπιστήμιο της Λυών το 1975. Όπως και στο βιβλίο της για την *Κύπριδα Αφροδίτη* που εκδόθηκε το 2005, για πρώτη φορά προτείνεται μια νέα επιστημονική προσέγγιση της λατρείας της θεάς της Κύπρου μέσα από την εικονογραφία της και σε συνδυασμό με τις γραπτές πηγές της αρχαιότητας, την ομηρική ποίηση και την αρχαία ελληνική λογοτεχνία. Η λεπτομερής και κριτική μελέτη του συνόλου των αρχαιολογικών και λογοτεχνικών πηγών που αναφέρονται στη θεά την οδήγησε στην απόδειξη της ύπαρξης μιας πανάρχαιας λατρείας της γονιμότητας στο νησί και ειδικότερα στην περιοχή της Πάφου, η οποία ανάγεται στην 4η χιλιετία π.Χ. και η οποία εξελίσσεται στη λατρεία της Αφροδίτης. Η μελέτη αυτή και πάρα πολλές άλλες που ακολούθησαν, έχουν συμβάλει έκτοτε αποφασιστικά στην αναθεώρηση πολλών απόψεων που είχαν εκφραστεί παλαιότερα για τη λατρεία

In her first years after moving to Cyprus, she worked as a teacher of Latin and French initially at the Pancyprian Gymnasium and the Faneromeni Girls School and later at the French Institute of Cyprus. Her contribution to education was significant to the extent that several generations of Cypriots learnt French and were initiated by her into the French culture.

Hers was an active and restless spirit, who apart from her work in education, also studied the role of Cyprus in French literature, and thus promoted lesser known works that however emphasized the relations between the two countries.

Although she was not a field archaeologist, Jacqueline was active in the field of archaeological research in cooperation with Vassos Karageorghis, co-authoring many articles that centred primarily on the subjects of the Cypro-syllabic script and numismatics.

Jacqueline Karageorghis' greatest contribution to archaeology and the study of ancient Cyprus is undoubtedly her research on the Great Goddess of Cyprus, Kypris Aphrodite. It was Jean Pouilloux, the first Director of the French Archaeological Mission to Salamis, who recommended that she research the goddess that had made Cyprus famous throughout the world. Her research was carried out as her doctoral thesis that she defended in 1975 at the University of Lyon. As she also wrote in her book on Kypris Aphrodite that was published in 2005, a new scientific approach was proposed regarding the worship of the goddess of Cyprus through her iconographic depictions and in combination with the ancient written sources, Homeric poetry and ancient Greek literature. Through her careful and detailed study of all the archaeological and literary sources related to the goddess, she was able to prove the existence of an ancient worship of fertility on the island and specifically in the region of Pafos, which eventually began to die out in the 4th millennium BC and evolved into the worship of Aphrodite. This project as well as the countless others that she undertook over the years have contributed significantly to the revision of many previous ideas regarding the worship of Aphrodite on Cyprus, and have given modern scholars new guidelines on how to correctly interpret sources.

της Αφροδίτης στην Κύπρο και έδωσαν νέα κατεύθυνση στους νεότερους επιστήμονες για το τρόπο με τον οποίο να προσεγγίζονται οι πηγές για τη σωστή ερμηνεία τους.

Η ευγένεια του χαρακτήρα της, η καταδεκτικότητα, η απέραντη αγάπη για την Κύπρο και τους ανθρώπους της, σε συνδυασμό με την στέρεη επιστημονική κατάρτισή της, οδήγησαν πολλούς να αγαπήσουν την Κύπρο και την αρχαιολογία μέσα από το έργο της και από τη γνωριμία μαζί της.

Η Jacqueline Καραγιώργη δεν επεδίωξε ποτέ την δημοσιότητα και την αναγνώριση αν και με το έργο της κατάφερε να συνδυάσει δύο πολιτισμούς, τον γαλλικό και τον ελληνικό και να φέρει κοντά δύο διαφορετικούς κόσμους, την Ανατολή και τη Δύση.

It was through her work and by meeting her that led many people to fall in love with Cyprus as she was a gentle soul of noble character who never faltered in showing her immense love for Cyprus and for the people around her.

Jacqueline Karageorghis never sought publicity and recognition even though it was through her effortless work that she was able to associate the French and Greek civilizations, and thus bring closer two different worlds, East and West.



Excavations at Chlorakas-*Palloures*: New Light on Chalcolithic Cyprus

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INTRODUCTION

In July–August 2015 the first season of excavation took place at the site of Chlorakas-*Palloures*. The site has been known as one of a series of important Chalcolithic sites in the Pafos District from the 1950s onwards,¹ and has been badly disturbed by agricultural development and urbanization of the region from the 1970s onwards. In the face of new development plans for the main section of the site, the Department of Antiquities of the Republic of Cyprus wanted rescue excavations to take place prior to this development. It was in this context that the Leiden University expedition to Chlorakas-*Palloures* was set up in consultation with the Department of Antiquities. For the time being the project focuses on a field known as Plot 568, which is the one that is up for development. Given that the owners did not allow archaeological research the plot was expropriated for a period of three years (2015–2017), and our excavation window is thus restricted to only three campaigns. Beyond these initial three campaigns, our aim is to develop this excavation project into a long-term research collaboration between Leiden University and the Department of Antiquities of the Republic of Cyprus. The initial three pilot seasons of the *Palloures* expedition were made possible through a grant of the Byvank Fonds, associated with Leiden University.

The Chlorakas-*Palloures* excavations are by no means the first investigations into the Chalcolithic of western Cyprus. A systematic and long-lasting research project based at Lempa and directed by Professor

Edgar Peltenburg at the sites of Lempa-*Lakkous* (1976–1983), Kisonerga-*Mosfilia* (1979–1992), Kisonerga-*Mylioudia* (1976–1996), and Souskiou-*Laona* and *Vathyrkakas* (2001–2011), has transformed our understanding of the Chalcolithic of Cyprus (Figure 1).² As a result of these investigations we are well informed about the subsistence economy of the period,³ mortuary practices,⁴ house forms,⁵ settlement systems,⁶ and ceramic and lithic repertoires.⁷ In light of these considerations one could ask what, apart from the heritage considerations of a rescue project, the *scientific* arguments are for excavating another Chalcolithic site in the Pafos district.

First, whereas (Middle) Chalcolithic houses and burial practices are often presented as relatively homogeneous and standardized,⁸ there is actually a fair amount of variability in house types and burial traditions,⁹ and we need to scrutinize and investigate this diversity in order to arrive at a fuller understanding

¹ The site was first recorded by G. Eliades in 1951 (28/51: 8) as Chlorakas-*Moutti*.

² Crewe et al. 2005; Peltenburg ed. 1985; 1991; 1998; 2003; 2006.

³ Croft 1998; Murray 1998.

⁴ Crewe et al. 2005; Niklasson 1991; Lunt et al. 1998.

⁵ Peltenburg 1985; 1998; Thomas 1998.

⁶ Knapp 2013; Peltenburg 2014.

⁷ Bolger et al. 1998a; Bolger et al. 2004; Finlayson et al. 1998; McCartney 2003.

⁸ Knapp 2013, 204–6, 217–27; Steel 2004, 86–91, 95–99.

⁹ Peltenburg 1985; 1998; Niklasson 1991; Lunt et al. 1998; Crewe et al. 2005.

of the period. Thus, our first research question is how the *Palloures* buildings and burials fit into the broader dataset of Chalcolithic excavated sites in western Cyprus.

Second, due to the very fact that a number of more or less contemporary settlements in a relatively small region have been excavated it has become clear that these are not simply homologous settlements in terms of size or other characteristics. While these sites share a lot of cultural traditions, there are also marked differences in settlement size, proportions of pottery fabrics and fine wares present, types of raw material used for chipped stone, building materials used for larger buildings, the differentiation of building sizes and the types of buildings present, and the presence or absence of cemeteries.¹⁰ Thus, the excavations of the 'Lemba Archaeological Project' show us that we need to explore the intricate differentiation and relations between settlements in this region to arrive at a fuller understanding of Chalcolithic society in western Cyprus (and beyond). Among these *Palloures* is one of the largest sites and has a relatively high proportion of chipped stone made of Moni chert, which is considered to have been prestigious and desirable. In terms of pottery, however, *Palloures* has relatively modest amounts of painted fine wares, in contrast to Kisonerga-Mosfilia, and is much smaller than that site.¹¹ Thus, one of our aims is to understand better how *Palloures* fits into the broader Chalcolithic settlement system of the Ktima lowlands.

Third, the transition between the Middle Chalcolithic (3400–2900 BC) and the Late Chalcolithic (2800–2400 BC) is poorly known from the key sites of Lempa-Lakkous and Kisonerga-Mosfilia¹² and the *Palloures* excavations can contribute to a fuller understanding of this transition. Given that the Late Chalcolithic differs in key respects from the preceding Middle Chalcolithic, with possible evidence for wealth differentiation emerging, the nature of this transition is of considerable interest in the prehistory of Cyprus.

In order to investigate these three research questions and safeguard as much data as possible we have set up the *Palloures* excavations. The 2015 campaign took place between the 10th of July and the 10th of August. The team, directed by Dr. Bleda Düring, comprised a total of 24 members, ranging from students

to specialists. We worked for 26 days in the field, and opened up 6 trenches of 5 by 10 metres. We also created a 3D model of the site, and executed a geophysical survey with a ground penetrating radar device. In this report the main results of our investigations will be presented.

RESEARCH HISTORY

Chlorakas-*Palloures*, often designated as Chlorakas-Vrysoudia, was first identified in the 1950s by archaeologists. It is one of a series of Chalcolithic sites situated in the so-called Ktima lowlands, which consist of a well-watered lowland area stretching from Kouklia to Paliokastro in the Pafos District in western Cyprus. Here a series of Chalcolithic settlements have been found that are about 1.5 km apart from each other and are located on hills overlooking the coastal plain. *Palloures* is one of these sites, situated on a hill at the western edge of the village of Chlorakas and due north of the city of Pafos. Today the site is no longer under cultivation, but in the recent past the area was used for (irrigated) banana cultivation. Historically, however, vegetables, fruits and wheat would have been grown here, and the region has sufficient precipitation for dry farming (300–500 mm per annum), with dry but humid summers, and temperatures ranging from an average of 13°C in the winter to 26 °C in the summer.¹³

The first studies of the site appear in the Pafos District Survey.¹⁴ At that time the site reportedly consisted of a hill slope and was located downslope from a spring to its northeast. It was used for the cultivation of primarily melon and grape, and the surface assemblage on the site was thin and scattered over about 3 ha.

In the mid-1970s the land consolidation program that was undertaken in the Pafos District significantly impacted this and other sites.¹⁵ Apart from the merging

¹⁰ Bolger et al. 2004; Peltenburg 2011; 2014.

¹¹ Bolger et al. 2004, 113 (pottery), 120 (flint sources), 121 (site sizes).

¹² Knapp 2013, 246–47; Peltenburg et al. 2013.

¹³ Christodoulou 1959; Xenophontos 1985.

¹⁴ Hadjisavvas 1977; Stanley Price 1979, 143.

¹⁵ Hadjisavvas 2004, 40.

of small plots into larger ones, this program also included terracing of the hill at *Palloures*. Terraces were cut down from the pre-existing level of the hill, and the soil was spread out downslope. When Peltenburg visited the site in 1977, a much greater amount of artefacts was therefore visible, now spread over an estimated 5 ha. Moreover, traces of walls belonging to circular structures, and plastered and pebble paved surfaces were visible.¹⁶

In the 1980s further (deep) terracing activities took place on the site,¹⁷ imported soil was put on the fields and a banana plantation was developed at *Palloures*. Banana growing was abandoned after about a decade or so, and during the 1990s up to the present the site has suffered from the construction of buildings around its edges and road works. During these construction activities at least one building was observed by residents during road construction works and Dr. Paul Croft, from the Lemba Archaeological Research Centre, tried in vain to halt deep excavations for a basement that hit two round houses and about five burials at some metres below surface close to the main coastal road. Unfortunately, no records of any kind exist for these structures.

Fortunately, the site was repeatedly surveyed by the 'Lemba Archaeological Project' during recent decades.¹⁸ In these surveys a total of 12,122 sherds were collected from the site, testifying both to the richness of the archaeological deposits and the scale of their disturbance. The identifiable ceramics from Chlorakas-*Palloures* included mainly Red-on-White (9.4%), Red Monochrome pottery (22.5%), Red and Black Stroke Burnished (11.2%) fabrics, and the site can therefore be confidently dated to the Middle Chalcolithic (RW & RMP) and Late Chalcolithic (RB/B).¹⁹ No substantial assemblages dating to later or earlier periods are present at the site. The chipped stone assemblage analysed for the site show that all production stages are present and that the community had access to the high quality raw material known as 'Moni chert'.²⁰

Thus, over recent decades, Chlorakas-*Palloures* has suffered substantially from agricultural development and from construction activities. The site was not

classified as an 'Ancient Monument' until recently, and was therefore not protected. Notwithstanding this upgrade in status, the site is likely to experience further destruction in the near future. The owners of the main plot (568) aim to sell their land for development, which is not surprising given the built up nature of the areas surrounding the plot, the sea view from the hill, and the high price of building land in this part of Cyprus. This is the context in which excavations at *Palloures* are taking place.

MAPPING THE SURFACE AND SUBSURFACE OF *PALLOURES*

As a first step in our research we produced a high resolution elevation model of the site to gain a better understanding of its topography and to use as a basis for GIS analysis. The model was created using photogrammetry with photos which were taken by our *DJI Phantom vision+* quadcopter drone. The drone was programmed to fly automated flight paths over the site at an altitude of 30 m. Approximately 500 photographs were taken with an average 70% overlap between contiguous photos. *Agisoft Photoscan* was used to compute a 3D model from these images. With the aid of twelve GPS-measured control points around the site, the model was accurately georeferenced. Additionally, the use of these control points helped to anchor the internal geometry of the model for added accuracy. This technique enabled us to create a highly accurate elevation model with three centimetre resolution. An added benefit of the technique is that in addition to the elevation model, high resolution aerial imagery is also created which can be plotted on top of the elevation model, in effect resulting in a 3D model of the site (Figure 2). The same technique was used to create accurate photorealistic plots of the excavated areas (see below).

¹⁶ Peltenburg 1979.

¹⁷ We estimate that at least 4.400m³ of soil was moved in the course of terracing at the site.

¹⁸ Bolger et al. 2004; Peltenburg 1979, 79.

¹⁹ Bolger et al. 2004, 112.

²⁰ Bolger et al. 2004, 119–20.

GPR Research

A geophysical survey was conducted using Ground Penetrating Radar by Dr. Till Sonnemann (Leiden University) with the assistance of Martijn Warnaar (Delft University of Technology). Using TU Delft's Sensors and Softwares (*Sensoft*) GPR equipment the survey was first undertaken in the lower terrace of the current field of excavation (Figure 2). Unfortunately the upper terrace of this field was covered by building rubble and had a very rough surface, making it impossible to survey. Subsequently, the fields downslope of the excavation were also surveyed with the GPR. The intention here was to receive a first understanding of potential structures in the area proposed for potential future excavations. To facilitate data collection and analysis, the whole area was divided into 8 grids (see Figure 3), covering a total area of 8981 square metres. The two 250Mhz shielded transmitter and receiver antennas were placed in line on the skid plate, with the instrument prepared for dragging which facilitated work on the rough surface expected particularly in the agrarian fields. Initial trials showed that signal penetration was reaching about 30 ns, which, according to hyperbola fittings, corresponds to about 1 m depth in this dry rocky soil. With the intention to improve the signal's velocity-to-depth calculation in the filter process, the two-way travel time was set to 64 ns, or approximately 2 m depth, but already strong noise hindered good signal return above this depth.

Data processing was conducted using *Sandmeier's ReflexW* software. Processing and minor filtering which were performed included an X-flip of every second profile, maximum phase correction, 2D-background removal, and a gain curve was applied. However, the GPR processing yielded ambiguous results, with very few clear features that could be identified as structural.

A number of possible structures were detected in the field of the current excavation, and the fields downslope from it (Figure 3). Most promising results were expected from the north area of the excavated field, where the excavations had unearthed a number of circular walls and other structures close to the surface. The grid was set up as close as possible to the four excavated trenches to the east of the road, offering the possibility to directly compare the measured

features with already excavated structures. Although the surveyed area is relatively narrow, it does indeed show evidence of several circular and linear features.

There was no positive evidence for archaeology in G2 and G6 (Figure 3). The G2 areas have been heavily transformed by terracing and are covered by land fill. The heterogeneous subsurface, particularly below the dirt ramp in the north, created a strong reflection; while modern facilities, such as concrete slabs, pipes and cables were mapped, no apparent archaeological features were detected.

The fields of G3, G4 and G5 are all heavily littered with ceramic sherds, very likely from the terracing process. Over all these fields a strong noise from the top to lower stratigraphy has affected the data interpretation. Towards the surface the data show the effect of deep ploughing, particularly evident in the northern and southern corners, where the turning plough has created circular anomalies that in size and shape should not be misinterpreted as structures. Nevertheless a number of potential archaeological features could be identified. Most prominent circular structures are located on the eastern side of each plot, alongside the bottom of the slope adjacent to the next upper field. This could indicate that the archaeology here is closer to the surface, as greater amounts of soil have been bulldozed. Due to the extensive surface litter of archaeological material, it is debatable how extensively the terrace construction has affected the underlying archaeology, and if not, large amounts of archaeology have been removed in this process, or material pushed over the escarpment to create more arable land. The survey ended abruptly during the inspection of G6, when the instrument failed.

Concluding, the geophysical survey at *Palloures* has yielded limited but exciting results. In particular on the field which is currently being excavated many potential structures have been observed. In the coming years these interpretations will be tested by excavation. As it stands, it is indicated by this methodology that other fields at *Palloures* also conceal the presence of prehistoric architecture. The results are therefore in line with the indicated minimum extent of the settlement at *Palloures* as it was perceived based on the earlier surveys. Clearly, despite modern destruction by terracing, the area remains of high archaeological value.

It should however be strongly stressed that in the areas in which no geophysical evidence for archaeology is indicated, absence of evidence cannot be equated with evidence of absence. The technique is hampered by terracing, building rubble, and modern drains and cesspits, which have made it difficult to detect archaeological features. Additionally, due to the soil composition and condition, the GPR device can only detect features in the first 1.5 m of the subsurface. From past observations we know that towards the coast, prehistoric buildings are present 4 m below the surface. Perhaps this is a reason that, at *Palloures*, most potential structures were visible near the lower end of the slopes on each terrace, where more material had been removed in the terracing process. It is therefore important to note that areas which have not yielded a geophysical signal of architecture may yet harbour significant archaeological remains. The technique can be used to indicate the presence, but never the absence of archaeological remains.

STRATIGRAPHY AND CHRONOLOGY

At the start of the *Palloures* excavations we could draw on the systematic analysis of more than twelve thousand sherds collected from the site by the Lemba Archaeological Project, which were dated in comparison to the excavated sequences of *Lempa-Lakkous* and

altered by substantial pick-ups, we decided not to survey the site once more, but to use this analysis as our starting point to try and identify the presence of the various Chalcolithic phases identified through the pottery analysis.

A logical starting point for us was the large road cut along the western edge of Plot 568 on which we were planning to excavate. We therefore started with cleaning this road cut, which is about 100 m long and 1.5 m high, in order to document the visible stratigraphy. Subsequently we took detailed photographs of the profile, which were used in photogrammetric software *Agisoft Photoscan* to create an accurate 3D model of the road cut. The 3D model was converted into a pdf file, which we then used to draw our profile drawing on, using a 10 inch tablet with a Wacom digitizing pen function. In this manner a very detailed record of the road profile was obtained in a very efficient manner.

In total 24 stratigraphic units (cuts, layers, and walls) were distinguished in the road profile (Figure 4), and their properties were described in the site database. We also took ceramic samples from these units, in order to try to date the various deposits.

Two sets of features were of special interest. The first consists of large cuts through the bedrock (Units 4 and 10). The second consist of what appeared to be

Period	Wares	Numbers	% of identified sherds
Late Chalcolithic	Coarse painted	98 + 1355 = 1453	27%
	Red and Black Stroke		
	Burnished		
Middle Chalcolithic	Red-on-White	2724 +	72%
	Red Monochrome	1139 = 3863	
Early Chalcolithic	Glossy burnished	53	1%

Table 1. Characterisation of *Palloures* pottery collected from the surface by period.²¹

Kisonerga-Mosfilia. Their analysis suggested a possible presence of 1% Early Chalcolithic material, a robust presence of Middle Chalcolithic pottery of 72%, and a good amount of Late Chalcolithic pottery of 27% (Table 1). Given the thoroughness of this analysis, and the fact that the site surface population had been

a series of curved walls eroding out of the road profile (Units 7, 13 and 19). The dating of these units was difficult, due to the small numbers of sherds that could be extracted from the section. There was however, a

²¹ Bolger et al. 2004, 112.

general correspondence between our Harris matrix sequence and ceramic chronology. Almost all units appear to date to the (Early) Middle Chalcolithic, and Late Chalcolithic sherds were mostly from the topsoil. The only possible Early Chalcolithic material came from Unit 17, an ashy layer with considerable amounts of pottery near the start of the sequence (Figure 4).

The documentation of the road section formed an ideal starting point for planning our excavation strategy. Over the site we created a grid of 5×10 m trenches, each identified through a letter/number combination, which we feel is a good size for a team of about 4 to 5 archaeologists/students to work in efficiently. No section baulks were retained; instead adjacent trenches can be excavated to different depths to obtain and document profiles through the deposits.

Six trenches were opened, of which two are quite small due to the road cut. In locating our trenches we based ourselves on four parameters. First, we felt that at the downslope side of terraces chances of preservation and accessibility of archaeological strata are probably the best. Thus we preferred to dig on the lower edge of the plot along the road. Second, we used the road cut to position our trenches adjacent to possible wall features observed in the road cut. Third, we wanted to have a good spread of the trenches over the plot, in order to sample the overall site stratigraphy. Fourth, we needed to prioritise areas that were scheduled for development in the near future, as indicated on a map we received from the Department of Antiquities (see Figure 5).

Four of the six trenches opened in the 2015 *Palloures* campaign were located above what seemed to be promising wall features in the road profile. However, given that we are dealing with round structures of which the walls would be cut at an angle, and that the masonry of Chalcolithic houses is not always very regular, it should be appreciated that recognising such wall features is not unproblematic. Thus, one of our trenches, BT 13, was located over what appeared to be a wall in the section, but in the trench it was a stone concentration rather than a wall.

By contrast, in Trenches BQ10, BP10, and BP09, our expectations of finding Chalcolithic buildings on the basis of our reading of the road profile were met.

In these trenches we found the partially preserved remains of about four different buildings in a relatively small area, on which we will report below.

Finally, we opened two trenches in order to sample the plot and its overall stratigraphy, and one of these, BX14, was placed over a planned building in that part of the plot. Whereas trench BR11 yielded very little archaeological features, apart from its northern edge, trench BX14 did yield the partially preserved remains of a small round house and a midden deposit, with rich concentration of domestic waste, suggesting it is located on the edge of a settlement area.

Our preliminary assessment of the most diagnostic pottery sherds from *Palloures* suggest that while the northern Trenches BP10, BQ10, and BR11 of the site have predominantly Middle Chalcolithic wares, with the Late Chalcolithic component probably deriving mostly from the topsoil, the Late Chalcolithic is more prominent in the south of the site, in Trenches BT13 and BX14 (Figure 11). Indeed in trench BX14 we have excavated Late Chalcolithic material at the top and Middle Chalcolithic assemblages further down.

For the time being, therefore we appear to have a Middle Chalcolithic settlement in the northern part of Plot 568, and it appears that in trench BX14 we are at the edge of a Late Chalcolithic settlement to its north and east, probably sitting on top of a Middle Chalcolithic predecessor, given that the midden deposits in BX14 also date to that period. No doubt this interpretation will appear naively simplistic in future seasons, but it does provide the clearest model for our observations so far.

TRENCH TALES

As mentioned above, the location of all trenches except for BX14 was determined by the presence of features in the road section. The expectation that these locations would yield Chalcolithic architecture was chiefly met in the northernmost trenches. Trenches BR11 and BT13 were characterized mainly by large heaps of stones, deposited in erosional gullies. The southern trench BX14 on the other hand did yield the remains of a Chalcolithic roundhouse as well as the deepest recorded stratigraphy of the site. Despite large-scale erosion processes, both historical and

modern, during the first season of fieldwork at *Palloures* we have established that at the site a number of large 'monumental' buildings existed during the Chalcolithic. The discussion below commences with the southernmost trench (BX14) and moves north along the two trenches which were mostly characterized by stone heaps (BT13 and BR11) and ends with a discussion of the northern trenches in which most of the architecture was found (BP09, BP10 and BQ10).

Trench BX14

In the south of the field a trench was situated on one of the areas on which construction was planned according to the excavation permit map. Due to recent large-scale earth movement and thick layers of modern rubble on the surface in this area we originally did not consider this a hot spot for excavation. The aim of excavating there was to investigate if there was any well-preserved archaeology in this part of the site. Interestingly however, the trench yielded both the remains of a Chalcolithic round house as well as the deepest archaeological deposits yet of the site.

The topsoil layer (Unit 1) was mixed with modern building rubble. Across the site, below the topsoil a colluvial deposit which contained small, abraded sherds was found (Unit 2). Two stone concentrations were discovered below this deposit (Units 3 and 5), one of which yielded a partially preserved circular wall of a Late Chalcolithic round house, measuring approximately 6 m in diameter (Unit 5). Unfortunately, due to (deep) ploughing, only the northern part of the wall was preserved a single course high (Figure 6). No associated floor levels or features were preserved.

Below the level of the wall we encountered a series of midden deposits (Units 6, 8, 12), which we excavated in a sounding in the east of the trench. These midden deposits contained much pottery, animal bone, and ground stone (including many axes). The fragmented nature of the ceramics indicates that these were deposited as secondary refuse; the axes were however in a complete state, which may indicate that these were placed in a pit we failed to recognize during the excavation. Several unusual finds originated from these deposits: a bone of a marine turtle, a stork, and a crab claw refashioned into a bead were discovered. All of these objects are unique for the Chalcolithic.

Also our principal find of the season was discovered in these midden deposits. This is a small picrolite figurine of a quadruped without a head and with two piercings, one of which might have been used to attach a head with a string (Figure 7). Notably, this piece is unique in the picrolite repertoire of Chalcolithic Cyprus.

Another important result of trench BX14 was that, following the ceramic repertoire from the midden, a sequence from the Late Chalcolithic to the Middle Chalcolithic is present there. This has so far not been documented well at other Chalcolithic sites on Cyprus.

Trenches BT13 and BR11

The location of the trenches along the road section was determined on the basis of large stones which were present in the section. It was assumed that these represented the walls of round houses. In trenches BT13 and BR11 these expectations were unfortunately not met.

Trenches BT13 and BR11 yielded hardly any architectural remains. The stones which were witnessed in the road section in these areas were in fact part of large heaps of stones which seem to lie in large erosion gullies. Possibly these stones and large amounts of Chalcolithic sherds among them, originated from a settlement which was located higher up the slope. That these deposits were not the result of one major event is clear from the fact that two separate erosion gullies were recognized in BT13 (Units 3 and 5). From under the larger of these two (Unit 3, Lot 262), an amphora fragment was found bearing a stamp, for which an exact match has yet to be found.²²

Some Chalcolithic material was however, discovered in both trenches. In the northwest corner of BT13 an exterior surface was discovered with large sherds of a storage vessel and a fragmented grinding stone (Unit 4, Lot 17). In BR11 the stone heaps were concentrated in the south of the trench. In the north, a Chalcolithic wall (Unit 10) was found which rested upon a bedrock outcrop and runs into the northern edge of the trench. Geophysical research has also indicated that this wall

²² The best match so far: Grace 1985, pl. 3, no. 19.

is part of a larger structure to the north of the trench. The wall could not be linked to any of the remains discovered in other trenches. Abutting the wall to its east was a small ash pit containing a coarse cooking tray. To the west of the wall an exterior surface was found, containing some ceramics and chipped and ground stone (Unit 11). Below this surface silty deposits with much pottery and stone artefacts were found. The deposit appeared very similar to the midden deposits in trench BX14 and has been interpreted in the same vein. The midden in BR11 was possibly in use during the habitation of the structures to the north of this trench.

The Northern Trenches: BP09 and BP10/BQ10

Three trenches were excavated in the north of the field. Because BP10 was very small due to its location on the road section, it was joined with BQ10. In effect two trenches are described for this area (Figure 9). Similar to the above described trenches, the position of these was also determined by the presence of stone concentrations in the road section. In this area their interpretation as wall remains was confirmed in the excavations. Fortunately, to the north of BR11 there was no evidence for the stone heaps and erosion gullies. In effect, despite modern disturbances, trenches BP09 and BP/BQ10 have yielded by far the most interesting architectural remains from the site. Three substantial walls, two hearth features and several large patches of a lime floor were found. Because all these features were truncated it was difficult to link these together. Here a very tentative interpretation of at least five habitation phases for this area is proposed, which might be adjusted as excavations proceed.

The first habitation phase is indicated by a hearth (Unit 28) and a small part of a wall which was assigned to Unit 9. The curvature of the wall appears to correspond to the location of the hearth as a central point of the house. As the hearth is located 3 m from the wall these features comprise the remains of a Chalcolithic round house with an outer diameter of 6 m. These features were, however, linked with each other post-excavation and may therefore not hold up to later scrutiny.

After the structure was no longer in use, it was probably largely demolished and its stones were

probably used for the construction of a large wall in the west of trench BP/BQ10 (Unit 8). Two parts of this wall were discovered, with a total length of 4.2 m and a minimum width of 0.5 m. Its curvature indicates that the wall was part of a large round house located to the west. Although it is difficult to ascertain its original outer diameter with precision, based on the fragmentary remains it is estimated at 10 m.

After this second phase, on top of this wall a new wall was constructed of an even larger structure (Unit 9). The preserved wall sections have a total length of 5.4 m and a width of 70 cm. The outside of the wall displays a clear curvature which seems to indicate a diameter of approximately 17 m, even larger than the preceding house. Notwithstanding the problems with calculating the full size of the structure based on such scant evidence, it is clear that these are the remains of a very large structure. To its exterior two dug-in pot bases (Lots 48 and 49) were found which may have been contemporary.

Also possibly contemporary to this large house is a structure which was found to its north in BP09. Here a raised hearth platform of at least 2.5 m in diameter was found (Unit 11 on Figure 10). The platform comprised of a pavement of large rocks, which may have originally had a mud or plaster floor, as is indicated by some plaster remains in the east of the feature. Two hearths were constructed in the middle of the feature (Units 14 and 15). Initially Unit 14 served as a central hearth until it was replaced by Unit 15. The feature may have again been part of a very large house, or was perhaps located in the open air. Part of a lime floor (Unit 16) was found south of the feature which may have been related to it. The hearth platform is without parallel in terms of size in Chalcolithic Cyprus.²³ No walls could be directly linked to the feature so far; the nearest wall remains were found at a distance of 7.5 m (Unit 21). If these should indeed be related to each other they would constitute a building of 15 m in diameter.

The final phase which was excavated in the northern area is illustrated by several large patches of a lime

²³ Thomas 1998, 59.

floor (Unit 3 on Figure 9). From a modern cut it could be observed that the floor was renovated once; it is composed of two consecutive lime floors of 0.5 cm thickness. If all patches which have been observed in the trench are part of the same floor, then it covers an area of at least 5.5 m from north to south. Because this floor is situated on the exterior of the other observed house structures it is evident that it belongs to yet another structure. Since it was found at a higher elevation than the other features in the trench it is assumed for the moment that it constitutes the youngest building of the trench.

Although some of the house size calculations above are rather speculative, it is evident from the presented data that during this phase the area was built up with several 'monumental' structures, which are amongst the largest known on the island.

PALLOURES ASSEMBLAGES

Brief introductions are provided here about the *Palloures* ground stone industries, ceramics, and faunal remains, as these have been analysed systematically in the course of the 2015 campaign. Other categories, such as chipped stone industries and botanical remains, will be presented in future reports.

The Pottery (by Charalambos Paraskeva)

During the first season of excavations at Chlorakas-*Palloures*, the pottery processing system and the typology established by the Lemba Archaeological Project (LAP) were the starting point,²⁴ but they were modified to increase efficiency. Furthermore LAP's nomenclature and the mode of recording have been altered, in order to accommodate a different approach towards pottery analysis and the advent of contemporary digital recording technologies. A brief outline of the methodology used and the typology changes implemented is therefore provided.

In the field, pottery from each identified context was collected in separate sealable bags. Upon transfer to the project base, the pottery was carefully washed, dried in the sun and thereafter each bag was assigned a unique number associated with a barcode. In terms of pottery processing a two-fold strategy was employed. First, in the initial processing, all sherds from each

bag were sorted into wares and afterwards subdivided in fabric/surface groups. Detailed counts of open-closed-unknown body, rim, base, handle/lug and spout sherds were recorded for each fabric-surface group into a custom-made database. Notes on decorative motifs, the relative thickness of sherds in each group, as well as peculiarities and technological details were recorded per fabric-surface group at this stage and introduced in the database. Finally, diagnostic sherds and those bearing decorative motifs were sketched and photographed, while the diagnostics were transferred to separate bags for further analysis. The second step consisted of detailed processing, in which the diagnostic sherds were subjected to a highly detailed recording analysis of their physical, functional, decorative and technological traits, which encompasses recording information for ca. 110 characteristics, which will be used for post-analytical verification of the typology established for the site.

A new typology was developed for Chlorakas-*Palloures*, which is based on, but also deviates from the typologies of the nearby sites of Kisonerga-*Mosfilia* and Lempa-*Lakkous*.²⁵ On the one hand, the designation of separate wares on the basis of quasi-polythetic attribute associations was abandoned,²⁶ and substituted by the identification of overarching distinctive characteristics that provide the ware name (e.g. Red Monochrome, Red-on-White) coupled with the distinction of fabric and surface groups within the ware based on polythetic attributes. This approach significantly reduces nomenclature, precludes data homogenization, and accommodates attribute overlaps within wares. On the other hand, instead of following a lumping approach to pottery classification,²⁷ a mixed splitting-lumping approach was endorsed, which may at the level of fabric/surface groups lead to an increase in the complexity of the typology's structure, but allows more detailed and nuanced recording of pottery, provides a framework for distinguishing variants and

²⁴ Bolger et al. 1998a, 93–95; Bolger et al. 1998b, 121.

²⁵ Stewart 1985, 261–62; Bolger et al. 1998a, 95–97.

²⁶ See for example: Bolger et al. 1998a, 95–97.

²⁷ Lumping has been the approach advocated for by most prehistoric ceramic specialists in Cyprus: Bolger 1985, 23; Bolger et al. 1998a, 95; Webb et al. 2009, 196.

Chlorakas-Palloures	Kisonerga-Mosfilia
Red Monochrome (RM) Characteristic: Exterior and/or interior surface monochrome painted or slipped with red colour.	Red Slip, Red Monochrome Painted A, Red Monochrome Painted B, Red Monochrome Massive, Coarse Painted Monochrome, Red and Black Stroke Burnished (not presenting mottling or smudging), Glossy Burnished ware.
Reduced Red Monochrome (RRM) Characteristic: Exterior and/or interior surface monochrome painted or slipped with red colour and reduction effects applied (interior reduction, exterior reduction, reduced band, mottling, smudging, etc.).	Black Topped Ware, Red and Black Stroke Burnished.
Red-on-White (RW) Characteristic: Exterior and/or interior surface slipped with light/white coloured slip and painted with red paint or slip.	Red-on-White Middle Chalcolithic, Red-on-White Parallel Band, Red-on-White Banded, Red-on-White Lattice, Red-on-White Band and Line, Coarse Painted Patterned, Coarse Painted Tartan.
Dark Monochrome (DM) Characteristic: Exterior and/or interior surface monochrome painted or slipped with brown to dark brown dark toned paint/slip.	Spalled ware, several of the wares mentioned in RM presenting much darker toned/tinted brown paint/slip.
Plain White (PW) Characteristic: Exterior and/or interior surface monochrome slipped with light/white slip. As an overall group, it may represent the white slipped part of RW vessels or abraded RW vessels, but its existence as a discrete type cannot at present be discounted.	Plain White.
Black Monochrome (BM) Characteristic: Exterior and interior surface entirely reduced.	-
Coarse Ware (CW) Characteristic: Coarse version of fabrics used predominantly for the production of utilitarian shape types (trays, cooking vessels, pithoi, other large storage vessels). Usually surfaces do not survive, save for the occasional white slip or wash.	Coarse ware.

Table 2. Concordance of the Chlorakas-Palloures and Kisonerga-Mosfilia typologies, including the prominent characteristics and abbreviations for the Chlorakas-Palloures wares.

subtle functional/technological/stylistic changes and/or differences within wares, and encourages application of multivariate pottery analyses. Table 2 presents the changes in overarching ware nomenclature proposed by the present analysis.

As the Chlorakas-*Palloures* typology is still at a nascent stage, a more detailed description of fabric and surface groups within the wares is considered untimely. However, some preliminary inferences may be drawn based on the initial processing of a significant proportion (5497 sherds, ca. 30%) of the total collected during the first season (Figure 11). First, the pottery from the site can be safely dated to the Middle (ca. 48%) and Late (ca. 27%) Chalcolithic, while there are also small quantities of Early Chalcolithic or Late Neolithic (<1%) and Roman (ca. 3%) pottery. The level of abrasion is relatively low (ca. 21%) and most non-recognisable pottery derive from upper layers.

Second, although Middle Chalcolithic pottery quantities appear to outnumber Late Chalcolithic, it appears that they also represent a longer span of time. Specifically, certain technological and stylistic developments in pottery production are apparent within the Middle Chalcolithic pottery, which hints to an Earlier (19.4%) and Later (28.5%) phase equivalent to Kisonerga-*Mosfilia* Periods 3A and 3B respectively.²⁸

Third, spatial patterns start to emerge, as on aggregate trenches BT13 and BX14 produced more Late Chalcolithic pottery, whereas trenches BP10, BQ10 and BR11 contained mostly later Middle Chalcolithic pottery. Although the analysis is still at a very early stage, this may indicate shift of spatial focus of habitation between the two periods.

Fourth, comparing the site's assemblage to pottery from nearby sites, such as Kisonerga-*Mosfilia*, Lempa-*Lakkous*, and Kisonerga-*Mylioudia*, it appears that the majority of Middle-Late Chalcolithic types appear in all sites. One particularly prominent example illustrating the cultural homogeneity of these lowland sites, concerns the Late Chalcolithic fabric for the production of RM and RRM (Kisonerga-*Mosfilia* RB/B),²⁹ which is ubiquitous and the clay recipe near-identical in all sites attested. Nevertheless, small quantities of pottery at Chlorakas-*Palloures* indicates that the site also maintained contacts with other parts

of the island, as types mostly found in the north (circum-Keryneia range areas) and south (Vasilikos valley and Erimi-*Pampoula*) coasts of the island in the Middle and Late Chalcolithic, such as certain DM, BM and RRM fabric/surface groups.³⁰

Finally, there is no Philia or Early Bronze Age pottery on the site, which may indicate either site drifting during these eras, or site abandonment.

The Ground Stone (by E.M. Souter)

The ground stone assemblage comprises a total of 209 objects, most of which fit comfortably within Chalcolithic stone working traditions. 194 of the objects were classed as being tools. These include chopping (axes, adzes and chisels), grinding (handstones, querns, grinders), percussive (pounders, hammerstones, an anvil), polishing (polishing pebbles and burnishers), composite and re-used tools. The other items (15 items) are cupped stones, vessels, figurative items, conical stones, a grooved stone, a perforated stone and a pivot stone. Items lacking from the *Palloures* collection do not always occur at other contemporary sites and, when found, occur in low frequencies. Only one pendant and no microlite anthropomorphic figurines were found. However, the one anthropomorphic item and microlite pendant discovered are unique, giving a distinctly local character to the collection.³¹

The percentage frequency of different categories of tools from Chlorakas-*Palloures* was compared to published data from three other Chalcolithic sites in the region (Figure 12). Two notable features emerged; *Palloures* exhibited a relatively low percentage of chopping tools and a higher frequency of percussive tools than the other sites. Although re-used chopping tools, particularly those with a percussive function, are not always recognised elsewhere, only 6.3% of

²⁸ Peltenburg et al. 1998b, 244–49; Peltenburg et al. 2013, 321.

²⁹ Bolger et al. 1998a, 95.

³⁰ Paraskeva 2015.

³¹ For Kisonerga-*Mosfilia* see Elliott-Xenophontos (1998); for the Middle Chalcolithic roundhouse 200 from Kisonerga-*Mylioudia* see Jackson (2003); for Lempa-*Lakkous* see Elliott (1985).

the tools found at *Palloures* represent chopping tools re-used for purely percussive functions. It is likely that these frequencies, to some extent, represent a true pattern, indicating that, in most excavated areas of the site, adzes, axes and chisels were in lesser demand or not as highly valued at *Palloures*. In addition, the large collection of percussive tools could signify that a higher frequency of industrial processes was being undertaken at the site.

Units 8 and 12 in trench BX14, representing the upper and lower levels of the midden deposit respectively, are exceptional. Unit 8 has a high percentage of complete chopping tools (33.3% of all items). Most of these were found together in Lot 221 (3 adzes, an axe and axe-shaped pounder), likely representing a worker's cache. The style of adzes is similar to items at *Kisonerga-Mosfilia*, occurring from the late Middle Chalcolithic onward. Conversely, the assemblage from Unit 12 is almost completely dominated by pounders (64.7% of tools from this context), indicating that different activities were performed in this locale during accumulation of the midden deposit. Unit 12 also produced the only evidence for figurative representation on the site. CP G246.1 is the picrolite animal pendant (Figure 7), described above, and CP G231.1, an irregular piece of diabase, was likely chosen due to its anthropomorphic qualities, but has been further shaped to accentuate them. Far from being an area where items were forever abandoned, this midden deposit was probably a very active area of the site.

Although this report only concerns a small number of items recovered from the initial season of excavation, the ground stone from this site has revealed some interesting attributes. Future analysis of ground stone can hopefully shed light on how inhabitants of the distinctive site of *Chlorakas-Palloures* lived out their lives.

Palloures Faunal Remains (by P. Croft)

The animal bones were mainly well-preserved, but often covered with a mineral encrustation which somewhat impeded identification, recording and measurement. The entire excavated sample of 14.270 kg of bone was examined, of which 65% could be identified. Numbers (NISP) and weights (g) of identified fragments are presented in Table 3.

The *Palloures* faunal assemblage is dominated by remains of fallow deer (*Dama mesopotamica*) and pig which, together, account for 85% of identifiable fragments or 90% of bone by weight. It should be noted that whilst deer bones are somewhat more abundant than pig bones amongst the identified fragments, their remains appear less abundant than pig remains when the weights of identified material are considered. The average weight of an identified deer fragment is 25 g compared with 15 g for pig. This is due to the larger body size of deer. Caprines are far less abundant by either means of assessment, and consisted mainly of goats, but included some sheep. The deer would have been free-living, hunted

Species	NISP		Weight	
	No	%	G	%
Deer	194	38.3%	4.784	51.3%
Pig	239	47.1%	3.589	38.5%
Caprine (17 goat, 2 sheep)	64	12.6%	0.899	9.6%
Fox	8	1.6%	0.007	0.1%
Dog	1	0.2%	0.007	0.1%
Equid	1	0.2%	0.040	0.4%
Total	507	100.0%	9.326	100.0%

Table 3. Numbers (NISP) and weights (g) of identified mammalian fragments. Not included are bird, marine crab and marine turtle, which are each represented by a single fragment.

animals, whilst it is presumed that at least the majority of the pigs were husbanded swine. Goats and a few sheep are also likely to have been herded stock. Fox may have been hunted for its pelt and it is no surprise to find that the domestic dog is present.

An equid is represented by a single upper tooth that is encrusted, and it is clearly not a recent intrusion. However, it seems unlikely to be Chalcolithic since equid has not been securely identified in Cyprus prior to the Bronze Age. The bird bone, a metatarsus of a stork (*Ciconia* cf. *ciconia*), and an ulna of a marine turtle are more likely to be Chalcolithic. The crab claw is a substantial specimen that has been ground down at both ends so that it could have been threaded as a bead. It most probably derives from *Eriphia verrucosa*, the warty or yellow crab, which occurs throughout the Mediterranean Sea and makes good eating.³²

The *Palloures* bone assemblage retrieved so far appears to fall into a regional pattern that has been established by the previous work of the Lemba Archaeological Project at nearby sites in the coastal lowlands of western Cyprus (Figure 13). It will be clear from Figure 13 that the Chalcolithic bone assemblages from *Palloures*, *Lempa-Lakkous* and the Kisonerga sites of *Mosfilia* and *Myloudia* all include large proportions of both deer and pigs which together account for 77–87% of the remains of the main animals. Caprines are also commonly represented at these sites, and these consist mainly of goats with only a small minority (around one tenth) of sheep. The similarity between *Palloures* and the *Mosfilia* period 3B (Middle Chalcolithic) and period 4 (Late Chalcolithic) samples is particularly close, with pig remains somewhat outnumbering deer remains in all three instances, and the occurrence of caprine remains restricted within the range 13–19%.

The faunal evidence from *Lempa* and *Mosfilia*, along with that from Early Chalcolithic Kisonerga-*Myloudia*, has long been understood to indicate a decline in deer, and increasing reliance on pig during the Chalcolithic period. These changes probably reflect the diminishing contribution through time that hunting was able to make to the subsistence of an expanding human population in the region. The acquisition of chronologically distinct Chalcolithic

faunal samples from *Palloures* is eagerly anticipated in the hope that it will not only provide evidence for the nature and evolution of subsistence at this particular settlement, but also enhance our understanding of developments within the broader regional economy.

CONCLUSIONS

The first excavation season at Chlorakas-*Palloures* has clearly demonstrated the importance of the site and its potential for extending our knowledge about the Chalcolithic of western Cyprus and beyond. Although the site has been severely impacted by agricultural developments and construction activities, a considerable archaeological deposit remains for the investigation of both the Middle and Late Chalcolithic occupation of *Palloures*.

In terms of building and burial types and how they compare to other sites investigated in the region by the Lemba Archaeological Project (at *Lempa*, *Mosfilia*, and *Souskiou*), the following preliminary conclusions can be drawn. So far we have not found any burials at *Palloures*. However, we did find five small pieces of human bone in various contexts across the site (BP09 Units 2 & 13, BQ10 Unit 1, BX14 Units 8 & 12). This indicates that on-site burials will probably be found in the future seasons.

We did find a number of buildings in the 2015 season, however. In the northern trenches BQ/BP10 and BP09 we have good (but truncated) evidence for a series of what appear to be rather monumental Middle Chalcolithic buildings, and the GPR data suggest that there are further buildings adjacent to them. More work is necessary, however, to evaluate how our buildings compare to those at *Lempa-Lakkous* and Kisonerga-*Mosfilia*.

Such work, and a more detailed comparison of our ceramic, lithic, faunal, and botanical assemblages is necessary in order to assess in what respects *Palloures* differs in its economy and other aspects from previously investigated settlements in the area. Already ceramic investigation has begun to show how *Palloures* is also

³² Data from Croft 2003, table 20.12 (*Myloudia*); Croft 1998, table 22.10 (*Mosfilia*); Croft 1991, table 2 (*Lempa*).

part of networks that span Cyprus as a whole, but again we need more work to flesh out this pattern.

Finally, the 2015 season has already begun to show us that *Palloures* can provide important data on the transition between the Middle and the Late Chalcolithic. In the southern trench BX14 we have excavated an important midden sequence spanning the Late Chalcolithic to Middle Chalcolithic transition and we look forward to continue this work.

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ΠΕΡΙΛΗΨΗ

Η Χαλκολιθική Κύπρος αποτέλεσε το αντικείμενο συστηματικών και μακρόχρονων αρχαιολογικών ερευνών εδώ και αρκετές δεκαετίες. Εντούτοις, πολλά ερωτήματα σχετικά με αυτή τη σημαντική περίοδο κατά την οποία παρατηρούνται για πρώτη φορά η δημιουργία δικτύων ανταλλαγής τεχνικών δεξιοτήτων, η πρωιμότερη παραγωγή μεταλλικών τεχνέργων και η ανάδυση πρώιμων μορφών κοινωνικής διαφοροποίησης, παραμένουν. Η σωστική ανασκαφή στη θέση Χλώρακας-Παλλούρες ξεκίνησε με σκοπό να διαφωτίσει τα προαναφερθέντα ζητήματα. Στο άρθρο αυτό παρουσιάζονται τα αποτελέσματα της πρώτης ανασκαφικής περιόδου σε αυτή τη θέση. Το πρόγραμμα αποτελεί συνεργασία μεταξύ του Τμήματος Αρχαιολογίας του Πανεπιστημίου της Λιέγης (Leiden University) και του Τμήματος Αρχαιοτήτων Κύπρου.



Fig. 1. Prehistoric sites mentioned in the text. 1: Chlorakas-Palloures; 2: Lempa-Lakkous; 3: Kisonerga-Mosfilia; 4: Kisonerga-Mylioudia; 5: Souskiou-Laona; 6: Souskiou-Vathyrkakas (by Victor Klinkenberg, image source: Esri).



Fig. 2. 3D image of Chlorakas-Palloures with the 2015 trenches indicated (looking north east) (by Victor Klinkenberg).

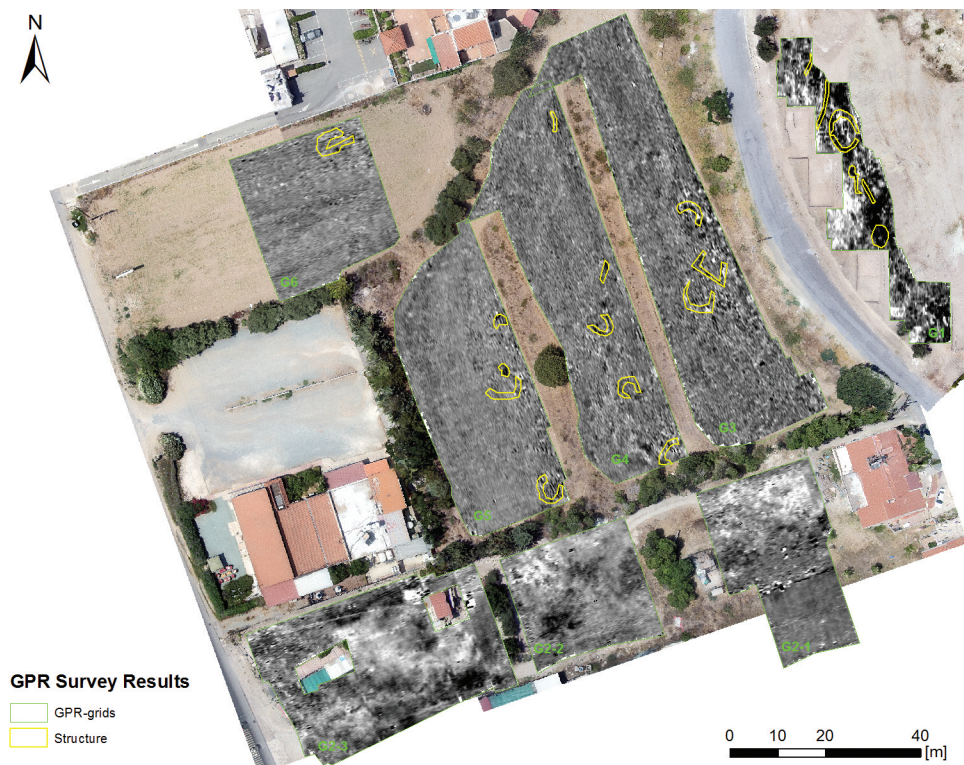


Fig. 3. Overview of the results of the GPR geophysical survey (by Till Sonnemann).

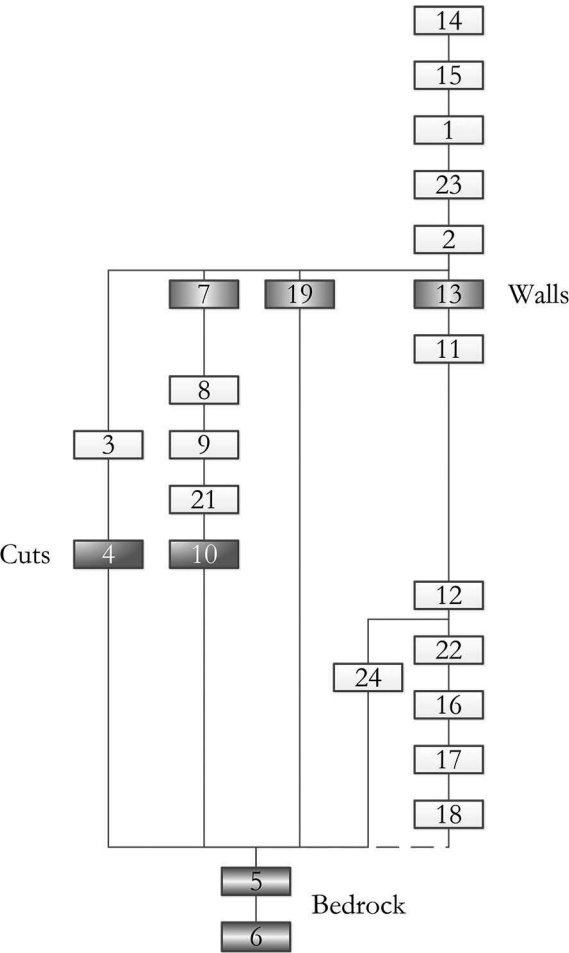


Fig. 4. The Harris matrix of the road cut on the west side of plot 568 (by Victor Klinkenberg).



Fig. 5. Plot 568 of *Palloures* with the 2015 trenches superimposed (by Victor Klinkenberg).



Fig. 6. Overview of trench BX14 (by Victor Klinkenberg).



Fig. 7. Animal figurine from the midden deposit in BX14, Unit 8, Lot 246 (Photo by Ian J. Cohn).



Fig. 8. Damokrates stamp (ca. 3 cm across), from Lot 262, trench BT13 (Photo by Ian J. Cohn).

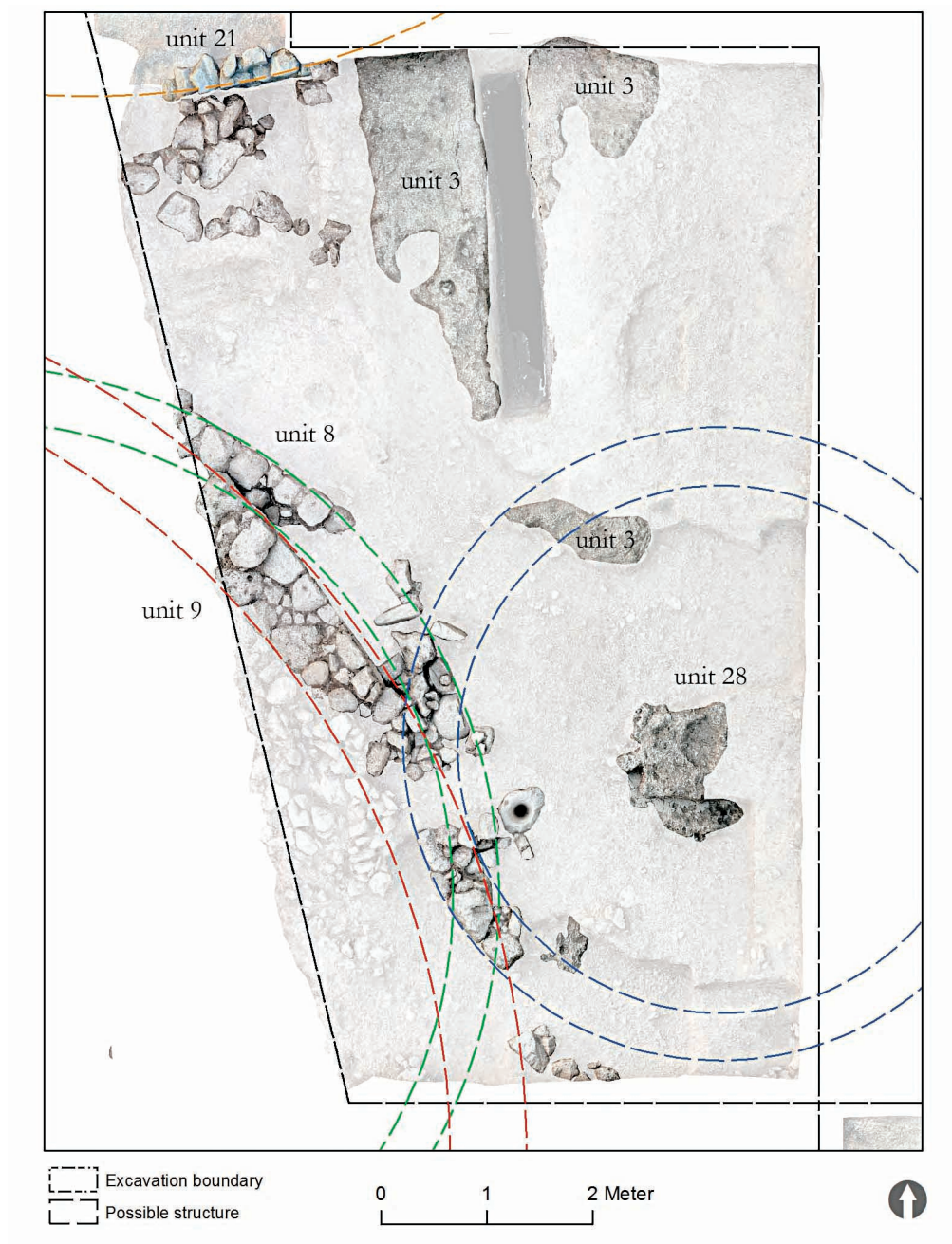


Fig. 9. Features in trenches BP/BQ10 with a hypothetical reconstruction of buildings (by Victor Klinkenberg).

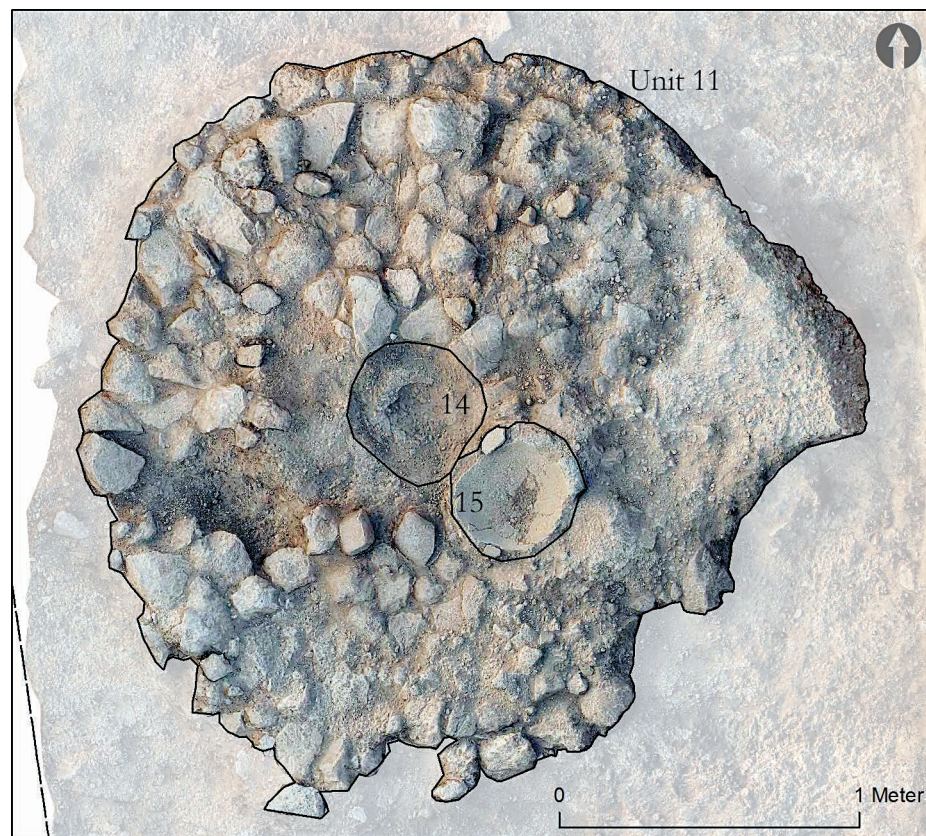


Fig. 10. The large hearth platform Unit 11 in BP09. The stones are laid concentrically around Unit 14, the first hearth. Unit 15 is a later fire bowl (by Victor Klinkenberg).

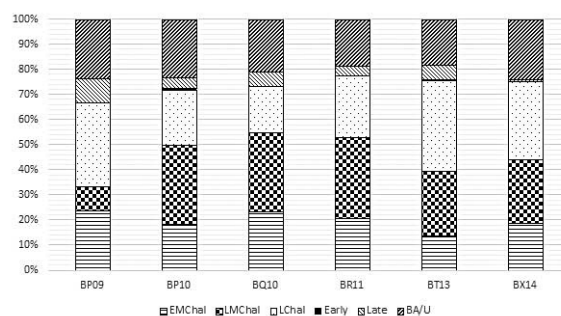


Fig. 11. Sherd quantities and percentages by trench and relative dating. Analysis of BP09 is at a very early stage and should not be considered accurate. Legend abbreviations: BA/U = Badly Abraded/Unidentifiable; EMChal = Earlier Middle Chalcolithic; LMChal = Later Middle Chalcolithic; LChal = Late Chalcolithic; Early = Early Chalcolithic or Late Neolithic; Late = Post-Chalcolithic, at present all Roman (by Charalambos Paraskeva).

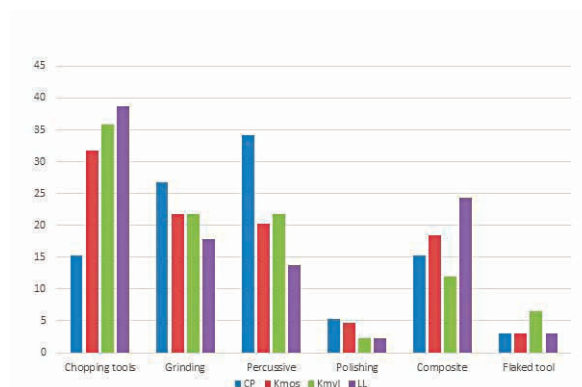


Fig. 12. Bar chart comparing percentage frequency of different tool classes from four Chalcolithic sites; CP = Chlorakas-Palloures; Kmos = Kisonerga-Mosfilia; Kmyl = Middle Chalcolithic roundhouse 200 from Kisonerga-Mylioudia; LL = Lempa-Lakkous¹ (by Ellon Souter).

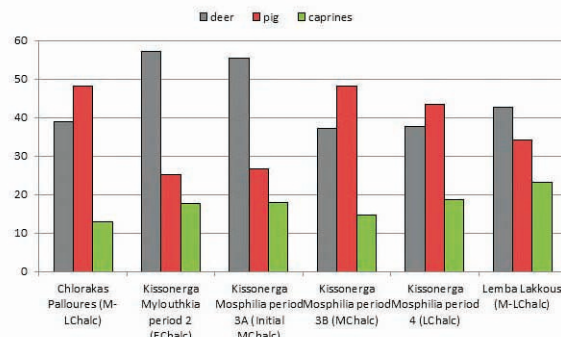


Fig. 13. Identified remains of the main animals (NISP) in several Chalcolithic bone assemblages from the Ktima lowlands (by Paul Croft).³²

NOTE FOR CONTRIBUTORS OF THE *REPORT OF THE DEPARTMENT OF ANTIQUITIES, CYPRUS (RDAC)*

The Editors welcome articles on subjects related to the archaeology, history and culture of Cyprus and to conservation. The *RDAC* is divided into two sections. Section I includes articles concerning the study of archaeological/historical objects/architecture, archaeological theory, the conservation of objects/architecture, as well as other subjects deemed suitable for publication by the Editors. Section II consists of preliminary and interim reports by archaeologists carrying out excavations and surveys (on land and underwater) with the permission of the Department of Antiquities.

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Articles may be submitted in Greek, English, German, Italian and French. It is the responsibility of the author(s) to have the article reviewed prior to submission by a native speaker of the language in which the article is written.

The deadline for submission of an article for the *RDAC* is 31st of March of the year of publication. The final version of the article should be submitted, both in electronic form and as a printed manuscript. The text should be written in MsWord, New Times Roman (12pt), double spacing. Footnotes should be submitted as endnotes (at the end of the article). Titles of sections in the article should be in the centre in capital letters, of sub-sections aligned left in lower case and italics, and of sub- sub-section titles, aligned left, in lower case and bold.

The spelling of Cypriot geographical names in the text must follow the publication by M.N. Christodoulou and K. Konstantinides, *A Complete Gazetteer of Cyprus* (Nicosia 1987).

Italics should be used for localities (i.e. Lempa-*Lakkous*, Kouklia-*Evreti*) but not for terms such as in situ and et al. Capitals should be used for periods (i.e. Neolithic period, Bronze Age, Archaic period etc.) and for wares (i.e. Black-on-Red ware, Red Polished ware etc.).

Images should be submitted in electronic form only (TIF, PDF, EPS) at minimum 300 dpi resolution and not inserted in MsWord documents. The author(s) may prepare to-scale plates and images that will be inserted according to the page dimensions.

Articles must be accompanied by a short abstract in English or Greek accordingly (not exceeding one A4 page), which should also include the title of the article.

Complete contact information should be given for each author (name, email address, mailing address).

REFERENCING

Articles submitted for the *RDAC* must follow the same referencing style as indicated by the Editors below. Articles using other referencing systems will not be accepted and will be returned to the author(s). In-text citations are not to be used. Authors may use footnotes for citation that will refer to a complete list of cited works at the end of each article. Footnotes with biographical citation should consist of: author's last name, publication year, comma, pages/figures/plates etc (see examples below).

¹ Boardman 2002, 39–45.

² Karageorghis and Vilaris 2012, pl. XV.

³ Peltenburg et al. 2006, figs. 7, 8.

Footnotes with more than one biographical citation should use semi-colons (see example below).

¹ Nicolaou and Mitford 1974, 35–37; Nicolaou 2005.

For footnotes with both biographical citations and discussion, the following format should be used:

¹ Boardman (2002, 39–45) explains this hypothesis further.....

WORKS CITED

Kiely, T. 2012. “The British Museum excavations on Cyprus in the 1890s.” In *Ancient Cyprus: cultures in dialogue*, edited by D. Pilides and N. Papadimitriou, 28–30. Nicosia: Department of Antiquities, Cyprus.

Flourentzos, P., ed. 2007. *Proceedings of the International Conference “From Evagoras I to the Ptolemies. The transition from the Classical to the Hellenistic period in Cyprus” (29–30 November 2002)*. Nicosia: Department of Antiquities, Cyprus.

Karageorghis, V., and A. Georgiou. 2012. “A Corpus of Late Minoan III pottery from Pyla-Kokkinokremos.” *RDAC* 2010: 301–24.

Accepted abbreviations may be used for archaeological journals and reference books.

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