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ŽARKO TANKOSIĆ, FANIS MAVRIDIS, PASCHALIS ZAFEIRIADIS & AIKATERINI PSOMA

Gourimadi Archaeological Project

The results from the first excavation season (2018) of a prehistoric site in the Karystia, southern Euboea

Abstract

The Norwegian Institute at Athens received a permit from the Greek Ministry of Culture and Sports in 2018 to conduct a five-year excavation project at the site of Gourimadi in southern Euboea. The first field season, conducted in June 2018, lasted for four weeks during which two trenches were opened at the site and partially excavated by a Norwegian-Greek team of researchers and students. The aim of the project is to understand the transition from the Neolithic to the Bronze Age in this part of the Aegean in the light of emerging regional maritime interaction networks and lasting settlement of the Cycladic islands. In addition, data collected from both the surface and excavation indicate that Gourimadi can contribute potentially crucial information needed for examining the Aegean prehistoric obsidian exchange and the introduction of metallurgy in the same region. Finally, the project is the first systematic (i.e. non-rescue) excavation of a prehistoric site in southern Euboea. The 2018 excavation confirmed our expectations about the importance of the site and has added to our understanding of prehistoric Euboea and the Aegean. The paper contains a brief preliminary but comprehensive report of the 2018 Gourimadi Archaeological Project results.*

Keywords: Gourimadi, southern Euboea, Late Neolithic, Final Neolithic, Early Bronze Age, prehistoric Aegean, pottery, obsidian

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Introduction

The southern section of the island of Euboea, also known as the Karystia after Karystos, its largest modern and ancient settlement, comprises approximately 240 km^2 of land[1] surrounded by sea on three sides and connected to the rest of Euboea by the relatively narrow Filagra isthmus (*Fig. 1*). How one defines the Karystia varies, and this distinction can be important for understanding population dynamics and movement of people within the region in antiquity.[2] In its appearance as well as its geomorphological composition, the Karystia resembles more the Cycladic islands to the south than the rest of Euboea.[3] This is also reflected in its prehistoric material culture, which represents a mixture of Cycladic and Mainland influences, with certain local characteristics,[4] indicating interactions of its past

* Many individuals and organizations have in various ways assisted with the organization and conduct of the Gourimadi Archaeological Project and, sadly, we cannot do them justice by mentioning them all here. This, however, does not reduce the gratitude we owe them. We would particularly like to thank the Norwegian Institute at Athens, for the permit and financial support, as well as the Institute for Aegean Prehistory (INSTAP) for its generous funding. Our work would not have been possible without the support of the Ephorate of Antiquities of Euboea and its current and former directors, Drs Angeliki Simosi and Pari Kalamara, respectively, as well as archaeologists Fani Stavroulaki (the Head of the Department for Byzantine and Post-Byzantine Antiquities of the same Ephorate) and Kostas Boukaras. We thank the Glenn Black Laboratory of Archaeology at Indiana University for lending us the necessary magnetometric equipment and our colleague Dr Elizabeth Watts Malouchos from Indiana University Anthropology Department for operating it in the field. We also thank our friends and colleagues Dr Denitsa Nenova, Aikaterini Kanatselou, Paschalis Delios, Hüseyin Öztürk, Stamatis Vogiatzopoulos, Maria Mitropetrou, Antonios Papadopoulos, Aca Đorđević, Dr Aleksandar Kapuran, Kostas Nikolaou, Jonida Martini, Dimitris Lambropoulos, Dr Markos Katsianis, and Dr Flint Dibble for their help during the excavation and study process. Dr Nenova's contribution in terms of the digitalization of the project data acquisition, storage, and analysis cannot be overestimated. The project has been made possible and enjoyable thanks to our amazing team consisting of student volunteers from Norway, Greece, the United States, and the Netherlands. Finally, we owe a great debt of gratitude to the local community for their support, and particularly to the Mayor of Karystos, Mr Lefteris Raviolos, and the staff of the Karystos Museum, Ms Sofia Stambelou and Ms Evangelia Athanasiou.

[1] Tankosić 2011; Tankosić & Katsianis 2017.
[2] Tankosić 2017; Tankosić & Katsianis 2017, 243; Mavridis & Tankosić forthcoming.
[3] Tankosić 2011, 283–295; Tankosić 2017, 102; Mavridis & Tankosić forthcoming.
[4] Tankosić 2011; Cullen *et al*. 2013, 59; Mavridis & Tankosić 2016a; 2016b; forthcoming; Mavridis 2017.

Fig. 1. Location of Gourimadi in the wider Aegean. Author: Žarko Tankosić.

inhabitants both with the immediate surroundings as well as participation in wider Aegean networks.[5]

Southern Euboea is dominated by the twin peaks and the radiating ridges of Mount Ochi, the horseshoe-shaped Bay of Karystos, and two large alluvial plains, the coastal Karystian plain (colloquially known as the *Kampos*) and the Katsaronio plain (or the *Ano Kampos*), which forms a plateau north of the Kampos. Both plains represent a significant agricultural resource in the Aegean islands, to which the Karystia in many ways belongs,[6] and which are generally poor in arable land.[7] The bay is formed by the dry Paximada[8] peninsula to the west and by the much larger and rugged area called the Bouros-Kastri peninsula by archaeologists,[9] although there is no local name that encompasses the entire area.

In this paper we discuss the preliminary results from the first excavation season (2018) at a hilltop site of Gourimadi, a key site for understanding the end of the Neolithic and the transition between the Neolithic and the Early Bronze Age (hereafter EBA) phase in this part of the Aegean. Recent research in southern Euboea, consisting largely of archaeological surface surveys, has brought to light large quantities of new data concerning the region's prehistory.[10] Despite this increase, several problems still remain, particularly in refining the chronology and terminology of the latest subphases of the Neolithic (often referred to as the Final Neolithic [FN] but also as the Late Neolithic [LN] Ib, IIa–b)[11] and the transition to the following Bronze Age. Moreover, the issue of the

[5] For an overview of interactions between the Mainland, and specifically Attica, Euboea, and the Cycladic islands during the Final Neolithic–Early Bronze Age, see for example Broodbank 2000; Kouka 2008; Nazou 2010; 2017a; 2017b; 2020; Tankosić 2011.
[6] Tankosić 2017.
[7] Tankosić 2011; Tankosić & Katsianis 2017.
[8] Also referred to as Paximadi (e.g., Cullen *et al*. 2013).
[9] Wickens *et al*. 2018.
[10] E.g., Cullen *et al*. 2013; Keller 1985; Tankosić *et al.* 2021; Tankosić & Chidiroglou 2010; Wickens *et al*. 2018.
[11] For detailed discussion on the chronology at the end of the Neolithic see e.g., Mastrogiannopoulou & Sampson 2017; Mavridis 2006; Mavridis & Tankosić 2016a and references therein.

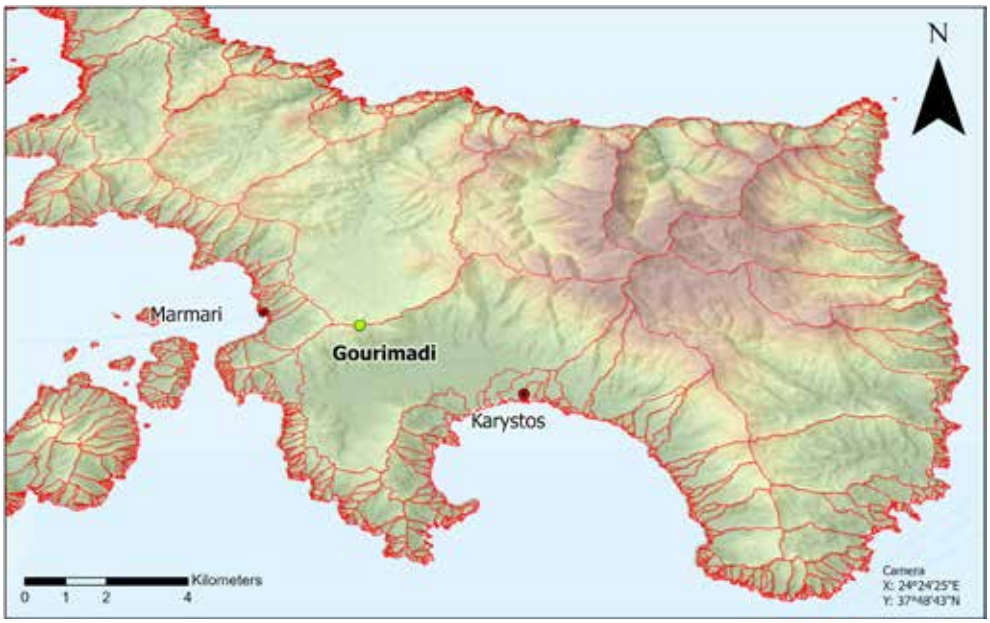

Fig. 2. Gourimadi within southern Euboea (Karystia). Authors: Markos Katsianis, Žarko Tankosić.

first settlement of southern Euboea remains open, with until recently the earliest material coming from the Agia Triada cave,[12] without any known contemporaneous open-air sites.

The paper first introduces the location and the history of the site, followed by the description of the 2018 excavation, including the applied methods and research protocols. We continue by summarizing the preliminary results of the study of the most numerous classes of artefacts collected during the excavation, namely ceramics and lithics. In the end, we offer some preliminary conclusions about the nature of this important site.

The site

The site of Gourimadi is located on a hill of the same name in the south-eastern edge of the Katsaronio plain, 2.5 km southwest from the village of Katsaroni, *c.* 6 km from the modern town of Karystos (*Fig. 2*). The site was discovered and recorded during an earlier survey of the area (Norwegian Archaeological Survey in the Karystia, NASK).[13] It was immediately recognized as important, based on the size and composition of the artefact assemblage collected from its surface. Particularly indicative was the surface pottery scatter, which suggested the existence of multiple chronological strata and the occupation at the site during the FN–EBA I transition (roughly the 4th millennium BC), which is elusive both in the Karystia and in the Aegean in general.[14] Large quantities of surface obsidian finds (3,660 pieces in total), including 180 tools of which 53 were arrowheads (most of them tanged and barbed), as well as evidence for the complete reduction sequence were also significant.[15] Metallurgical remains consisted of small quantities of slag and a well-preserved copper axe.[16] The location of the site was also suggestive of its importance, as it has excellent defensive properties with unobstructed vistas of not only all access routes but of the entire broader area, including most sections of southern Euboea, east Attica, and the northern Cycladic islands of Andros, Tinos, Giaros, and Kea. On clear days, the view from Gourimadi extends to Kythnos, Serifos, and Syros.

Gourimadi means "large rock" in the local Arvanitika dialect, and the hill on which the site sits and from which it takes its name rises *c.* 400 masl, crowned by a large natural rock outcrop. In morphological terms, the hill comprises a very slightly inclined (east to west) area west of its summit, the relatively steep southern slopes, and the mildly inclined western and northern slopes. Typical eastern Mediterranean garrigue vegetation consisting of thorny bushes (*phrygana*) covered much of the hill before the excavation. The prehistoric site covers the plateau on the summit as well as the north, west, and south slopes of the hill. According to the size of the archaeological surface scatter, the maximum extent of the site is *c.* 4 ha, although it is likely that the actual subsur-

[12] E.g., Mavridis 2017; Mavridis & Tankosić 2009.
[13] Tankosić & Katsianis 2017; Tankosić *et al.* 2021.
[14] Tankosić *et al.* 2021.
[15] Tankosić *et al.* 2021.
[16] Mastrotheodoros *et al.* forthcoming; Tankosić *et al.* 2021.

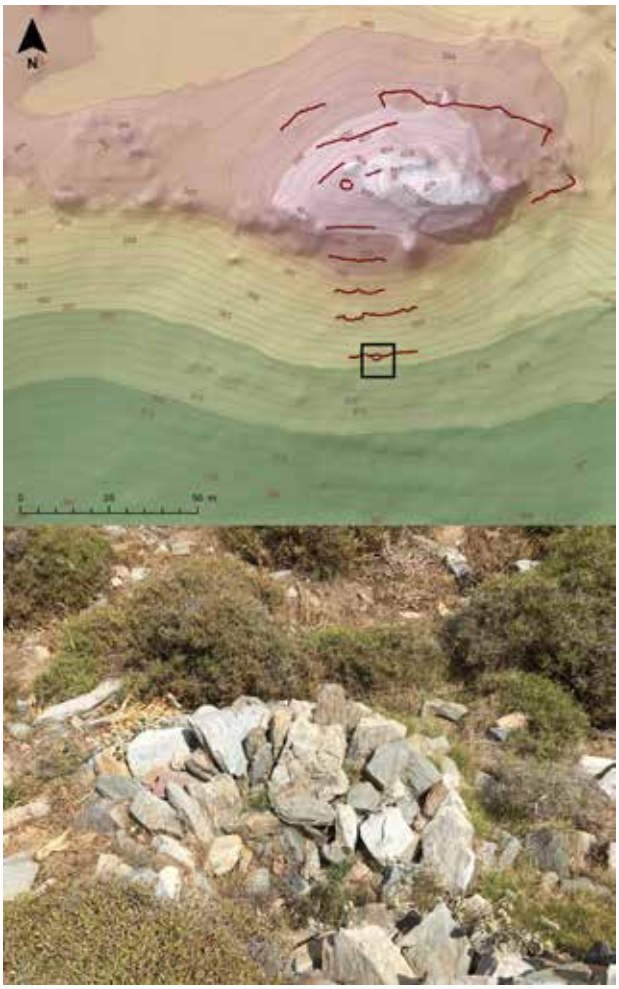

Fig. 3. Location of the possible stone-built tower recorded during the topographic survey. Authors: Denitsa Nenova, Paschalis Zafeiriadis. Red lines represent stone-built retaining walls. The photograph was taken looking south.

face remains cover a considerably smaller area. The distribution of surface artefacts can be affected by many factors,[17] at least some of which have been at play at the Gourimadi (e.g. agricultural activities, husbandry, construction activities, erosion by strong winds/rains, etc.[18]). The southern slopes are also intersected by agricultural terraces of indeterminable date aligned in a roughly east–west direction. One of the lower terraces is built upon a semi-circular construction that resembles a bastion typical of Aegean prehistoric fortification (*Fig. 3*); however, the true nature and dating of this feature can only be ascertained through future research. The presence of terracing indicates the use of the area for agriculture, although not in recent times. The entire section of the Katsaronio plain, where Gourimadi is located, is still regularly used for animal husbandry (sheep and goats).

In terms of surface artefact density, the southern slopes, especially those below the main summit of the hill, is where we encountered the thickest concentrations of archaeological material during the survey, followed by the summit and the western and northern slopes.[19] We believe that this could be the result of erosion that had partially stripped the summit of its cultural layers and redeposited them on the southern slopes. At the same time, despite their steepness, the southern slopes provide a much more hospitable location for habitation, as they are sheltered from the prevailing strong northeasterly winds that would have been a factor at least for part of the year. Nevertheless, we decided to begin our excavation by first targeting the plateau on the summit of the hill. We expected that its elevated location would have made it an important area of the prehistoric site and, erosion notwithstanding, more likely to yield intact cultural deposits. We hypothesized that, although the quantity of surface (and subsurface) artefacts might be higher on the southern slopes, many of them would be unstratified or lacking context, since the likelihood that they were redeposited from elsewhere is greater.

2018 excavation

In the 2018 season we began the excavation of two trenches: trench 1 (7 x 4 m) covering the central section of the plateau on the summit, and trench 2 (4 x 4 m) on the southern section of the summit and *c.* 5 m south of trench 1, where the ground begins to slope (*Fig. 4*). Our aim was to investigate the summit and uncover intact cultural layers that would give us an indication of the chronological periods present on the site as well as the nature of its use. Based on the size and composition of the surface scatter and large quantities of loose stones likely belonging to destroyed walls, we expected to find architectural remains as well.

METHODS

We designed methods around the principles of recording precision, simplicity, and flexibility. To achieve this, we used a modified version of the recording system designed for the archaeological project at the Neolithic site of Paliambela in Pieria, northern Greece, conducted by the Aristotle Univer-

[17] Bintliff *et al.* 1999.
[18] See Tankosić & Katsianis 2017.
[19] Due to the methodological limitations of NASK (Tankosić *et al.* 2021), we cannot provide surface artefact densities for Gourimadi. The observation here is based on personal experience with the Gourimadi survey and subsequent visits that preceded the start of the excavation.

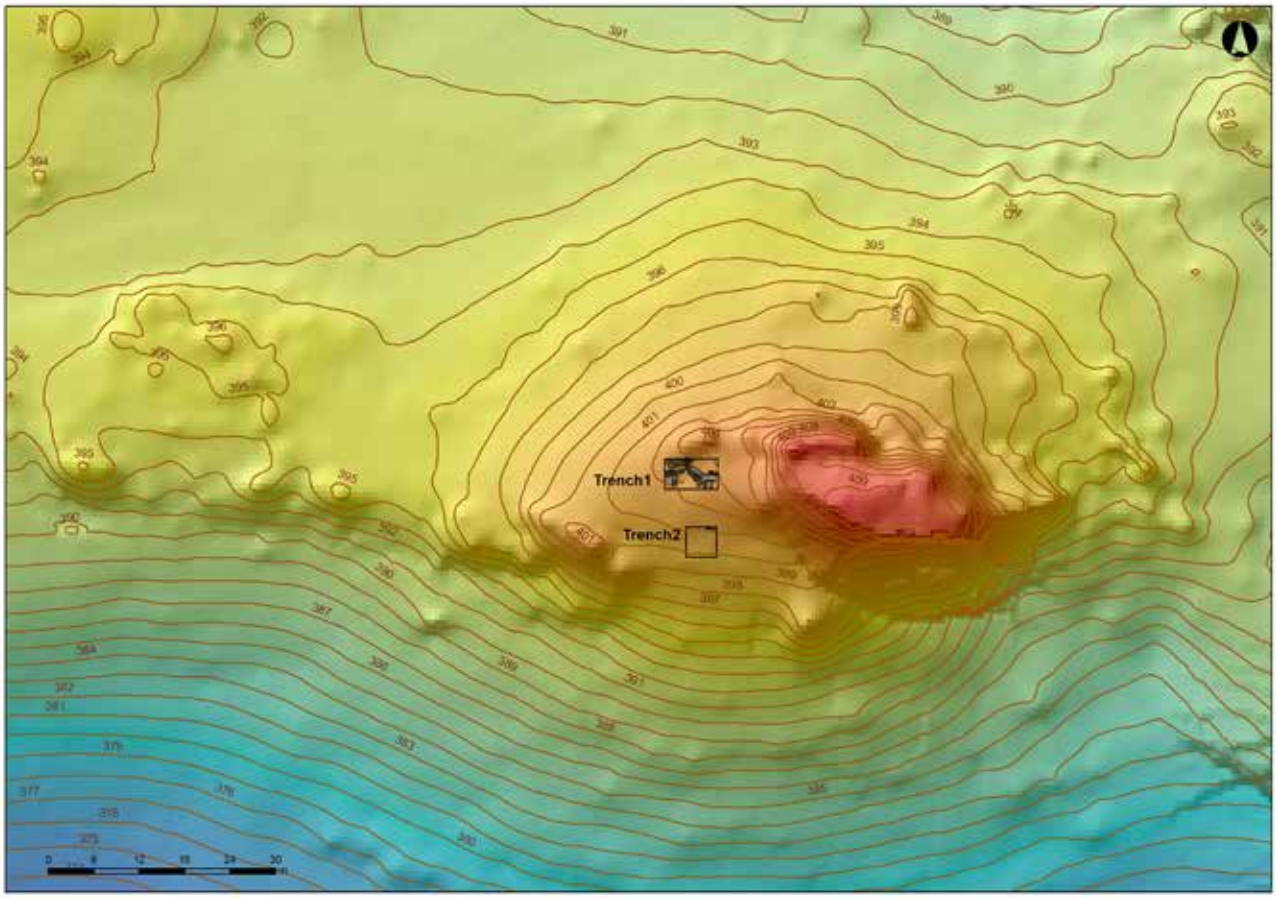

Fig. 4. Topographic plan of Gourimadi hill with the excavation trenches. Author: Denitsa Nenova.

sity of Thessaloniki and the University of Sheffield.[20] After consulting with GIS specialists,[21] we decided that archaeological recording systems that are entirely based on portable electronic devices such as tablet computers (e.g. iDig) were not suited for our project, as we also intended to create a more robust data trail that would include both digital recording and old-fashioned written notes and observations. Moreover, employing the necessary portable devices to implement iDig would be cost prohibitive.

The excavation proceeded in "excavation units" (U) that, where possible, followed the observable cultural stratigraphy. Excavation units were assigned with successive arbitrary numbers in thousands, starting with the number of the trench (e.g. trench 1 excavation units started with 1001 and trench 2 with 2001). Excavation units were meant to represent the three-dimensional space, primarily the excavated soil but also any positive or negative stratigraphic feature that occupies space (e.g. walls, pits, and similar). An excavation unit can also represent individual anthropogenic or natural events (e.g., fills, floor constructions, geological depositions, etc.) that left their trace in the stratigraphy of the site. When differences in soil could not be easily observed, we excavated arbitrary units that we examined and connected to specific strata in the post-excavation process. The plan was to combine individual excavation units into cultural layers and stratigraphic contexts during the post-excavation process.

The metrics of each excavation unit were recorded in a variety of ways to reduce the possibility of undetected errors. Our basic data acquisition/recording tool was an inexpensive Android-based tablet running ODKcollect[22] software. Most of the quantifiable information (e.g., type of excavation work, volume, soil consistency and texture, inclusions, Munsell Chart values, etc.) was recorded in this way and the excavation unit form was central in connecting all other excavation

[20] For an overview of the methodology employed in Paliambela see Katsianis 2012, 158–182; Kotsakis & Halstead 2004; Kotsakis *et al*. 2007.
[21] M. Katsianis, pers. comm., 2018.
[22] https://docs.getodk.org/collect-intro/

Fig. 5. Example of photogrammetry of trenches 1 (above) and 2 (below). Author: Denitsa Nenova.

data. This provided the needed degree of uniformity in the type of data that was recorded as well as in basic descriptions. Some unquantifiable observations, such as the stratigraphic relationship with other adjacent or similar unit(s), as well as comments of various kinds, were also recorded in this form.

We also had separate digital ODKcollect logs for all the various types of movable and architectural finds and data (e.g., pottery, lithics, pits, walls, photographs, shell, etc.), in which they were assigned a unique number (for each trench) and connected to the central excavation unit form.

In addition to tablet-based data acquisition, trench supervisors maintained field journals separately for each trench. The journals were intended to record qualitative and observational information for the units and the trench as a whole.

The metrics of each excavation unit were recorded using a total station and those that were considered important for whatever reason were also photogrammetrically recorded. We generally relied heavily on photogrammetry for spatial recording in the field, either at the level of individual units or the entire trench (*Fig. 5*), thus producing successive 3D models of the excavational process.

The finds and soil were recovered and kept separately by unit. All the soil from each unit was dry-sieved, and *c*. 10 kg samples were taken for flotation. The spatial position of di-

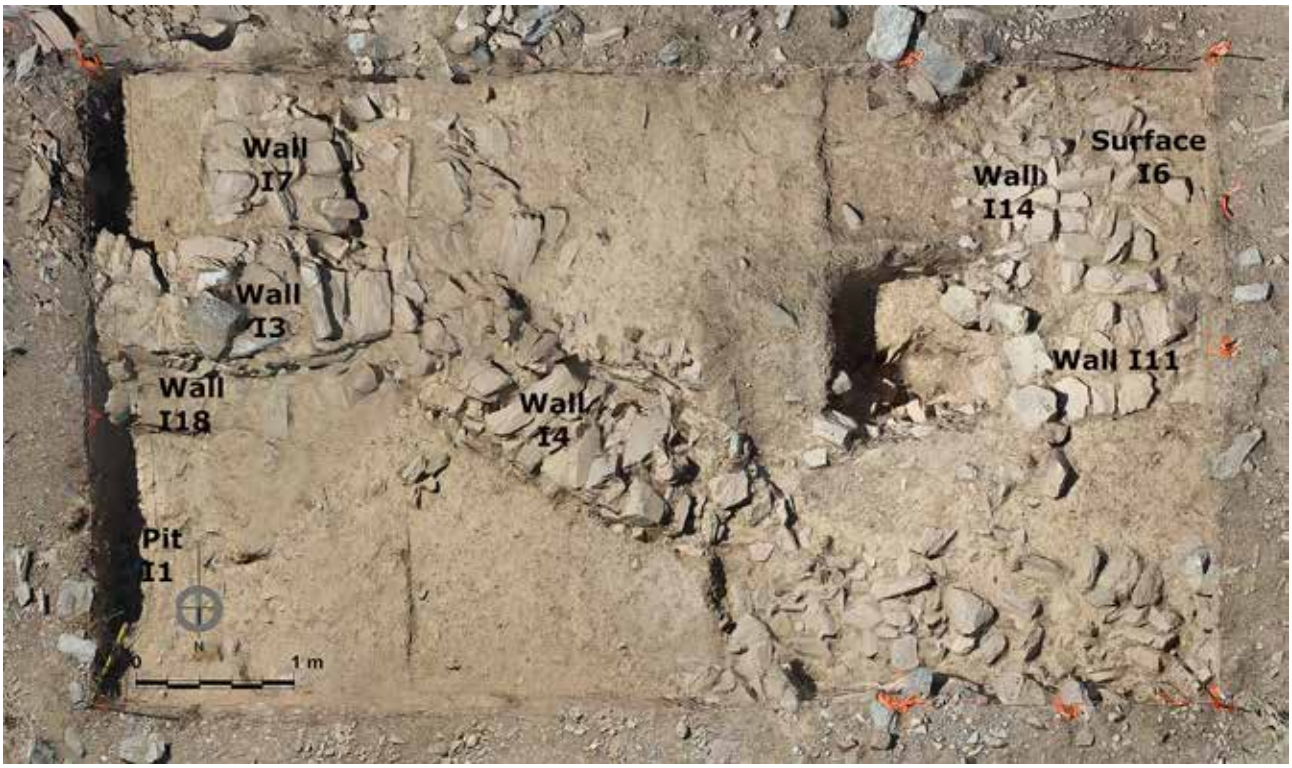

Fig. 6. Trench 1 at the end of the 2018 excavation season. Authors: Denitsa Nenova, Paschalis Zafeiriadis.

agnostic finds of all kinds, concentrations of finds, chipped stone tools or important pieces of debitage, and features was recorded by total station, and they were also photographed and, on occasion, drawn. Soil from each unit was examined for colour, consistency, texture, and composition, and pedological samples were also taken for later analysis.

TRENCH 1 SUMMARY

Trench 1 (hereafter T1; *Fig. 6*) covers 28 m^2, extending 7 m east–west and 4 m north–south. Its location reflects our wish to have a substantial excavation area opened at the top plateau of the Gourimadi hill, in the relatively flat area west of the large rock outcropping, where we expected to find the best-preserved strata. In 2018, we excavated 32 excavation units in T1 reaching about 1 m below the modern surface of the hill, without hitting the bedrock in any part of the trench.

T1 produced important results consisting of both movable finds and several non-movable/architectural remains. Significant amounts of pottery and numerous lithic pieces, comprising both tools and debitage, and predominantly made of Melian obsidian, were excavated. The two categories of finds, ceramic and lithic, are discussed further below. In addition, two polished stone chisels, two stone-made beads and one clay anthropomorphic female figurine were also recovered from the trench.

The prehistoric architectural remains exposed in 2018 consist of several stone-built walls of variable width, both straight and curved. Based on the spatial distribution of movable finds and preliminary stratigraphic observations, these walls could have defined both roofed and open-air spaces; however, by the end of the 2018 excavation season we were still unable to clearly distinguish between the two. The regular presence of burnt daub, albeit in small quantities, indicates the use of mud or mud mortar either as wall plaster or as a part of adobe superstructure.

Several layers of compacted hard soil with inclusions of small stones and fragmented pottery were recorded in different areas of T1, especially in its eastern half, in the vicinity of the structural walls. Based on their composition and appearance, we believe that they represent remains of use surfaces or floors, especially since some of them have more than one substratum, indicating repair or successive reuse. Also, a possible stone-paved area (surface I6) was uncovered by the south-west corner of the trench. Finally, what we originally considered as a possible pit (pit I1), containing pottery, small stones, and animal bones, was excavated along the eastern edge of of T1. Following additional excavation in this area, we abandoned the interpretation of this feature as a pit, as the layer with same composition/inclusions extended throughout the north-eastern part of the trench, bounded to the south by walls I3 and

Fig. 7. Trench 2 at the end of the 2018 excavation season. Author: Denitsa Nenova.

I4. Instead, we started considering this entire section of the trench as a possible prehistoric discard area.

Towards the end of the 2018 excavations, we decided to place a small 1 x 1 m exploratory stratigraphic sounding in the western half of T1, in the middle of an oval depression *c*. 50 cm at its deepest that was visible on the surface before the beginning of the work in trench 1. Although we are not entirely certain about the origin of the depression, we believe that it might represent an old looters' trench. Units 1027 and 1029 were excavated in the sounding. The stratigraphic sounding did not reach the bedrock despite reaching 1.2 m in depth below the level of the original surface. This indicates that the cultural layers on the summit of the Gourimadi hill are much more substantial than we originally postulated.

TRENCH 2 SUMMARY

We positioned trench 2 (T2) south of T1, with its southern edge abutting a probably recent retaining wall (*Fig. 7*). The trench covered an area of 16 m^2 (4 x 4 m). We excavated it using the same methods as at T1. T2 produced similar movable finds as T1, though fewer in number. Unlike T1, in T2 we did not encounter substantial architectural remains, except for a face of a straight east–west wall in the northern edge of the trench. The movable finds consist of pottery, lithics (mostly obsidian), three fragments of metallic slag, and an anthropomorphic clay figurine of a very similar type to the one found in T1. Excavation in T2 also did not reach the bedrock in 2018.

In the northern two thirds of the trench, we encountered an extensive concentration of stones. We removed several layers of stones lying on top of each other, but we did not discern any intentional arrangement. The stones were mixed with archaeological materials similar in type and appearance to those from T1, although in smaller quantities. Towards the end of the 2018 excavations, we opened a narrow stratigraphic sounding along the east edge of T2 to examine if undisturbed stratigraphy was present. After removing another *c*. 40 cm of rocks, we encountered a stratum *c*. 30–50 cm thick with few rocks and with evidence

of intensive burning (U-2009). This stratum also contained pottery and lithics in larger quantities than in the stone-filled strata above. Below this layer, we reached another layer of stones with some archaeological material mixed with them.

From the start of the excavation in T2, the lower third of the trench, along the southern trench edge, contained much fewer rocks; however, the excavations in this part of the trench were minimal in 2018, since we first excavated the sections of the trench lying on higher ground. Nevertheless, in relative terms we found a larger quantity of archaeological material in this section than in the rest of the trench. This is due either to the presence of better-preserved cultural strata or to the effects of the retaining wall, which likely served as a barrier that caught artefacts eroded from the higher areas of the hill.

SUMMARY OF THE STRATIGRAPHIC RESULTS

The two trenches excavated in 2018 produced a number of important results. They yielded a wealth of movable archaeological material, which is discussed in the following section of this paper. We confirmed the expected presence of prehistoric architectural remains at the site, suggesting its more substantial use and perhaps permanent habitation. The remains unearthed in 2018 support the existence of several structures at the summit of the Gourimadi hill. Limited magnetometric research conducted at the site in August 2018, although largely inconclusive, indicates the possible existence of another structure to the west of T1, to which the stone-paved area (I6) in the south-west corner of T1 could be related.

The stratigraphic position of the walls in T1, the results of the 2018 stratigraphic soundings, and the preliminary study of the excavated pottery confirmed the prolonged habitation on the site. The chronological span of the excavated pottery that ranges from the early and mid-5th millennium BC to the early part of the 3rd millennium BC (see below) further supports the above conclusion. Unfortunately, no radiocarbon dates are available at the time of writing of this article to illustrate the chronological range in absolute terms. Notwithstanding the natural slope of the terrain, the differences observed in the stratigraphic levels of certain architectural features can be indicative of chronological variations in their construction. For example, it seems that wall I3 is built on top of I18 while wall I7 postdates I3, which it abuts (*Fig. 6*).

Review of the ceramic and lithic finds

CERAMICS

In addition to the lithic artefacts discussed below, pottery represents the most frequently found artifact category from 2018. We uncovered *c.* 73 kg of pottery from T1 (*Table 1*) and *c.* 13.50 kg from T2 (*Table 2*), a total of *c.* 87 kg of sherds. In T1, which was the focus of the 2018 excavation, U-1006 produced the largest volume of pottery (8.66 kg), followed by U-1028 (6.24 kg), U-1016 (5.79 kg) and U-1002 (5.01 kg). According to this, the largest concentration of pottery comes from the eastern half of T1, especially close to its south-east corner, from an area enclosed by architectural remains (Walls I3 and I7). All ceramic material was weighed, counted, and sorted, and information regarding its fabric, ware, which part was preserved, etc. was systematically recorded. The pieces selected for further study were registered in a FileMaker Pro database, designed exclusively for this project. The detailed macroscopic inspection together with the application of laboratory analytical techniques will provide further information on the production and consumption strategies represented by the pottery assemblage. It is safe to say for the moment that the local fabrics are characterized by the presence of schist, quartz, and mica (muscovite), which is consistent with the region's geology. Some grey and red-buff wares were also detected, but they seem to be related to the EBA material, with most sherds coming from the surface or near-surface layers.

The evidence for interaction between Neolithic Aegean sites is still very limited, although there are finds that indicate the existence of such contacts, especially between the Mainland and the islands. For example, Mainland matt-painted ware is known from the Saliagos horizon in the Cyclades.[23] In general, the circulation of pottery seems to have been limited; however, we need to underline here the absence of systematic provenance studies. During the Aegean Neolithic, especially in the southern Aegean region, pottery seems to have been produced and consumed locally, likely at the site level.[24] This finds confirmation in the analyses conducted for the Neolithic pottery islands project,[25] where only minor quantities of pottery were identified as being in circulation. At the same time, the strong stylistic similarities of the white-on-dark painted, the pattern-burnished, and other wares have usually been considered as evidence for some type of cultural ties between communities producing them, the character of which still eludes us. The interpretation of technological similarities in pottery production shared by geographically distant communities, as well as similarities in the syntax and character of decoration seen on pottery and other artefacts, all of which would indicate maritime interactions, need further study and are outside the scope of this paper.

Generally, the excavated pottery from Gourimadi in 2018 is not well preserved and is often fragmented. This indicates

[23] Sotirakopoulou 2008, 123.
[24] Mari 1993, 147–148; Nazou 2010; Wilson 1999, 7–8.
[25] Mavridis 2009, 354–368.

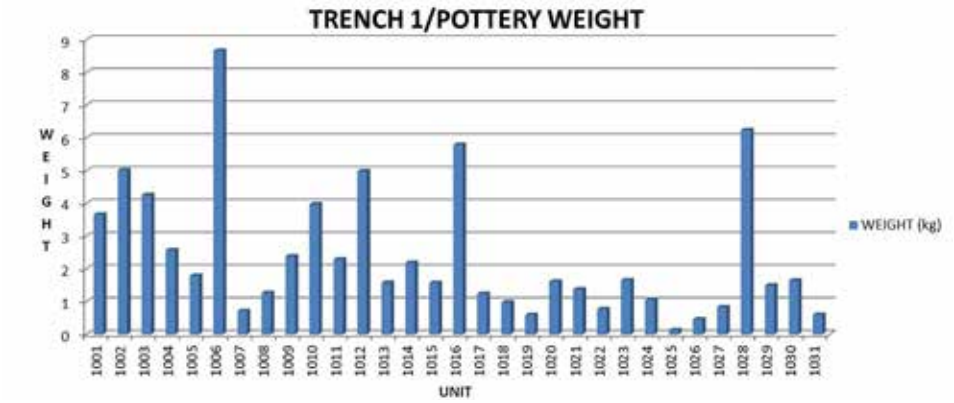

Table 1. Pottery weight per unit. Trench 1. Author: Fanis Mavridis.

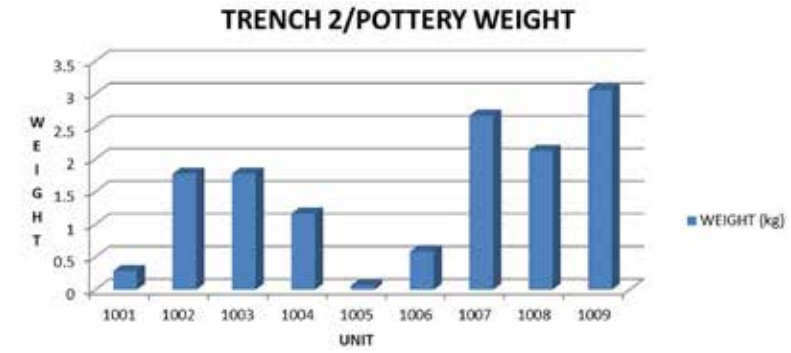

Table 2. Pottery weight per unit. Trench 2. Author: Fanis Mavridis.

prolonged exposure on the surface. This is not unusual, since in 2018 we were still excavating layers that are comparatively close to the modern surface of the site.

Among the pottery shapes, both closed (*Fig. 8*), open, and open-mouthed shapes are present (*Fig. 9*). There are rounded (*Fig. 8a*), straight-sided, usually shallow (*Fig. 8c–d*), deeper S-profile (*Fig. 8b*) or closed (*Fig. 8e*) bowls. Among chronologically sensitive shapes, "cheese pots" (*Fig. 8f*) are relatively numerous, a particular, usually coarse, shape with a row of perforations below the rim that is characteristically found on Aegean sites dated to the later 5th and 4th millennia BC.[26] There are also closed and open-mouthed shapes with handles and lugs starting from the rim or just below it (*Fig. 9a, j*), jars with straight, in- or out-turned necks (*Fig. 9b–d, f, g, i*), jars with incisions below the rim (*Fig. 9e*), and a unique closed shape with spherical body (*Fig. 9h*). The presence of a closed vase with spherical body and a tapering neck resembles closely the well-known shape called "amphoriskos", found at many Aegean late 4th-millennium sites,[27] with parallels in other Neolithic sites such as Emporio on Chios,[28] Kalythies cave in the Dodecanese,[29] and sites in the Cyclades.[30] However, the presence of several shapes with similar characteristics in 5th-millennium Ftelia on Mykonos[31] may indicate the long ancestry of this shape. Also, unlike at Ftelia, the Gourimadi shape has the beginning of a strap handle on the shoulder.[32]

Medium monochrome ware, defined here as having a dark, smooth surface with distinct thick burnished slip but no decoration, and a fabric that varies between fine and that with some (usually small stone fragments) inclusions, is the most dominant. Coarse ware follows, while medium to fine usually dark-faced burnished sherds are rather limited in number. This last category has black-grey surfaces and on occasion some traces of fugitive red colour are present, indicating that the so-called crusted ware was used at the site;[33] however, the preservation is poor. Red-burnished ware was not represented in the 2018 ceramic assemblage. Several of the vessel bases have preserved matt impressions (*Fig. 10a*). Notable also is the presence of various kinds of horned handles in different types and wares (*Fig. 10b, c*). Tubular handles, various kinds of strap handles, and lugs with vertical or horizontal perforation are also well represented.

[26] Doukaki 2018, 59–81.
[27] E.g., Dova 1997, fig. 8; Pantelidou-Gofa 2005.
[28] Hood 1981, fig. 101:44.
[29] Sampson 1987, fig. 45:476.
[30] Renfrew 1972, fig. 10:1–2, 7.
[31] Sampson 2002, fig. 20.
[32] E.g., Pantelidou-Gofa 2005, figs. 2, 4, 7, 10–11.
[33] See Phelps 2004, 108–111; Zachos 2008, 17–19 for an overview of this ware.

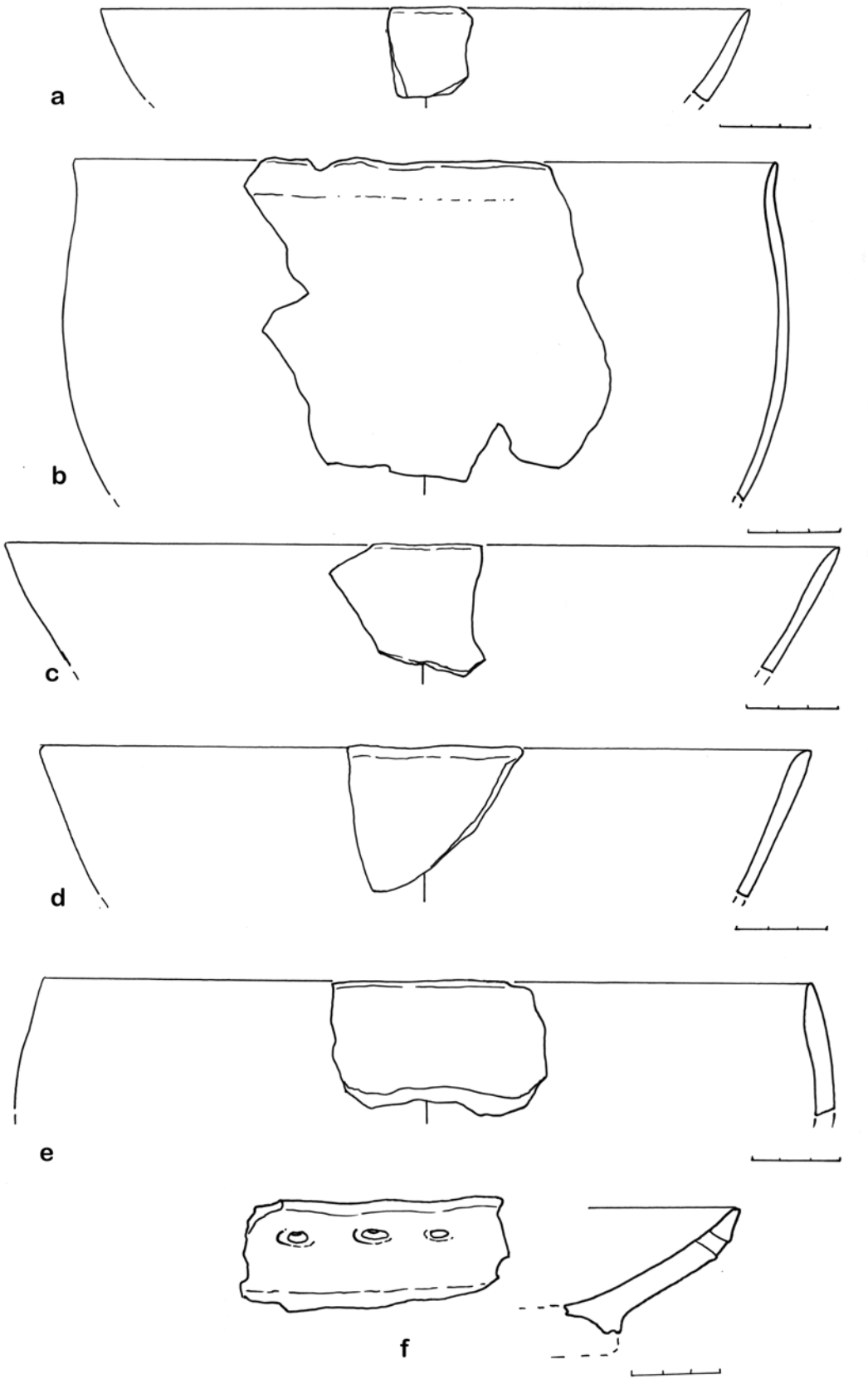

Fig. 8. Typical open pottery shapes from Gourimadi. Authors: Fanis Mavridis and Aleksandar Kapuran.

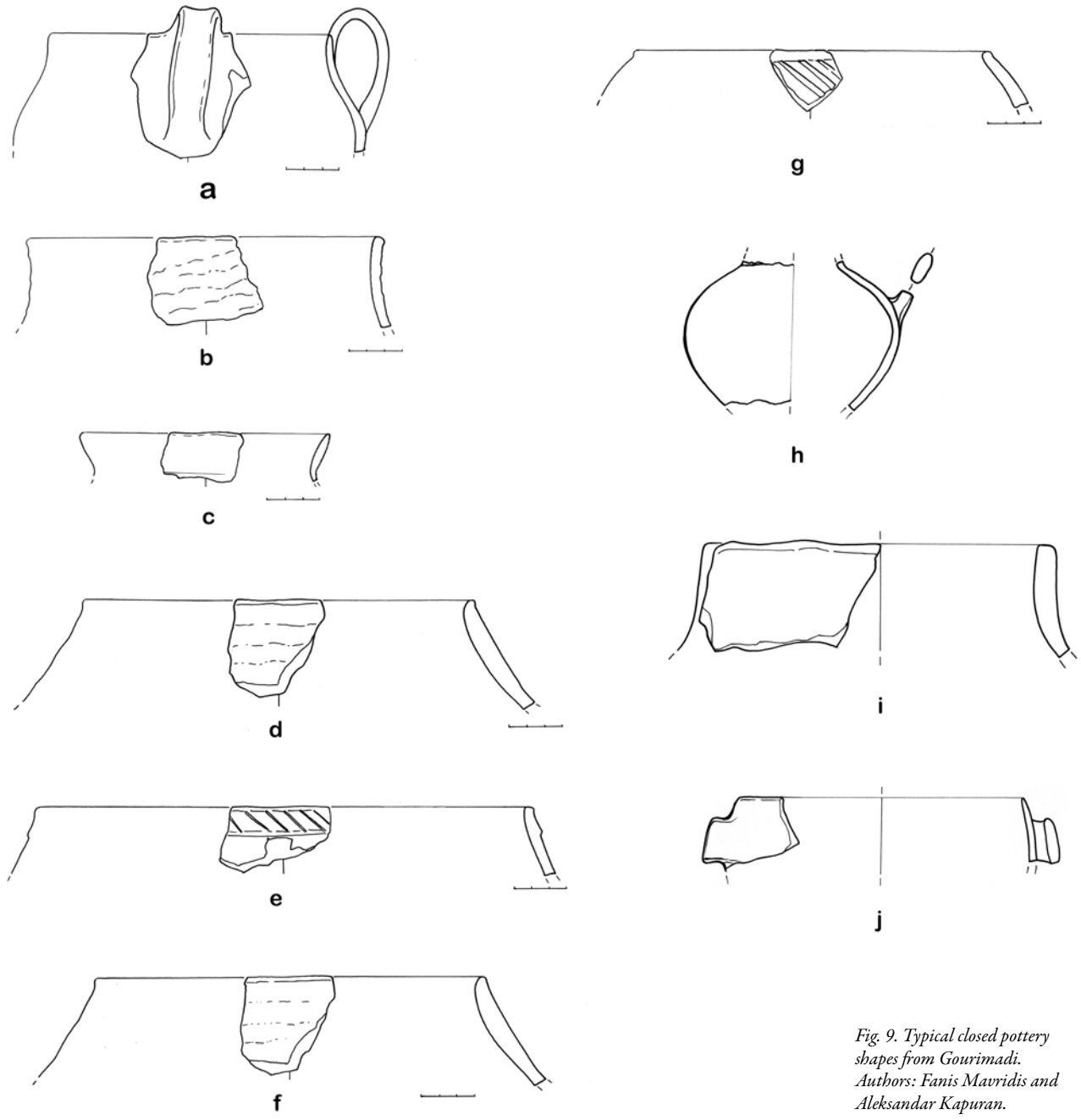

Fig. 9. Typical closed pottery shapes from Gourimadi. Authors: Fanis Mavridis and Aleksandar Kapuran.

Relief and plastic decoration consisting of ridges, knobs, buttons, mastoid projections (*Fig. 10g*), and similar are the most common types of decoration, particularly finger-impressed raised bands ("rope decoration").[34] Incised and grooved pottery is also present (*Fig. 10d–f*). Jars with a raised band just below the rim decorated with incised patterns (usually triangles filled with diagonal lines) are found at Gourimadi and are common at sites such as Ftelia on Mykonos,[35] Kephala on Kea,[36] and others. Several handles may come from scoops, which is another shape distinctive of this prehistoric phase.[37] Some sherds bear pattern-burnished decoration (*Fig. 10i*);

[34] For similar pottery in the Karystia see Mavridis & Tankosić 2016a, figs. 12.9, 9.h.

[35] Sampson 2002, figs. 68–71.
[36] Coleman 1977, pl. 32.F–G.
[37] See, for example, Sampson 1993, 91–92.

Fig. 10. Examples of decorated pottery from Gourimadi. Author: Fanis Mavridis.

however, the specimens preserved are few and small.[38] A small number of sherds belong to rolled-rim vessels and vessels with T-shaped rims, indicating an EBA I presence.[39] Some undiagnostic body sherds with buff and greyish clay may also belong to this later phase, or even to a more advanced phase of the EBA, however it is difficult to confirm this at this stage.

Particularly important is the identification of the so-called white-on-dark ware, reminiscent of similar pottery from the Agia Triada cave,[40] also located in southern Euboea. This pottery points to the 5th millennium's so-called Saliagos horizon of the Cyclades, named after the excavation on the homonymous islet located between Paros and Antiparos in the 1960s.[41] The white-on-dark sherds identified so far from Gourimadi are very few. Some sherds with incised and *pointillé* decoration (*Fig. 10e*) may be of similar date.[42]

[38] For parallels, see Sampson 1993, 135–151.
[39] E.g., Sampson 1981, 219–220.
[40] Mavridis 2017.
[41] Evans & Renfrew 1968.
[42] For parallels see Efstratiou 1985, figs. 25–26.

This is the first time that such pottery has been identified on an open-air site in southern Euboea. In addition, this chronological horizon was not expected at Gourimadi, since it did not appear in its surface assemblage during the field survey of the site. White-on-dark pottery also represents the earliest evidence of human habitation in this part of Euboea known thus far.[43]

These preliminary observations on the pottery assemblage offer a first insight on the time range of the use of the site from approximately the early/mid 5th millennium (Late Neolithic) to the beginning of the EBA, at the transition between the 4th and 3rd millennia BC.

One of the Gourimadi's principal contributions will be the definition and further refinement of the chronology of the FN, an almost 2,000-year-long period that cannot be defined as only a single phase. Regarding southern Euboea, on the Paximada we seem to have a late, 4th-millennium assemblage,[44] while at the Agia Triada cave we have one occupation episode dated to the second half of the 5th millennium and another dated to the late 5th–early 4th millennium.[45] Gourimadi is the first open-air location where these phases seem to coexist, which is of crucial significance. The study of intra-site space together with depositional practices and architecture will also shed light on the character of occupation and the belief systems and ideas behind the use of extended settlement patterns by the people who systematically settled diverse landscapes during the 5th and 4th millennia BC.[46] Thus, it is important to define these different sub-phases both locally and regionally in terms of relative and absolute chronology to understand the dynamics of settlement dispersal, connectivity processes, and exchange/interaction routes in the Cyclades, since southern Euboea has been traditionally considered as a key area associated with the archipelago even before the Neolithic.[47]

LITHICS

Chipped stone artefacts, overwhelmingly made of Melian obsidian, constitute an equally important and voluminous part of the Gourimadi archaeological assemblage. 3,175 pieces were collected in 2018 and 1,690 of those had been analysed in detail before the conclusion of this paper. Due to time constraints and the large number of lithics, the main aim of the study was the composition of a holistic picture of the assemblage. To that effect, we discuss approximately half of the uncovered pieces, representative across various categories of debitage and retouched pieces. This enables us to draw initial inferences on the character of the assemblage and to formulate a comprehensive, albeit preliminary, picture of the tool typology and technical characteristics.

The studied pieces were sorted and counted to record basic information on reduction techniques and diagnostic types. The data entry was carried out using the FileMaker Pro software and the study was largely based on the macroscopic characteristics of the lithics. For specific pieces, detailed information such as platform preparation, knapping techniques (where feasible), blank types, tool types, as well as retouch type and placement were recorded, along with some additional remarks where necessary. Some of the pieces were measured in terms of length, width, and thickness, to better comprehend the utilization of the raw material. Information on the material type, colour, and condition of each piece was also recorded. The analysis of the lithic assemblage and the detailed study of the reduction sequence and typology can provide useful information on the techniques used in lithic production and the functionality of the site.[48]

From the 1,690 pieces, 1,342 (79.40%) originate from T1 and 341 (20.17%) from T2. Almost all the lithics from both trenches are made of obsidian (99.58%, 1,676). The percentage breakdown of obsidian between trenches is 99.55% (1,336) in T1 and 99.7% (340) in T2. Moreover, seven obsidian pieces were collected from the surface, bringing the obsidian total to 1,683. The small remaining percentage of 0.45% (six pieces) and 0.3% (one piece), respectively, is comprised of other raw materials, mostly of quartz and chert/flint. Specifically, there are: one tertiary flake of low-quality grey chert (T1/U-1020), one complex tool on trapezoidal blade of a high quality/fine-grained white-beige flint (T1/U-1027), and five natural pieces of quartz. The latter do not appear to have undergone human modification and were not used for tool production. This is in contrast to recently identified quartz tools at other prehistoric sites in the broad region of southern Aegean (e.g., in northern Kea[49]).

The total number of pieces that were recovered and studied from T1 amounts to 1,342. Of these, 1,336 are obsidian artefacts representing various blank types (*Table 3*). The assemblage contains all the stages of the reduction sequence and large quantities of debitage, which is indicative of extensive on-site reduction using both indirect percussion and pressure flaking techniques. Moreover, in T1 we recovered 98 tools (i.e., 7.33% of the total number of pieces, *Table 4*, *Fig. 11*). Noteworthy is the large number of arrowheads that were found, 33 pieces in total, which make up approximately a third (33.67%) of the trench's tool total. Most arrowheads are tanged and barbed (*Fig. 11e, g*) with bifacial retouch, bearing

[43] Mavridis 2017.
[44] Cullen *et al.* 2013, 67–74.
[45] Mavridis & Tankosić 2016a, 431.
[46] Mavridis 2018.
[47] Cherry 1985, 21.
[48] Inizan *et al.* 1999; Pelegrin 2012.
[49] Papoulia 2013.

Table 3. Distribution of obsidian blank types. Author: Aikaterini Psoma.

Blank types	Trench 1	Trench 2	Total
Primary flake	7 (0.52%)	1 (0.29%)	**8 (0.47%)**
Secondary flake	32 (2.39%)	7 (2.05%)	**39 (2.32%)**
Blade core/Flake core	20 (1.49%)	2 (0.58%)	**22 (1.31%)**
Trapezoidal blade	85 (6.36%)	35 (10.29%)	**120 (7.15%)**
Triangular blade	233 (17.44%)	63 (18.52%)	**296 (15.87%)**
Crest blade	9 (0.67%)	4 (1.17%)	**13 (0.77%)**
Rejuvenation flake	1 (0.074%)	0	**1 (0.05%)**
Tertiary flake	440 (32.93%)	113 (33.23%)	**553 (32.99%)**
Spall: non-cortical	448 (33.53%)	102 (30%)	**550 (32.81%)**
Spall: cortical	9 (0.67%)	1 (0.29%)	**10 (0.59%)**
Blade-flake	52 (3.89%)	12 (3.52%)	**64 (3.81%)**
Total	**1,336 (79.71%)**	**340 (20.28%)**	**1,676 (100%)**

Table 4. Distribution of obsidian tool types. Author: Aikaterini Psoma.

	Trench 1	Trench 2	Surface finds	Total
Arrowhead/ Point	33 (33.67%)	17 (37.77%)	4 (66.66%)	**54 (36.24%)**
Ovate	0	0	1 (16.6%)	**1 (0.67%)**
Blade with retouch	5 (5.10%)	7 (15.55%)	0	**12 (8.05%)**
Blade without retouch	7 (7.14%)	8 (17.77%)	0	**15 (10.06%)**
Disc?	1 (1.02%)	1 (2.22%)	0	**2 (1.34%)**
Denticulate	9 (9.18%)	2 (4.44%)	0	**11 (7.38%)**
Endscraper	3 (3.06%)	1 (2.22%)	0	**4 (2.68%)**
Notch	5 (5.10%)	2 (4.44%)	1 (16.6%)	**8 (5.36%)**
Perçoir	8 (8.16%)	1 (2.22%)	0	**9 (6.04%)**
Sidescraper	1 (1.02%)	0	0	**1 (0.67%)**
Retouched piece	16 (16.32%)	5 (11.11%)	0	**21 (14.09%)**
Bec	10 (10.20%)	1 (2.22%)	0	**11 (7.38%)**
Total	**98 (65.77%)**	**45 (30.20%)**	**6 (4.02%)**	**149 (100%)**

typological characteristics encountered in other LN and FN points at a number of sites in Greece.[50] It is also worth mentioning that, among the tools, we uncovered two leaf-shaped points (*Fig. 11a*) that are similar to the obsidian points found at the LN sites of Ftelia and Saliagos.[51] Further, the excavation of T1 yielded a round-shaped flake that bears resemblance to the "disc" tool types found at the site of Saliagos, where they were classified as "pieces of rejuvenation flakes or cores with secondary retouch."[52] Other characteristic tool types that we uncovered include blades with marginal and/or nibble retouch, blades without retouch, denticulates (*Fig. 11b*), endscrapers, sidescrapers (*Fig. 11h*), notches, perçoirs (*Fig. 11c*), retouched pieces, and becs (*Fig. 11d*).

A total of 341 pieces were recovered and studied from T2 (20.27% of the total obsidian artefacts from both trenches). Of these, 340 are various blank types of obsidian artefacts (*Table 3*) and, as in T1, pressure flaking and indirect percussion appear to coexist. The T2 assemblage contains a considerable amount of debitage (see *Table 3*), that is consistent with on-site reduction. Typical examples of blank types include primary/secondary flakes, cortical spalls, conical blade core fragments, large amount of trapezoidal (*Fig. 11f*) and triangular blades, tertiary flakes, spalls (63.23% of the total amount), as well as technical pieces connected to core preparation (e.g., crested blades, *Fig. 11i*). The total number of tools that were recovered from T2 amounts to 45 pieces (13.23% of the total number of pieces, *Table 4*). Similar to T1, we found a significant number of arrowheads (17 pieces in total, 37.77% of the total amount of tools in T2). Again, most projectile points are tanged and barbed with bifacial retouch, sharing typological characteristics with FN arrowheads uncovered in other prehistoric sites around Greece.[53] Among the different tool types, there is also a second Saliagos-like "disc",[54] while other distinctive tool types include blades with marginal or nibble retouch, blades without retouch, one bec, denticulates, endscrapers, notches, perçoirs, and retouched pieces.

The preliminary analysis of the lithic assemblage can provide us with clues regarding the use and procurement of the site's lithics. More specifically, the lithic production was almost exclusively carried out with obsidian, an imported raw material from the island of Melos in the Cyclades, which lies approximately 150 km south of Gourimadi. Judging by the large quantities of debitage, we can conclude that core reduction took place extensively at the site. All phases of the reduction sequence were identified, and the site appears to have played a central role in lithic artefact production. The extensive presence of characteristic pieces such as cortical flakes and technical pieces suggests that the obsidian raw material was imported at the Gourimadi site in the form of unprepared nodules, which were subsequently shaped into blade or flake cores. The technical traditions of pressure and flake production appear to have coexisted, while the total number of products indicates that there was particular inclination towards pressure blade produc-

[50] Galanidou 2002; Moundrea-Agrafioti 2008; Perlès 2004; Sørensen 2006.
[51] Evans & Renfrew 1968; Galanidou 2002.
[52] Evans & Renfrew 1968, 52.
[53] Galanidou 2002; Moundrea-Agrafioti 2008; Perlès 2004; Sørensen 2006.
[54] Evans & Renfrew 1968.

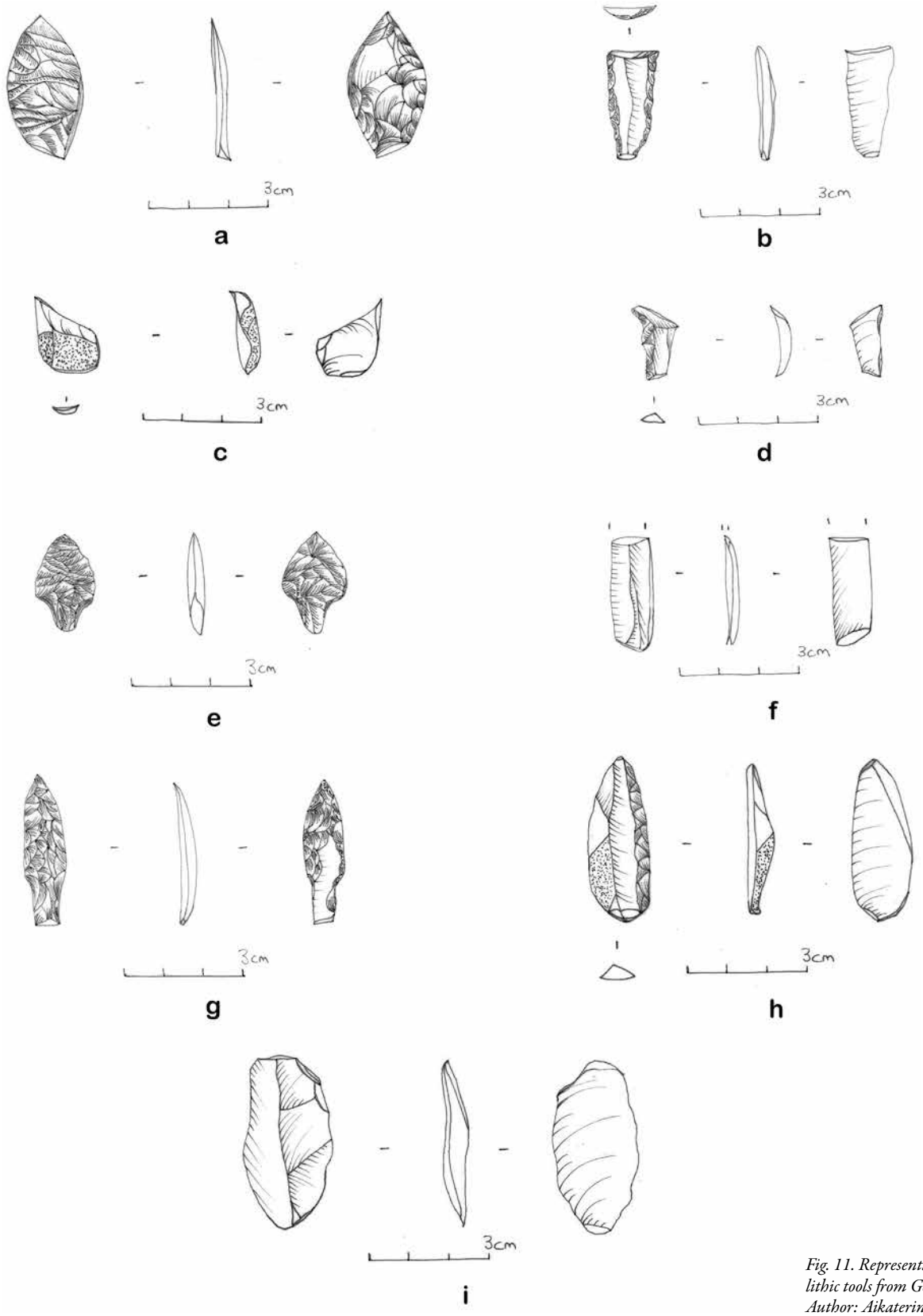

Fig. 11. Representative obsidian lithic tools from Gourimadi. Author: Aikaterini Psoma.

tion, since the site yielded large quantities of debitage, as well as triangular and trapezoidal obsidian pressure blades.

Contemporary obsidian tool industries in different stages of production have been found in several prehistoric sites in southern Euboea (e.g., the Paximada peninsula).[55] However, the Gourimadi site stands out, as the excavation has yielded to date the largest amount of obsidian debitage and tools in the region. The site seems to have played an important role in the production and procurement of lithics and specialized tools. More specifically, we found a significant number of obsidian arrowheads, an aspect that is also reflected in the surface material we uncovered in the area during the NASK project.[56] The analysis shows that arrowheads were an important component of the site's lithic production and constitute the largest tool percentage at the site. The combination of survey and excavation lithic assemblages makes the Gourimadi obsidian projectile points collection the largest in southern Euboea and one of the largest in the Aegean. While some tool types indicate agricultural, domestic, and/or animal husbandry activities (e.g., blades with or without retouch, scrapers, perforating tools etc.), the specialized lithic production of arrowheads could be related to hunting activities. Another possibility is that the arrowheads were utilized as weapons for defensive purposes, if one considers the site's advantageous geographical location for controlling land or sea routes.

Conclusions

The first season of the Gourimadi Archaeological Project confirmed and surpassed our expectations for this site. We encountered rich cultural deposits that are more substantial than we anticipated, especially when considering the likely effects of erosion on the site. Remains of architecture consisting of extensive stone-built walls indicate an extended habitation at this location. The unexpected discovery of an additional chronological phase, represented by the white-on-dark Saliagos-like pottery, testifies to the importance of Gourimadi to prehistoric Karystians over a period of at least a millennium. Whether human presence in this location was continuous during that time remains to be seen through continued research; however, the stratified presence of all three chronological phases at the same open-air site is thus far unique in southern Euboea.

At this stage of research, we are still not entirely certain about the character of the site or the exact use of the structures/walls we uncovered. The solidly built walls in several phases suggest some type of settled existence at Gourimadi, likely in the form of a settlement of currently unknown size. The series of curved walls recorded in T1 is puzzling, although not unique. Similar structures (whether those at Gourimadi are apsidal or circular/oval remains to be seen) have been recorded, for example at Ftelia on Mykonos[57] and at Strofilas on Andros,[58] to mention just the geographically closest parallels. Both sites are broadly chronologically comparable with prehistoric phases recorded at Gourimadi. The excavator of Strofilas believes that at least some of such structures had a communal function.[59] It is difficult to assign a specific function to the structures at Gourimadi without further research. Nevertheless, their massive well-built walls in combination with their location at the most prominent position on the site may suggest that they were part of an area that was considered important for the community.

Moreover, an extensive study of the lithic assemblage, an important component of the finds from Gourimadi, will allow us to determine the site's role in tool production, the exact level of specialization (i.e., workshop presence), and the site's role in tool distribution in this particular neighbourhood of the Aegean Sea. The area of southern Euboea as a whole is characterized by large quantities of obsidian found both as individual finds in the landscape or at confirmed archaeological sites. In fact, many of the prehistoric sites in the region consist of large scatters of obsidian with little or no other archaeological material.[60] In combination with a well-documented manufacturing process, it is possible to consider southern Euboea as one of the nodal points of prehistoric obsidian exchange in the Aegean, in terms of production, distribution, and consumption. Current evidence indicates that Gourimadi played an important, if not pivotal, role in this exchange system, the nature of which we hope to further refine through continued research.

Finally, the excellent defensive location of the site coupled with the large number of tools that could be used as weapons (obsidian arrowheads), and the possible existence of a perimeter wall around a part of the site, may indicate possible use of the site in times of conflict. A site such as Gourimadi would provide key advantages in conflict situations, as it is almost impossible to approach unobserved and its location forms a natural hillfort even without added defensive structures.

The chronological phases represented at Gourimadi and their material manifestations belong to a crucial phase of expansion towards seascapes during the 5th and 4th millennia BC, including the early EBA I. Gourimadi seems to be a key site for providing strong evidence for the important contribu-

[55] For obsidian assemblages from Plakari, Akri Rosos, Kazara, etc., see Cullen *et al.* 2013.
[56] Tankosić *et al.* 2021.
[57] Sampson 2008, 31–32.
[58] Televantou 2019, 154–155.
[59] Televantou 2019, 159.
[60] E.g., Tankosić & Katsianis 2017.

tion of southern Euboea to the Cycladic population from as early as the 5th millennium BC and probably at least through EBA I, only considered theoretically possible until now. Even the preliminary 2018 field campaign at Gourimadi indicates that the Karystia was not only a simple stepping-stone towards the Cyclades but was instead a crucial central area for interactions between the southern and northern Aegean regions. It is also apparent that these sea-routes and interaction spheres were a two-way process and the material culture typically considered to belong to the insular Cycladic Neolithic world (e.g. white-on-dark ware) found its way to regions outside of the central Aegean. Once more cultural boundaries seem not to coincide with the geographical ones. Gourimadi may also be promising for understanding connections and creolization of different archaeological traditions as early as the Aegean Late Neolithic. The continuation of fieldwork and the systematic analysis of the finds will allow us to approach such core questions about early Aegean prehistory, from chronological aspects to interactions and connectivity, social organization, and the use and meaning of material culture. Based on the initial results presented above, Gourimadi seems to be a good candidate for addressing some of these key questions.

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