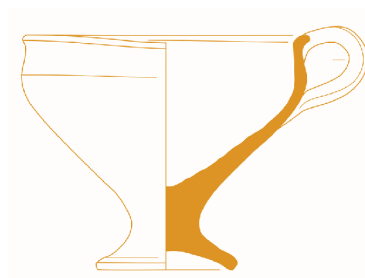


# Mycenaean Pefkakia Excavation Project: preliminary report on archaeological research conducted in 2023



**Abstract:** This is a report on the second season of a five-year (2022–2026) archaeological project at the site of Mycenaean Pefkakia, which is a collaboration between the Polish Archaeological Institute at Athens and the Ephorate of Antiquities of Magnesia. In 2023, following an extensive geophysical survey and geoarchaeological corings conducted during the previous season, two trenches were opened in sectors designated as B and C. In Sector B, a burial ground from the late Hellenistic–Roman period was found, and several amphora burials as well as a single tile grave were excavated. However, layers dating to the Late Helladic (LH) period have not been revealed, despite a significant depth reached. In Sector C, stone walls of a multi-phase building dated to LH IIIA2 period were found. In addition, traces of continued habitation past 1200 BC in the area were attested by pottery fragments from the more developed LH IIIC period.

**Keywords:** Late Bronze Age Thessaly, Magnesia, Demetrias, archaeomalacology, archaeobotany, zooarchaeology

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## INTRODUCTION

The site of Pefkakia lies 1.5 km south of the modern city of Volos (Magnesia, Thessaly), on the opposite side of Volos Bay, which forms part of the larger Pagasetic Gulf [Fig. 1]. It consists of a tell site, known as Magoula, and an exten-

### **Acknowledgments**

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sive flat part south of it [Fig. 2]. Archaeological strata dating to the Late Bronze Age are mostly overlain by the remains of the Hellenistic city of Demetrias, established in 294 BC by Demetrius Poliorcetes, extending over a vast area that included Pefkakia. The first systematic research on the site was conducted by Dimitris Theodorakis (1957), who excavated Magoula and uncovered archaeological layers spanning from the end of the Neolithic to the Late Bronze Age/Late Helladic period (LH). He continued the work on Magoula in cooperation with Vladimir Milojević and the German Archaeological Institute in 1967–1977.

In 1986–1991, rescue excavations conducted on the flat part south of Magoula proved for the first time the existence of a Mycenaean settlement, concealed underneath Hellenistic occupational levels (Batziou-Efstathiou 1992). In 2006, a new excavation project began under the auspices of the Ephorate of Antiquities of Magnesia, directed by Anthi Batziou (2012; 2015a; 2015b). Work in the same area in 2016–2021 was carried out in cooperation with the University of Thessaly and Iphigenia Tournavitou. This excavation revealed multi-room complexes dating to the LH IIIA2–IIIB2/IIIC Early period (about 1400–1200 BC),

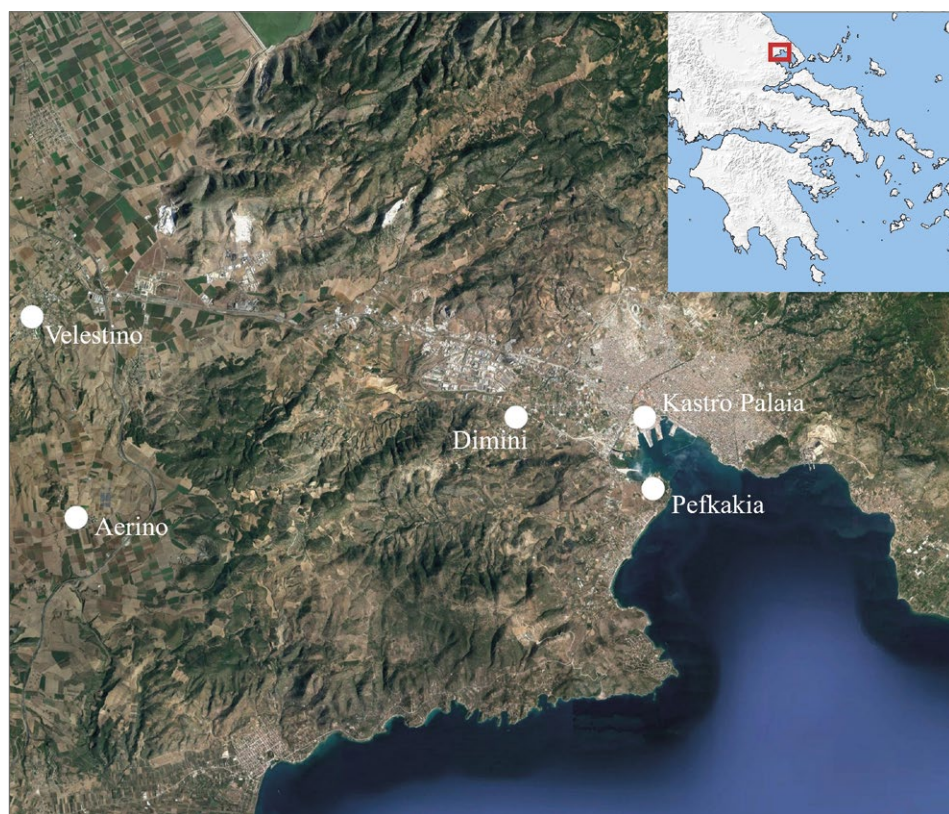


Fig. 1. Map of the region showing the location of Pefkakia (Processing B. Lis)

with a variety of functions including use for various types of craft activities [Fig. 2, Sector A].

The current five-year (2022–2026) archaeological project at the site of Mycenaean Pefkakia is conducted under the auspices of the Polish Archaeological Institute at Athens (PAIA), in collaboration with the Ephorate of Antiquities of Magnesia. The main aim of the project is to assess the extent of habitation at Pefkakia during the various stages of the Late Bronze Age and to provide a better understanding of the character of activities performed in various parts of the site. This will eventually lead to a fuller comprehension of the role of Pefkakia in local and regional settlement networks. Another important aim of the project is to investigate Pefkakia's role as a major harbor in the Aegean. So far,

this has been evidenced by the presence of a large number and variety of transport containers including imports from the Greek mainland and from as far as Crete and the Near East (Lis and Batziou 2025), but neither harbor facilities nor the exact course of the ancient coastline have been identified to date.

Fieldwork carried out at the site of Mycenaean Pefkakia in the 2023 season focused on archaeological research in two parts of the site [see Fig. 2, Sectors B and C] selected based on an analysis of the results of geophysical research and geoarchaeological corings, both conducted in 2022 (Lis et al. 2023). The main goal of the research in 2023 was to investigate the extent and nature of the settlement in the Mycenaean period. Fieldwork was conducted during a period of five weeks, from 26 June to 28



Fig. 2. View of the site showing Sectors A, B, and C with the trenches laid out in 2023 (Processing B. Lis)



July. Excavations were carried out using the stratigraphic method, with the Excavation Unit (EU) used as the basic documentation unit. Specific features (FE) were also documented and assigned individual numbers. During the fieldwork, the classical methods of archaeological documentation in the form of drawings and photos were used alongside orthophotographic documentation and 3D models. A digital tachymeter (Leica total station) was used for recording exact positions of excavation units and finds. The iDig app, originally developed for the Athenian Agora Excavations, was

implemented, following adjustments to the Pefkakia documentation system, in order to gather excavation data on iPads. In addition, finds were registered and described in the storeroom using a File-Maker database. The inventoried pottery fragments and all small finds were given individual identification numbers (P and SF, respectively), either in the field or in the storeroom.

Based on the aforementioned results of non-invasive investigation in 2022, two trenches were laid out, B01 and C01, respectively in Sectors B and C [see *Fig. 2*].



Fig. 3. View of B01: early stage (Photo and processing Ł. Miechowicz)

## TRENCH B01

Excavation was carried out in a trench initially measuring 5 m × 5 m, in a place where it was expected to reach structures visible on the ground-penetrating radar (GPR) map. Some of them were assumed to be the remains of walls dating from the Late Bronze Age based on their orientation and depth. Fieldwork began with removal of the topsoil layer, which contained mixed pottery, with the latest sherds dating to the 20th century. Further down, but still within the surface layers, the ceramic material was composed almost exclusively of small worn sherds, with a few fragments dating to the Roman period: a stamped handle of an am-

phora from Knidos (P23/011, EU07), double handles of amphorae type Dressel 2-4 (P23/013 and P23/015, EU06 and EU07), and a base of a globular amphora, probably of type Dressel 25 (P23/008, EU06). This topsoil layer also included multiple fragments of lamps, a lead pyramid-shaped weight (SF23/006, EU06), a single copper coin (SF23/038, EU07), and a miniature lead vessel (SF23/007, EU07).

Below, at a depth of approximately 25 cm beneath the surface (elevation approximately 1.85 m a.s.l.) [see Fig. 3], a stone rubble paving (EU8) was discovered, its irregular surface covering almost the entire area of the trench except its northwestern



Fig. 4. View of B01: final stage (Photo and processing Ł. Miechowicz)

part. There, the stone paving ended and turned into a layer of hard clay with stone inclusions (EU9), in which two copper coins were found (SF23/019 and SF23/024). Exploration of the upper part of the stone rubble paving revealed a rectangular tile-built platform (FE01), as well as outlines of three features (FE02, FE03, and FE04), two of which proved to be graves. The ceramic material associated with the stone rubble was very worn, chronologically mixed, and mostly of a broadly Hellenistic date (3rd/2nd century BC). However, at least one amphora rim (P23/030, see below, [Fig. 5]) might be of Roman date. It is of an undercut mushroom type, which suggests its identification as a Hellenistic Graeco-Italic form 1C (approx. 260–150 BC) or a Roman-type Dressel 1 (approx. 140–50 BC), which evolved from the former (Will 1982). Considered together with the pottery found immediately below, this material provides a 2nd century BC *terminus post quem* for the laying of the stone rubble paving.

The rectangular platform (FE01) exposed in the upper part of the stone paving layer was composed of 20 terracotta

tiles covered with stones and a layer of clay [Fig. 4]. The tiles, measuring between 25 cm and 30 cm along their sides and 3–4 cm thick, were arranged in five rows along the east–west axis and four rows along the north–south axis. The platform was oriented northeast–southwest, with its longer edge parallel to the coastline. Along the platform's southern edge were remains of vertically placed tiles with fragmentarily preserved mortar filling the space between them and the platform. The function of the rectangular structure remains unknown. The only parallel identified so far comes from Achinos (Thessaly), where such a platform was found in a room belonging to a 4th-century AD residential complex (Papakonstantinou and Tileli 2020).

Another feature identified within the stone rubble paving (FE02, Grave No. 1, EU13) proved upon excavation to be an amphora burial [Fig. 6]. The clay vessel was found damaged, broken, and lying on its side. Bones, possibly burnt, remained inside. The amphora (P23/003) was covered with larger stones, probably to mark the burial place on the surface of the cem-



Fig. 5. Amphora P23/030 (Photo B. Lis, drawing B. Konnemann)



etery. The amphora (preserved height approx. 40 cm, maximum diameter approx. 27 cm) lacked both the upper part and the base. A bronze artifact (SF23/014), perhaps a pin, was found next to the vessel. A cluster of large stones (FE03), probably a covering of a similar grave, was discovered 1.5 m to the north. This structure has yet to be explored [see Fig. 4].

Another grave (FE04, Grave No. 2, EU12) was discovered in the northwestern part of the excavation, at the junction of the stone pavement and the hard clay layer (EU9). The burial was likewise placed in an amphora [Fig. 7]. The vessel lay on its side, with a vertically placed flat stone closing the vessel mouth from the east and probably marking the location of the grave on the surface of the cemetery, as it protruded above the level of the stone paving. Prior to removal, the amphora was secured with an elastic bandage and plaster and taken out whole for exploration by a physical anthropologist in laboratory conditions, a task planned for 2024. The height of the vessel was approximately 60 cm excluding the rim, part of the neck, and handles, probably removed to enable placing the body or burnt remains of the deceased inside. The maximum width of the vessel was

35 cm, but the diameter must have been smaller as the amphora was compressed and slightly flattened due to the pressure of the overlying soil. The stone cap of the amphora was 43 cm high, 45 cm wide, and 12 cm thick. An oval burial pit was visible below the stone paving layer around the amphora and the stone.

During excavation, Trench Bo1 was divided into two parts, and the investigated space was restricted to an area of 3 m × 3 m in the western part of the trench [see Fig. 4]. The goal was to facilitate reaching deeper layers.

In this restricted area, the removal of the stone rubble paving revealed a layer of dark brown relatively soft and moist soil, as well as outlines of two more graves with a different construction (FE05 and FE06). One of these graves (FE05, Grave No. 3, its interior excavated as EU23) was examined exposing an inhumation of two children placed without any burial goods within a tent-like structure (length 110 cm, width 50 cm, maximum height 55 cm). The grave structure was built of terracotta tiles (Gr. *καλοβίτης*) measuring 100 cm × 42/45 cm and 3 cm thick [Fig. 8], decorated with a finger-impressed wavy ornament. The bodies of the two children were laid



Fig. 6. Broken amphora burial FE02 (Photo Ł. Miechowicz)



on the bottom terracotta tile [Fig. 9]. Smaller fragments of broken tiles (approximately 35 cm × 30 cm) were placed on the east and west sides. The roof of the grave, found at an elevation of approx. 1.60 m a.s.l., was made of tiles with a semi-circular section, arranged lengthwise. All elements of the grave were reinforced and bonded with mortar. As there is no evidence of reopening of the tomb, both individuals were most likely buried together. The outline of the grave pit recognized around the grave structure (excavated as EU15–16) constituted the only area of the trench where the stone rubble forming the paving layer continued at lower levels, filling the cut made for the burial. In addition, fragments of the same amphora were found both in the paving layer and in the stone rubble that surrounded the tile-grave (P23/012, found in both EU08 and EU15). The above suggests that this grave was dug through the stone paving or that it was prepared during its construction, and thus that it either post-dates the paving, or the two are contemporary (although the former possibility seems much more likely).

After completely exploring Grave FEO5 and removing the bottom tile, a dense cluster of stones distributed northwest–southeast was discovered underneath (its top was uncovered at an elevation of approx. 1.05–1.10 m a.s.l.) [see Fig. 4]. It may be part of another grave, but could also constitute a different

feature related to an earlier Hellenistic phase, before the area was turned into a cemetery. In the northwest corner of the excavation, a cluster of stones and top fragments of two terracotta tiles placed against one another were discovered (FEO6). They represent most likely another tile-built grave analogous in construction to FEO5. The feature was not explored.

The investigated tombs yielded no grave goods that would allow establishing their chronology, while stratigraphy provided only a general *terminus post quem* of the 2nd century BC for tombs below the stone rubble pavement, as well as for the burials within it. Tile-covered graves like FEO5 were in use at the cemeteries of Demetrias from the early 3rd century BC until the late 2nd–early 1st century BC (for the northern cemetery, see Batziou-Efstathiou and Triantaphyllopoulou 2012). However, finger-impressed decoration on the tiles used in the construction of Grave No. 3, as well as the use of mortar, point to a date in the Roman period,<sup>1</sup> and perhaps much later than suggested by the latest material in the stone rubble paving covering the tomb. Beyond Demetrias, tile graves continue into Late Roman times (for Corinth, see Slane 2017: 31–32). Another indication of a late dating is the fact that the bodies in Grave No. 3 were placed with their heads to the west, which is characteristic for the Christian funerary tradition (Slane 2017: 239–240).

1 For the use of mortar in the northern cemetery of Demetrias, see e.g. Tomb 91 dated to the 3rd century AD (Batziou-Efstathiou and Triantaphyllopoulou 2012: 278–279). Both features (decorated tiles and the use of mortar) were evidenced in a tomb excavated by Batziou in 1986, some meters to the north, against the exterior of the Demetrias city wall. Its construction was, nevertheless, different and it also lacked grave goods.

Burials placed in pots (kalathoi, amphorae, and chytra-like vases) were excavated in all cemeteries of Demetrias. In use from the mid-2nd century BC until the 3rd century AD, they contained ashes, burned bones, or child burials. The burial pots were placed in small pits often surrounded by stones to provide additional support (Batziou-Efstathiou and Triantaphyllopoulou 2012).

Earlier layers (excavated as EUs 17–27) located below the graves and south of the stone cluster occupying the northwest corner of the trench [see *Fig. 4*] might be associated with the accumulation of soil eroded from higher-lying parts of the settlement and retained by the Hellenistic city wall. This wall, located immediately to the north of the trench, was identified both during the 1986 rescue excavations

along the modern road and by the geophysical survey.

A further indication that these layers had formed as a result of natural erosion rather than intentional dumping is provided by the fact that they contained very few joining fragments of ceramic vessels and that the material was composed mostly of small and worn sherds. The pottery from units in this trench was usually mixed and included few diagnostics, with the majority of the material merely identifiable as Hellenistic. Nevertheless, when more characteristic features did appear in some units, they seemed to consistently point to no later than the 2nd century BC. At the very bottom of the trench (EUs 24, 26, and 27), however, the composition of the material changed with the appearance of some larger fragments



Fig. 7. Amphora burial FE04 (Photo Ł. Miechowicz)

and an increase in the number of joins. Its dating was also slightly earlier, probably within the second half of the 3rd century BC. The last unit excavated (EU27, bottom elevation 0.65 m a.s.l.) included numerous high-quality black-glazed pieces, which had not appeared in the trench before, while the number of pieces with West Slope decoration grew in comparison to overlying units. One of these units addi-

tionally yielded a pointed wooden object of unknown function (SF23/0035, EU21).

Despite the considerable depth reached in the trench, the amount of pre-Hellenistic material was extremely small. However, the chronology of these fragments is interesting, as they included several pottery fragments dating to LH II–IIIA1, i.e. predating the main phase of the development of the Mycenaean



Fig. 8. Grave FE05 (Photos Ł. Miechowicz)

settlement in the area south of Magoula. They may indicate that, unless we are dealing with exclusively redeposited material, an Early Mycenaean settlement might have existed in this area of the site. That such a settlement existed at Pefkakia can be inferred from the existence of a cemetery at Magoula at that time.

### FAUNAL REMAINS IN TRENCH B01

Species identified in the units of Trench B01 include cattle, sheep, goat, pig, as well as small percentages of wild species, such as red deer, and birds [Table 1].<sup>2</sup> In terms of species representation, ovicaprids dominate at 72.6% of the recorded material, followed by pig (12.3%) and cattle (11%).

Table 1. Trench B01: Species representation (MinAU – Minimum Number of Anatomical Units, MaxAU – Maximum Number of Anatomical Units)

	MinAU	%	MaxAU	%
Cattle	8	11.0	9	11.0
Pig	9	12.3	12	14.6
Sheep, goat, and sheep/goat	53	—	58	—
Sheep	18	24.7	19	23.2
Goat	35	47.9	39	47.6
Dog	0	0.0	0	0.0
Red deer	1	1.4	1	1.2
Bird	2	2.7	2	2.4
All species	73		82	

As far as body part representation is concerned, relatively valid evaluations were possible only in the case of sheep, goat, and sheep/goat, given the very low numbers of cattle and pig specimens. As is evident from [Table 2], all body parts were found, indicating the presence either of animals on the hoof or complete carcasses rather than meat parcels. The occurrence of elements regarded as primary butchery waste (e.g. head and lower feet) supports this suggestion, although the complete absence of small ankle bones and phalanges is striking. Calculation of the ratio for the representation of proximal radius:ulna (elbow joint), which are

not separated during butchery and are hence treated as a single butchery part, implies that post-depositional factors (e.g. poor recovery, gnawing, etc.) may have affected the assemblage. Be that as it may, it must be stated that water flotation was carried out and yielded very few bone elements. In addition, evidence of gnawing was attested on 6.2% of sheep, goat, and sheep/goat bones in this trench and hence cannot account for the complete loss of small elements. The implication, therefore, is that the complete absence of small ankle bones and phalanges might reflect a butchery practice involving the dressing of carcasses with separation of lower feet at the height of the ankle.

2 The percentages of sheep/goat have been proportionally assigned to sheep and goats respectively.



Table 2. Trench B01: Body part representation for cattle, pig, and sheep, goat, and sheep/goat (MinAU – Minimum Number of Anatomical Units)

	Cattle	Pig	Sheep, goat, and sheep/goat
Horncore/Antler	0	0	0
Mandibles	1	1	3
Scapula	0	1	1
Humerus proximal	0	0	2
Humerus distal	0	1	2
Radius proximal	0	0	3
Ulna	0	0	0
Radius distal	0	0	1
Metacarpus proximal	1	1	1
Metacarpus distal	0	1	2
Pelvis	1	0	2
Femur proximal	0	1	7
Femur distal	1	0	6
Tibia proximal	0	2	3
Tibia distal	2	1	4
Astragalus	0	0	0
Calcaneus	0	0	0
Metatarsus proximal	0	0	6
Metatarsus distal	2	0	8
Phalanx 1	0	0	1
Phalanx 2	0	0	0
Phalanx 3	0	0	1
Total per species	8	9	53
%	11.4	12.9	75.7



Fig. 9. Burial inside FE05 (Photo Ł. Miechowicz)

Butchery marks indicative of different stages of carcass processing, identified only on two sheep/goat elements, were related to skinning and filleting. However, given the relatively high percentage of sheep, goat, and sheep/goat bones bearing evidence of erosion and encrustation on their surfaces (30.8%), cutmarks might be underrepresented.

Age composition is not easy to assess, given the extremely fragmentary data available. Based on an evaluation of the very few sheep, goat, and sheep/goat mandibular teeth available, animals that had passed their first year of life were present. In terms of sex composition, two female pelvises of this taxon have been recorded.

## ARCHAEOBOTANICAL REMAINS IN TRENCH B01

During the 2023 season, 73 samples with volumes ranging from two to 16 liters were processed by flotation using meshes of 0.25 mm and 1.00 mm to catch the flot and residue, respectively. All residues were dried and sorted to retain any ecofacts present. From these, 35 samples from Trench B01 and 35 samples from Trench C01 (see below) produced residues and flots containing botanical material.

Flots and sorted botanical materials from the residues were scanned under a binocular microscope at magnifications up to  $\times 40$ . Charred plant remains were sorted, identified, and counted. The nomenclature used in this paper follows Dimopoulos and colleagues (2013).

Most of the samples contained occasional and moderate charred wood fragments  $< 4$  mm, which were unsuitable for further analyses. No cultivated plants were identified in the assemblages. Only in four samples —SS23/005 (EU03), SS23/011 (EU09), SS23/012 (EU12), and SS23/022 (EU15)— single seeds and fruit, probably of sea beet (cf. *Beta maritima*) and the wild grass family (Poaceae indet.), were noted. Additionally, samples SS23/006 (EU03), SS23/009, and SS23/010 (both EU13) contained fragments of charred amorphous remains (i.e. organic slag), which might represent charred fruit pulp, food leftovers, bread-crumbs, and/or badly charred wood. The assemblages were too sparse to draw any conclusions.

## TRENCH C01

Based on the analysis of geophysical research results in this area, predominantly linear anomalies visible on the GPR map, a test trench measuring 10.5 m  $\times$  2 m was outlined and divided into two parts, southern and northern, separated by a narrow baulk 0.5 m wide [see Fig. 2]. Only the southern part was investigated due to time constraints and the depth of anthropogenic layers that proved much greater than anticipated. Structures revealed by the geophysical survey were suspected to be remains of buildings from the Mycenaean period despite their shallow depth. This assumption was based on their orientation, which was not aligned with the regular

Hellenistic plan. In addition, results of the electrical resistivity survey suggested the presence of a bedrock outcrop in this area, and numerous Bronze Age ceramics as well as obsidian fragments were visible on the surface in this area prior to excavation.

Fieldwork began with removal of the topsoil layers (EU01–03), which yielded pottery dating from the Classical to the Modern period, a few Mycenaean fragments, as well as two bronze coins (SF23/003<sup>3</sup> and SF23/005,<sup>4</sup> both from EU01). Interestingly, the Hellenistic material was relatively rare even in these layers, in stark contrast to the situation in other excavation areas at the site.

3 The coin is attributed to the *koinon* of Thessaly (obv.: laureate head of Apollo right, rev.: Athena *Itonia* walking right) and dates from the 1st century BC.

4 The coin can be dated to the end of the 4th–early 3rd century BC (obv.: head of Heracles, rev.: a rider on a galloping horse. Below the horse's feet, monogram AT).

The first outlines of stone walls were observed after the removal of the top layer, at a depth of approximately 20 cm [Fig. 10]. In the western part of the trench, remains of a fireplace were identified (FE01), as well as further fragments of stone walls. Material from the fireplace



Fig. 10. View of C01: early stage (Photo and processing Ł. Miechowicz)

suggests a date already within the Late Bronze Age, and pottery of similar date was dominant across the entire trench. A few fragments suggest the presence of LH IIIC material (i.e. 12th century BC), which appears later than the latest material excavated in Sector A. This material includes a fragment of a possible carinated cup (P23/o22, EU03) as well as a vertical handle with a finger impression in White Ware fabric (P23/o27, EU04). If confirmed, this would provide evidence for continuation of activity at Pefkakia after 1200 BC. There is also some material indicative of occupation in the LH IIIB–IIIC Early period, more typical of the final phase of habitation investigated within Sector A (Batziou-Efstathiou 2015a). A single unfinished steatite button was found in a layer associated with this late phase (SF23/o20, EU04) together with a reworked pierced sherd (SF23/o26, EU04; several other reworked sherds were left in pottery lots).

As excavation moved to lower levels, more walls (Walls 1–5 [Fig. 11]), as well as two other features (FE02 and FE03) were exposed. Exploration was carried out in the spaces delimited by the stone walls and designated as Areas 1, 2, and 3 [see Fig. 11].<sup>5</sup> Additionally, Area 4, defined north of Wall 4, most likely represented an open space.

The areas, which comprised a building with stone wall socles, were only partly exposed due to the limited size of the trench [see Fig. 11]. Area 1, bounded by Walls 1 and 2, occupied the southwest corner of the excavation. Its fill consisted of a layer of clay mixed with sand (EU07). Due to

5 The term “area” rather than “room” was chosen for use until a better understanding of the architectural structures and their divisions is gained in the future.



Fig. 11. View of C01: final stage (Photo and processing Ł. Miechowicz)



spatial constraints, exploration was not continued to a deeper level in this place. Area 2 was delimited by Walls 3 and 4. Inside it, a feature with an unknown function (FEo3) was discovered. Exploration in this place was also limited. In order to expose the feature, a layer of sand mixed with clay was removed (EU12). The feature is a stone structure with dimensions of approximately 50 cm × 50 cm, in the shape of a box made of stone slabs [see *Fig. 11*]. This structure has not been explored, and neither its function nor its chronology have been recognized. It cannot be excluded that it is a small cist tomb located very close to the modern surface.

Other features identified in the trench included a rectangular mudbrick structure (FEo2) with dimensions of approximately 70 cm × 50 cm, located in the southeast corner of Trench Co1, adjacent to Wall 1 [see *Fig. 11*]. The bricks, measuring approx. 10–12 cm × 15–18 cm, show traces of fire, and the layer surrounding the structure (EUo6 and EU15) contained ash and burnt clay, permitting to provisionally identify the structure as an oven. Evidence of possible metallurgical activity was identified in several parts of Trench Co1, including, but not limited to, the surroundings of the feature FEo2. They take the form of small fragments of copper, slag (EUs 05, 07, 08, 09, 15, 16, 18, 30, and 32), sherds with metal slag adhering to them and possibly fragments of metallurgical ceramics (crucible and tuyère), as well as fragments of pottery with accretions resembling metal slag (EUs 25, 26, 27, 29, and 32).

The exposed walls built of irregular stones varied in width from 40 cm to 50 cm and were preserved to a maximum

height of 70 cm. They constituted the stone foundations of a building that had the upper parts of its walls built of mud-brick.

The stone walls showed evidence for several architectural phases, and their lower elevations differed. Walls 5 and 2 seemed to constitute the latest phase, while Wall 4 preserved the largest number of courses and its base was at the lowest level. The perpendicular Wall 3 was clearly a later addition to it. There was a gap between Wall 3 and Wall 1 located further south, which had the same orientation as Wall 3. Both Wall 1 and Wall 2 are founded at a yet higher level than Wall 3 [see *Fig. 11*]. The full architectural sequence will be clarified with further excavation and study.

The majority of the excavated material from within the building can be confidently dated to the LH IIIA2 period [Fig. 12]. A selection of diagnostic LH IIIA2 pieces includes patterned kylikes Furumark Shape (FS) 257 (P23/39–41, EUo8), monochrome kylikes FS 264 (P23/034, P23/075, and P23/114; EUo7, EU20, and EU31), an Aeginetan cooking pot (P23/047, EUo8), a shallow cup FS 220 (P23/057, EU16), a patterned juglet FS 112 (P23/074, EU20), a plain shallow angular bowl FS 295 (P23/076, EU20), a monochrome shallow angular bowl (P23/081, EU21), a patterned straight-sided alabastron FS 94 (P23/078, EU21), a monochrome conical cup FS 204 (P23/079, EU21), a patterned krater FS 7/8 (P23/077, EU22), plain conical cups FS 204 (P23/085 and P23/119, EU23 and EU26), and a patterned rounded alabastron FS 85 (P23/082, EUs 23, 25, and 29). Among them is the only almost com-

plete vessel found in the trench—an LH IIIA2 kylix FS 267 (P23/052, EUs 11, 20, and 22) [Fig. 13]—recovered from Area 3

[see Fig. 10]. Small finds associated with the architecture uncovered in the trench included a steatite button (SF23/023,

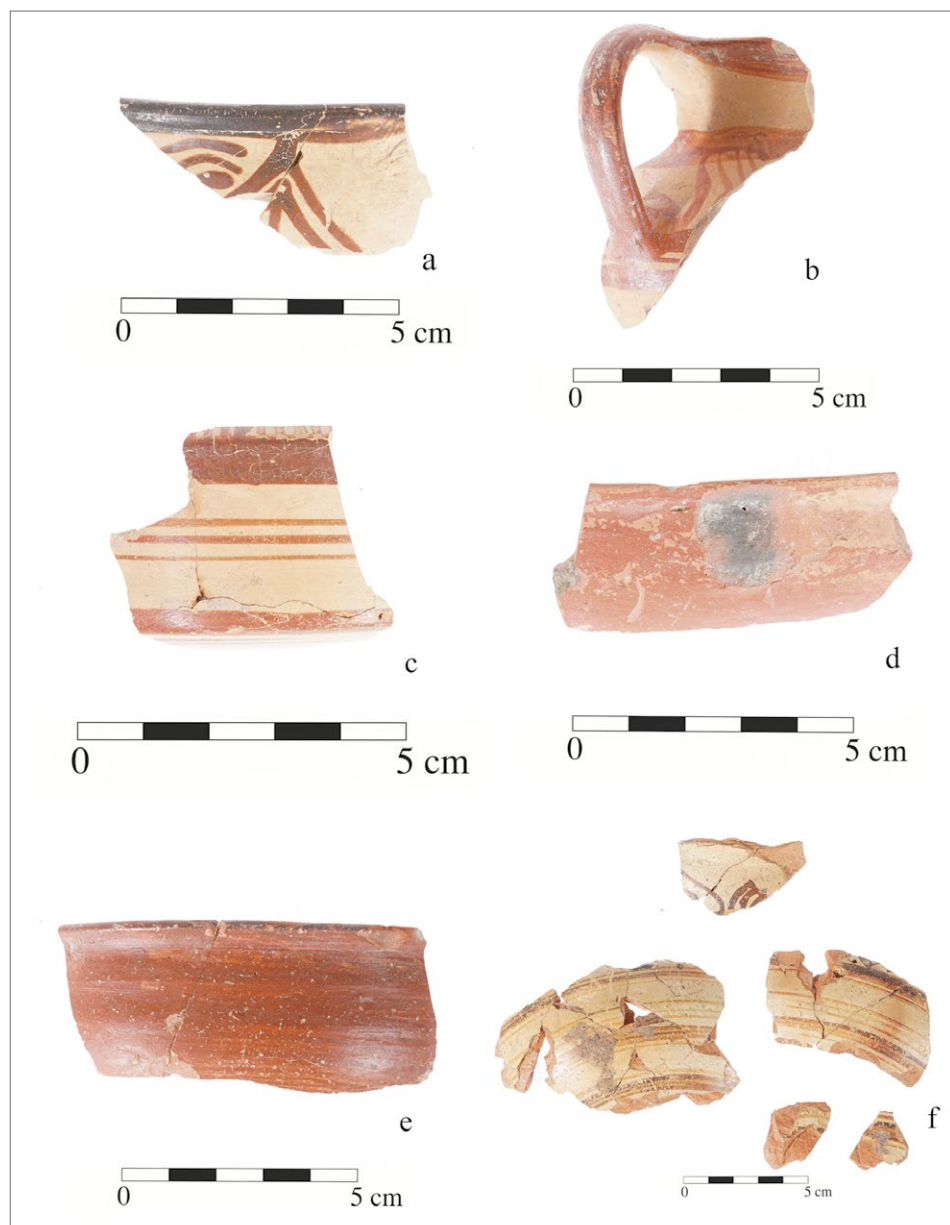


Fig. 12. LH IIIA2 pottery: a – kylix P23/039; b – juglet P23/074; c – straight-sided alabastron P23/078; d – shallow angular bowl P23/081; e – kylix P23/114; f – rounded alabastron P23/082 (Photos and processing B. Lis)

EU08), a clay biconical spindle whorl (SF23/025, EU08), and a basalt stone tool (SF23/046, EU29).

Within the LH IIIA2 ceramic material it was possible to distinguish at least one earlier and one later phase, which corresponded to different levels at which the relevant pottery had been found. The earlier phase (or phases) could be preliminarily dated to the LH IIIA2 Early period, perhaps indicating the beginning of larger-scale activity in the area; pottery of this date was also found below the bases of the stone walls (see below). The complete kylix [Fig. 13], alabastron with bivalve chain, small patterned juglet, and monochrome shallow angular bowl [Fig. 11f; b, d] belong to this group. A more mature LH IIIA2 phase followed, with more pattern-decorated material and the canonical decorated LH IIIA2 kylikes. Such material was mostly associated with EU08, the removal of which fully exposed the most substantial walls in the trench.

Worthy of note is the presence of fragments of transport stirrup jars (TSJs) in layers dated to the LH IIIA2 period, which provides a link with rich finds of

this category from earlier excavations in Sector A (Lis and Batziou 2025). They also show that import of TSJs to the settlement began concurrently with the large-scale occupation of the area south of Magoula.

The excavation exposed no clear floor levels that could be associated with the walls, and none were apparent in the baulks. However, the presence of a nearly complete kylix (P23/052 [see Fig. 13]) may indicate a possible surface at the depth of the lowest EU that produced fragments of this vessel (EU22, elevation 2.60 m a.s.l.).

Remains of mudbricks were identified at several locations within Trench Co1. In the northern part of the trench, in Area 4, a concentration of randomly arranged but well-preserved mudbricks was uncovered next to Wall 4 [Fig. 14]. Although these mudbricks had initially been interpreted as remains of an older, heavily damaged wall, they do not seem to form a structure. Good preservation and sturdiness of the bricks suggest that they were affected by fire. Remains of what could have been a mudbrick wall were also found in the lower part of Area 3 along its north, east, and south edges,



Fig. 13. LH IIIA2 kylix P23/052 (Photo B. Lis, drawing B. Konnemann)

below Walls 2 and 3, while the top of another possible mudbrick wall was uncovered in the gap between stone Walls 1 and 3.

Excavation continued below the bases of the uncovered stone walls in Areas 3 and 4 but did not reveal any structures, which may at least partly be due to the small size of the area available for investigation. Substantial amounts of LH I and late Middle Helladic (MH) material were present in associated pottery lots [Fig. 15], but only one of these units (EU32 in Area 2) was devoid of LH IIIA2 material. Moreover, a good quantity of LH IIIA2 Early pottery, including mendable fragments such as alabastron FS85 (P23/082) [see Fig. 12], came from units that extended below the bases of Walls 3 and 4. These could represent a fill deposit intended to level the surface prior to the occupation of that area in LH IIIA2, meaning that

the earlier material present in the units was simply residual. Irrespective of this, the presence of pre-LH IIIA2 Mycenaean pottery and the sheer quantities of MH/LH I pottery [see Fig. 15] including vessel fragments composed of multiple sherds strongly suggest that occupation in this area began already towards the end of MH period. An attempt to uncover layers related to this early phase of the settlement will be one of the priorities for future research.

The group of diagnostic MH/LH I pottery fragments excavated so far in Trench Co1 included the following specimens [see Fig. 15]: a Gray Minyan Pteleon goblet (P23/125, EU32), a Gray Minyan kantharos (P23/122, EU29), two matt-painted closed shapes (P23/120 and P23/138, both from EU29), and an imported Minoan Vapheio cup (P23/135, EU27).



Fig. 14. Mudbricks north of Wall 4 (Photo Ł. Miechowicz)



### FAUNAL REMAINS IN TRENCH C01

In terms of species composition, sheep and goat were the dominant taxa occurring in relatively equal proportions and collectively comprising 56.2% of the material from Trench C01, followed by pig and cattle, as well as a single dog specimen [Table 3]. Table 4 shows the representation of species for Area 3, considered as an interior space, and for

Area 4, interpreted as an open area. Interestingly enough, comparison of the two datasets revealed differences in the percentages of the recorded species. More specifically, in Area 3 pigs were the dominant species, comprising more than half of the remains, followed by sheep/goat and cattle, whereas Area 4 exhibited significantly higher percentages of sheep and goats. While both samples are

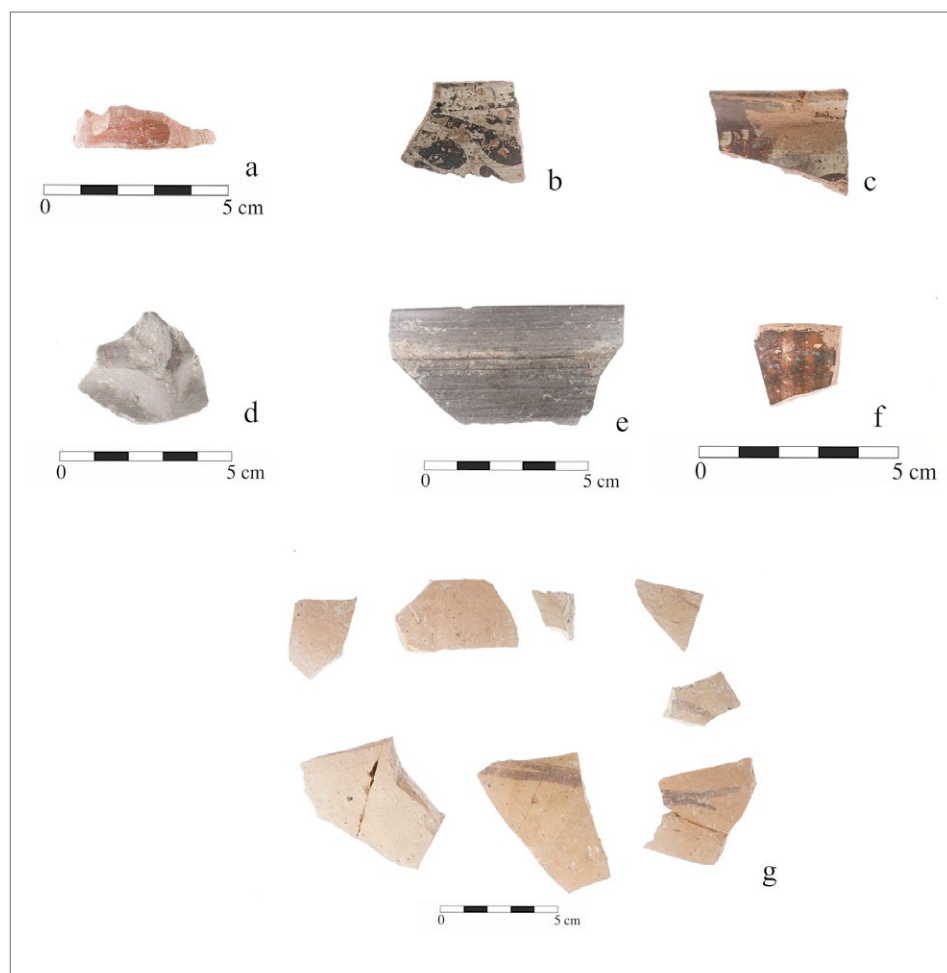


Fig. 15. Pre-LH IIIA2 pottery from Trench C01: a – Vapheio cup P23/124; b – goblet P23/055; c – goblet P23/061; d – Gray Minyan Pteleon goblet P23/125; e – Gray Minyan kantharos P23/122; f – Minoan Vapheio cup P23/135; g – matt-painted closed shape P23/138 (Photos and processing B. Lis)

very small and thus ill-suited for valid statistical analysis, the difference in species composition is striking. It must also be stated that 80% (n=12, Minimum Number of Anatomical Units) of the pig elements recorded in Area 3 belong to neonatal or very young piglets, several of which were in fact identified as belonging to the same animal. Most of these were thigh bones. A single thigh bone belonging to a neonatal piglet was

recovered in Area 4 as well. Post-depositional factors that could have resulted in potential variation in preservation of elements of young animals between the two context types have been evaluated. In both cases, the evidence of gnawing shows no significant variation (17.9% in Area 2 versus 12.9% in Area 4) and if anything would have affected remains in Area 3, suppressing the number of more fragile and young types of fragments.

Table 3. Trench C01: Species representation (MinAU – Minimum Number of Anatomical Units, MaxAU – Maximum Number of Anatomical Units)

	MinAU	%	MaxAU	%
<b>Cattle</b>	5	<b>6.8</b>	5	<b>6.8</b>
<b>Pig</b>	26	<b>35.6</b>	26	<b>35.1</b>
<b>Sheep</b>	21	<b>28.8</b>	22	<b>29.7</b>
<b>Goat</b>	20	<b>27.4</b>	20	<b>27.0</b>
<b>Sheep, goat, and sheep/goat</b>	41	–	42	–
<b>Dog</b>	1	<b>1.4</b>	1	<b>1.4</b>
<b>All species</b>	<b>73</b>		<b>74</b>	

Table 4. Trench C01: Species representation per context (MinAU – Minimum Number of Anatomical Units)

	Area 3		Area 4	
	MinAU	%	MinAU	%
<b>Cattle</b>	3	<b>11.1</b>	2	<b>6.1</b>
<b>Pig</b>	15	<b>55.6</b>	5	<b>15.2</b>
<b>Sheep</b>	4	<b>14.8</b>	12	<b>36.4</b>
<b>Goat</b>	5	<b>18.5</b>	14	<b>42.4</b>
<b>Sheep, goat, and sheep/goat</b>	8	–	26	–
<b>Dog</b>	1	<b>3.7</b>	0	<b>0</b>
<b>All species</b>	<b>28</b>		<b>33</b>	

As far as body part representation is concerned, *Table 5* presents the anatomical breakdown for all species present in Trench C01. Only sheep, goat, and sheep/goat, as well as pig remains enabled evaluation of the available data. Almost all body parts were identified, suggesting the presence of complete carcasses or animals on the hoof. The

underrepresentation and absence of small elements (especially of phalanges) is evident. The presence of very young elements suggests, however, that incomplete recovery cannot account for their complete loss, especially given the systematic character of flotation in this case too, implying that some kind of carcass dressing took place.

Cutmarks have been identified only on two sheep/goat forelimb specimens and on the base of a goat horncore. The first two cases are related to carcass dismemberment, whereas the latter is a result of chopping in an attempt to remove the horn from the head.

No evidence for sex composition of sheep/goat and pigs is available, but a fragment of a female cattle pelvis has been determined.

Evidently the faunal remains excavated thus far from Trench C01 do

not constitute a sample sufficient for a valid analysis. Nevertheless, further excavation, leading to the identification of interior and exterior spaces and hence offering clear contextual control will enable assessment of the zooarchaeological material at a lower level than that of the site, providing details on animal consuming practices indoors and outdoors, privately and in open view perhaps, potentially giving a better insight into the Late Helladic society.

Table 5. Trench C01: Breakdown of recorded elements per species (MinAU – Minimum Number of Anatomical Units)

	Cattle	Pig	Sheep	Goat	Sheep, goat, and sheep/goat	Dog	All species
<b>Horncore/Antler</b>	0	0	0	1	1	0	1
<b>Mandibles</b>	0	0	2	3	5	0	5
<b>Scapula</b>	0	0	0	0	0	0	0
<b>Humerus proximal</b>	0	0	1	2	3	0	3
<b>Humerus distal</b>	0	0	0	1	1	0	1
<b>Radius proximal</b>	0	1	3	4	7	0	8
<b>Ulna</b>	1	1	0	0	0	0	2
<b>Radius distal</b>	0	1	2	1	3	0	4
<b>Metacarpus proximal</b>	0	0	0	0	0	0	0
<b>Metacarpus distal</b>	0	0	1	1	2	0	0
<b>Pelvis</b>	1	1	2	0	2	1	5
<b>Femur proximal</b>	0	7	2	1	3	0	10
<b>Femur distal</b>	0	7	0	0	0	0	7
<b>Tibia proximal</b>	1	4	0	0	0	0	5
<b>Tibia distal</b>	0	2	2	3	5	0	7
<b>Astragalus</b>	0	0	0	0	0	0	0
<b>Calcaneus</b>	0	0	1	1	2	0	2
<b>Metatarsus proximal</b>	0	1	0	1	1	0	2
<b>Metatarsus distal</b>	0	1	3	0	3	0	3
<b>Phalanx 1</b>	1	0	2	1	3	0	4
<b>Phalanx 2</b>	1	0	0	0	0	0	1
<b>Phalanx 3</b>	0	0	0	0	0	0	0
<b>Total per species</b>	<b>5</b>	<b>26</b>	<b>21</b>	<b>20</b>	<b>41</b>	<b>1</b>	<b>73</b>
<b>%</b>	<b>6.8</b>	<b>35.6</b>	<b>28.8</b>	<b>27.4</b>	<b>56.2</b>	<b>1.4</b>	

### ARCHAEOBOTANICAL REMAINS IN TRENCH C01

Occasional to abundant charred wood pieces were discovered in all assemblages collected from Trench C01. In two samples, SS23/047 (EU24) and SS23/054 (EU29), three fragments of indeterminate cereals and/or wild grass family (*Cerealia*/Poaceae indet.) were identified. A single seed of fig (*Ficus carica*) was identified in sample SS23/015 (EU05, fireplace). Additionally, assemblages from sam-

ples SS23/008 (EU02), SS23/015 (EU05), SS23/036 (EU20), SS23/037 (EU21), SS23/047 (EU24), SS23/055 (EU26), and SS23/054 (EU29) contained single seeds and fruit of saltbush (*Atriplex* sp.), a seed similar to bur medick (*Medicago* cf. *nigra*), black elder (*Sambucus nigra*), as well as species of the legume (Fabaceae indet.) and wild grass (Poaceae indet.) families. Moreover, in samples SS23/015 (EU05) and SS23/058 (EU32), pieces of organic slag were present.

## ARCHAEOMALACOLOGICAL REMAINS – TRENCHES B01 AND C01

During the 2023 season, the excavation of both areas brought to light more than 1100 shellfish remains (23 EUs from B01 and 28 EUs from C01 contained shells). The following presentation is based on the preliminary recording of shells and a first assessment of their spatial distribution. The assemblage was characterized by high variety (at least 30 different species) and moderate diversity, as there were several species (n=10) represented by a fair number of remains (Number of Identified Specimens 20) alongside fewer shells distributed unequally among many species. The vast majority were marine bivalves and gastropods. There were also a few terrestrial snails that, in all likelihood, have entered the archaeological layers after the abandonment of the site.

The study of the ecological characteristics of marine species coupled with taxa representation indicate that people exploited different marine, mostly coastal, ecosystems: soft (e.g. *Hexaplex trunculus*, *Macrura stultorum*, *Ruditapes decussatus*)

and hard substrates (e.g. *Patella caerulea*, *Phorcus turbinatus*, *Ostrea edulis*) in the shallow water zone, hard substrates in deeper water zones (e.g. *Spondylus gaederopus*), and muddy substrates in estuaries/coastal lagoons (*Cerastoderma glaucum*). Based on ecological and archaeological studies, and observations from fieldwork at the nearby coasts (Veropoulidou field notes), these aquatic molluscs must have been readily available in the adjacent environments, and thus they were locally gathered by the inhabitants of Pefkakia.

All the marine species (apart from *Conus ventricosus* that is toxic) were edible. The most frequently encountered were *Hexaplex trunculus* (banded-dye murex), *Cerastoderma glaucum* (common cockle), and *Spondylus gaederopus* (thorny oyster). *H. trunculus* was mostly represented by fragmented shells that had been collected fresh (with the mollusc). This pattern of fragmentation is compatible with the waste of purple dye production. *C. glaucum* and *Sp. gaederopus* shells were mostly



collected fresh and are usually preserved intact. These remains likely represent waste from the consumption of these molluscs as food. The remaining species were represented by small numbers of shells bearing different taphonomic features; some were gathered fresh and were suitable for food consumption (e.g. *R. decussatus*, *O. edulis*, *P. caerulea*); some small-sized shells, collected worn from the beach, may represent accidental collections along the targeted prey or other materials from the coast (e.g. *Columbella rustica*, *Bititium reticulatum*). There were no shells bearing artificial perforations or other evidence of human modification in these trenches.

A preliminary assessment of the distribution of the shell remains indicates similarities in taxa variety coupled with differences in species representation between the two trenches. In Bo1, five (out of 16) marine species were represented by a moderate/high number of shells, including (in descending order) *H. trunculus*, *C. glaucum*, *Sp. gaederopus*, *C. vulgatum*, and *B. brandaris*. In Co1, there were 20 different marine taxa, of

which the most common were *H. trunculus*, *P. nobilis*, *C. glaucum*, *A. noae*, and *Sp. gaederopus*. Therefore, it seems plausible to suggest that common activities took place at the site through the ages (probably purple dye manufacture and molluscan food consumption, among others). The differences in targeted taxa, if not a matter of excavation biases, cannot be explained upon current evidence, but various reasons may be put forward (environmental changes, changes in tastes, fashions, and cuisine).

To summarize, the preliminary study of the shell assemblage points towards a systematic and diversified mode of marine resource exploitation, aiming at covering needs in crafts (purple dye) and cuisine. These results are quite similar to what has been observed in some other coastal Late Bronze Age and later in date sites across the Aegean. The validity of these observations will be tested with the continuation of excavation that will allow contextual and statistical analyses of the different archaeomalacological assemblages to contribute to a more nuanced understanding of these societies.

## SUMMARY AND CONCLUSIONS

In Trenches Bo1 and Co1, the discovered forms of settlement varied in terms of both function and chronology. The bedrock was not reached in any of the trenches, which is particularly surprising in the case of Trench Co1, as geophysical investigation had suggested the presence of bedrock relatively close to the surface. In Sector B, a burial ground of the late Hellenistic–Roman period was found. Sector C yielded remains of structures

from the Late Mycenaean period. Despite spatial constraints, research in Trench Co1 brought forth several architectural phases covering a significant part of the Late Bronze Age, with good indications that occupation in the area went back to the Middle Bronze Age.

Despite the limited area exposed, the research in 2023 provided very important clues as to the settlement history of Pefkakia. Starting with the earliest

remains, we now have firm evidence for activity dating back to the late MH/early LH period beyond the site of Pefkakia Magoula. We also may have a slightly better understanding of the location of the Early Mycenaean settlement thanks to pottery evidence from the later fills in Trench Bo1. Trench Co1 also produced some Early Mycenaean fragments. Most importantly, we managed to expose substantial remains of the LH IIIA2 phase, crucial for the understanding of the development of Mycenaean Pefkakia,

which, in contrast to Sector A of the site, seems not to have been heavily overbuilt during later periods. As for the final stage of Mycenaean occupation, there are hints of a continued habitation past 1200 BC with pottery fragments from more developed stages of the LH IIIC period in the upper layers of Trench Co1. Lastly, we gained a much better understanding of the Hellenistic and later activity in the part of the settlement directly adjacent to the city wall in Trench Bo1.

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