

Surveying scattered pottery assemblages in shallow waters: the case of Nissia Coves, Paralimni, Cyprus*

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Abstract

1. History of research

The main aim of the survey at Nissia Coves was to understand if high-resolution survey methodology can provide a more dynamic picture regarding the meaning of scattered underwater archaeological assemblages. In order to understand the reason behind this aim some aspects are necessary to be discussed.

It is out of debate that Maritime archaeology it is not equal with studding archaeological material underwater and the term maritime has a more complex meaning including all aspects related to the relation between human activity and the sea. In this respect the term *Maritime Cultural Landscape* introduced by Westerdahl (1992: 5) in 1978 is eloquent showing the implication of both physical and cognitive factors and the complex nature of one could call *maritime*.

In spite of this awareness and by taking a closer look into one of the leading journals in the field, *The International Journal for Nautical Archaeology and Underwater Exploration* (IJNA) it is

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obvious that the majority of the papers deals with shipwrecks and only few with other aspects of the discipline (Fig. 1). It is therefore not surprising, that when referred to scattered archaeological material in shallow waters, the scholars concentrate mostly on scattered shipwreck remains. Muckelroy (2004: 196) classifies them as discontinuous wreck-sites, where artefacts cannot be related to structural remains and no clear distribution pattern is observed. Parker (1981: 312 and 321-326) describes scattered wreck-sites as widely spread remains of the cargo with only occasionally preserved fragments of the hull, where association of material can still be observed despite contamination. Furthermore O'Shea (2002: 211) compares shallow water wrecks with terrestrial archaeological sites characterized by a long site formation process, a fact that requires a systematic and detailed approach in order to obtain coherent information. In spite of their contaminated and scattered condition, all three scholars mentioned above agree that scattered wreck-sites are worth of investigation and that by a systematic approach a lot of data can be extrapolated. The projects at Kammerland and Lake Huron on which Muckelroy and O'Shea based their theoretical and methodological conclusions, dealt however, with medieval and pre-modern, respectively modern wooden shipwrecks. It is only Parker that discussed what Demesticha (2015:68) calls *amphorascares*, i.e. the scattered amphora cargo of a shipwreck, a common find in the Mediterranean waters.

Scattered assemblages in shallow waters are though not limited to shipwreck remains, but in some cases they represent evidence of shelter and anchorage activities. The importance of recording this type of sites as well as their endangered situation was acknowledged already from the beginnings of the underwater scientific research. At the dawn of the maritime archaeology Frédéric Dumas (1962:3) was writing: *At certain points along the Mediterranean coast, the sea bed is littered with ancient débris: broken pottery, anchors and other objects. At first glance one might suppose they came from a wreck, but the way in which the sherds are dispersed and their differing dates indicate that we are looking at a place where the ancients dropped anchor, either in order to take shelter or to transact business with land. Their mooring was marked by certain accidents: things fell overboard or were jettisoned, while the seamen took advantage of calm water to tidy their load.* Du Plat Taylor (1965: 21-22) - one of the early archaeologists to apply scientific methods in maritime archaeology - distinguishes two categories of coastal sites: permanent harbours and sites with evidence of ancient trade routes, of which the last category is described as having been used as temporary shelters or to contract transactions with the

hinterland. She emphasized prophetically that this last type of sites is usually disconsidered and most sure they will disappear, due to their shallow location, before anybody would even attempt to study them.

The intensive use of SCUBA equipment for personal and touristic purposes, especially during the past 20 years led to a merciless looting process in Cyprus with the disappearance of the main anchorage indicator - the anchors, as in the case of Cape Greco and Cape Kiti for example. Together with the anchors also other large artefacts, like well preserved ceramic finds are constantly removed from their archaeological context and what is usually left behind is a handful of broken shards.

Scattered archaeological material is far from being unusual in the shallow waters of the Mediterranean and the interest for recording them on the Cypriot coast goes as far at the beginnings of maritime archaeology as a scientific discipline. Scattered archaeological remains have been either extensively or intensely surveyed so far at: Cape Andreas (Green 1970 and 1973), Cape Kiti (Engvig & Åström 1975, Ingelman-Sundberg & Åström 1975, Herscher & Nyquist 1975, McCaslin 1978 and 1980, Engvig & Beichmann 1984, Demesticha 2015), around Lara Promontory at Kerathidi Bay, Thalassines-Spiles, Maniki, and Lara-Limnionas (Giangrande et al. 1987), and at Dhrousha-Kioni (Leonard 1995a), around Akrotiri peninsula at Cape Zevgari, Dreamer's Bay and Episkopi Bay (Leidwanger 2005, Leidwanger & Howitt-Marshall 2006), around Cape Greco and along the coast of Protaras (Leonard 2005, Leidwanger 2008, Leidwanger 2018) (Fig.2). The results of these surveys are most crucial for understanding the maritime landscape of Cyprus throughout the history; the collected data however, is not always analytically comparable. In some cases the artefacts recorded during underwater surveys have been carefully mapped (Figs. 3, 4, and 5). In other cases the maps show only the location of artefacts clusters (Figs. 6 and 7). In some cases the distribution maps are completely missed, such as in the case of the survey at Cape Greco and Fig Tree Bay. Also the total number of counted artefacts is often disregarded. It is only the case of the shipwrecks at Cape Kiti and Fig Tree Bay where the total of diagnostic fragments counted is given, where as in the case of the anchorage at Dhrousha-Kioni only rough estimations are mentioned. Regarding the ceramic material, especially coming from anchorage sites there are no further analytical analysis as the

parity between different types of vessels and their distribution on the seabed. In some cases interpretations of the survey results, even possibly correct are not supported by strong arguments.

This situation led to the launch of the intensive survey at Nissia Coves, which results I would like to present further on.

2. Survey methodology

Nissia Coves is situated on the eastern coast of Cyprus, in Famagusta Bay, in one of the most frequently visited touristic resort of Cyprus, Protaras (Fig. 8). The coves to the north are one of the most dived spots of the area and beyond. To the south a small fishing shelter is located and recently larger touristic boats are frequently anchoring here. The coves to the north were previously extensively investigated as part of two underwater archaeological surveys, in 1989-1990 under the direction of John Leonard (2005: 61 and 65), and in 2006-2009 under the direction of Justin Leidwanger (2008 and 2018). Both archaeologists concluded that the coves might have been used as anchorage, without further explanations, but the presence of scattered pottery fragments on the seabed.

North of the coves, in the nearby vicinity several archaeological sites, both on land and under the sea have been identified and recorded: a Neolithic settlement (Flourentzos 2008) and a Hellenistic-Roman tomb (Georgiou 2011), a Roman (Leidwanger 2013) and a Late Ottoman shipwreck (ongoing project of the University of Cyprus under the direction of Stella Demsticha). Further looted tombs, quarrying traces, and scattered pottery fragments on land and underwater are present at Panayia (Fig. 9).

The project at Nissia Coves started in July 2016 with a preliminary, extensive research of the northern coves in order to establish the extent of the archaeological remains and to generate a map with the main characteristics of the seabed as a basis for developing the survey strategy. The intensive underwater survey took place between October 2016 and March 2017 with a total number of 39 surveying days and a total of 110 hours and 21 minutes dive time, covering an area of 6,312 square meters. The studied area was divided for practical reasons in Area 1 (west), Area 2 (center), and Area 3 (east). The basic unit of the survey was the artifact distribution per surveyed unit and for this purpose the entire surveyed area was divided into a grid system, with grids measuring between 25 and 100 square meters (Fig. 10). The larger grids were used where

little archaeological material was found. Within each grid, every pottery fragment was counted and diagnostic fragments were collected and delivered to the *Laboratory for the Treatment of Underwater Finds*, in Larnaca for conservation and storage. No intrusive methods were used during the sampling process and only loose pottery fragments visible on the seabed were collected. Also, an effort was made to collect as less as possible fragments of the same type of artefact. However, the pottery fragments that were left on the site were not only counted, but also photographed and basically described when recognizable. In this way, further quantitative analyses could be performed.

3. Description of the surveyed area

Area 1 is the western most surveyed part and also the easiest entrance to the coves from land. It is very shallow with depths between less than 1m and 3 to 4 m and it consists mostly in Late Roman 1 amphora fragments conglomerated against rocks. It runs in a northeast-southwest direction and the seabed is characterized by rock formations with just a few sandy patches. On the sandy parts of this area, only few scattered pottery are visible, in a very fragmented condition.

Area 2 represents the central part of the surveyed area and it is orientated north-south. The northern part is the deepest (6.2m) and is characterized by a sandy seabed, whereas the southern part is rocky and shallow narrowing towards the shoreline. The pottery fragments recorded in Area 2 are very fragmented, loose and few compared with the one recorded in Area 1 and 3.

Area 3 runs in a north-south direction and represents the eastern most and largest part of the surveyed area. To the south and to the north it is limited from the rest of the seabed by large rocks. It is characterized by a sandy seabed with *Posidonia* patches in the northern part. The pottery fragments are present all over the area, showing however larger concentrations on the northwestern side.

4. Survey results

A total of 7,094 pottery fragments were counted, mostly distributed in Area 1 and Area 3. 147 fragments (2.04% of the total counted) were sampled for further study.

The investigated area is characterized by two well-defined pottery clusters - Late Roman 1 amphorae conglomerated against the rocks over most of the central and northern part of the western most cove (Area 1), and scattered pottery fragments of a wide chronological range in the north-western part of eastern most cove (Area 3); in the central part of the surveyed area (Area 2) only towards the deepest, northern limit a clearer pottery cluster was observed (Fig. 11).

Only one stone anchor was recorded outside of the actual surveyed area. Further three stone anchors are used as decoration in the garden of a house just next to the coves (Fig. 12). As there was no possibility to contact the owner we cannot be sure that they have been removed from the surveyed area. Another stone anchor exhibited in the Municipality Town Hall comes from the area of Nissia, according to the authorities. One composite stone anchor was identified by Leidwanger (2018: Fig. 9) during the extensive survey from 2006-2009.

The artifact remains at Nissia Coves extend from a chronological point of view over an extensive time span from the Bronze Age until Late Ottoman, with the Late Roman period best represented in the survey record. The main question that arises from this fact is the actual use of space during these broad chronological periods.

Bronze Age is represented in the sampled record by one fragment of a Basing II bowl and a further fragment of a cooking pot which however, was only uncertainly dated to this period (Fig. 13). Both fragments were sampled from Area 3.

The broad Cypriot Archaic to the Hellenistic period is represented by four fragments (Fig. 14) and counting only 2.68% of the sample. These fragments were collected in the same Area 3.

A total of 87 fragments from the total sampled (58.38%) have been dated to the Hellenistic-Late Roman period, of which 21 are represented by amphora fragments (Fig. 15), 14 by fine ware, and 52 by domestic ware (Fig. 16). Additional 14 roof tile fragments were sampled and dated to the same period (Fig. 17). From the total sampled ceramic fragments, 30 have been dated to the Roman-Late Roman period and 45 to the Late Roman period. Together they represent 50% of the sampled material.

Only two fragments have been dated between 7th and 9th c. AD and further five to the Medieval – Late Ottoman period (Fig. 18).

These numbers show that a possible anchorage function of the site can be proved only for the Roman-Late Roman period as the other chronological periods are only scarcely present in the archaeological record. Also the parity between transport and non-transport vessels from the total counted artefacts in favor of the first speaks for rather maritime activities than settlement refuse (Fig. 19). The concentration of both transport and non-transport vessels on the northwestern side of Area 3 could represent an evidence for the location of the anchorage in this cove. The size of the cove, the depth, the sandy seabed and a fairly well protection against the winds are further arguments in favor of this interpretation. Moreover an important fresh water source was located near the coves and was still in use during 1930's. The fact that on land only scarce habitation evidence is attested (one wall and few pottery fragments of the Hellenistic-Roman period within the structures of an earlier, Neolithic settlement) might be explained by the intensive touristic development of the area during the past 40 years. The lack of further anchorage evidence, such as man-made structures doesn't represent necessary a contra-argument as the modern anchorage at the southern coves at Nissia functions with a minimum of facilities, i.e. a wooden pier.

Indeed the lack of anchors on the site makes the interpretation of the ceramic artefacts difficult. Generally, however, the sudden increase in ceramic artefacts during the Roman and especially Late Roman period in the surveyed area cannot represent just a simple coincidence. During this period an increase in maritime activities and a general prosperity of the island, connected with the rise of the Eastern Empire as well as a *busy countryside* were proved by several archaeological surveys (Leonard 1995: 227-244, Manning et al. 2000: 253-255, Rautman 2001: 241-256, Papacostas 2001: 108-111, Rautman 2006: 455-457, Todd 2013: 102-107, Caraher et al. 2014: 225-242). The area of Protaras was probably under Salaminian administration and it is very possible that some of the goods produced in the area might have been transported to the main harbor of the region on the sea. To prove however, that the coves were used also for economical transaction is not a simple task in spite of the ceramic material underwater, as there is just few archaeological evidence on land and so far no consistent settlement evidence was recorded. The area of Protaras is indeed characterized by fertile soils and until not long ago by good underground aquifers. The aridity that characterizes the eastern Mediterranean however, would rarely allow an agriculture surplus. Some toponyms in the area include the word δάσος (gr. forest), a fact that might point out to a dramatically change in the landscape during the past years as today there is not more than few scrub to be seen. Until not long ago it was animal

husbandry the main economical resource of Paralimni-Protaras (Christodoulou 1959: 132) and it is possible that also during the antiquity might have been the same. Fishing might have been also important, as practiced until today. Building material might have been also extracted here during antiquity as several quarries are visible along the coast; it is however, only at Mandali and Nissia, where the presence of pottery fragments in the surrounding areas might indicate quarrying activities during the antiquity. As the quarries at Nissia are close to several looted tombs, it is difficult to understand if the pottery scattered nearby is related in any way to the quarrying activities or only with the tombs. Also the small size of the quarries shows either occasional or short use for rather local purposes and not for trade.

The homogenous assemblage of Late Roman 1 amphorae in Area 1 (the western cove) represents the scattered remains of a shipwreck (Fig. 20). A total of 3754 fragments were counted of which 252 are represented by feature fragments (rims, handles and bases). No complete amphora profile was found and therefore the reconstruction of the original size was impossible. From the total of feature fragments counted, 133 are rims or complete upper parts of amphorae. As salvage operation might have occurred already during the antiquity and modern looting voided most probably the central, sandy part of Area 1 where fragments might have lied loose on the sea bed, it is impossible to reconstruct the size and tonnage of the ship. The ratio between feature fragments and body shards is rather large with 1:15. However, the ratio between rims and handles is of a very surprising 1:2.17, as expected on well preserved assemblages, rather than scattered shipwrecks. The extent of the area covered by the conglomerated remains of the Late Roman 1 amphorae is of roughly 30x40m. As clearly noticeable on the distribution map the highest continuous concentration of amphora fragments is located on the eastern side of Area 1, measuring roughly 30x10m. This distribution pattern could either show the wreckage impact area or natural factors involved in the site formation process, i.e. underwater currents pushing the material towards this side of the cove.

The data collected in Area 1 at Nissia Coves can be in a certain degree compared with only two other shipwrecks in Cypriot waters, both located in the shallow and found in a scattered condition, which have been intensively surveyed and accordantly published. In the case of the nearby Roman shipwreck at Sykia tou Protara/Fig Tree Bay, 133 feature fragments counted were found dispersed in two clusters, 10-15m apart and covering together an area of 70x45m

(Leidwanger 2013: 193) On another Roman wreck, Kiti N1 found at Cape Kiti, near Larnaca 35 diagnostic fragments have been counted, covering an area of roughly 50x20m (Demesticha 2015: 61).

In the case of Nissia the amphora distribution per square meter is 0.21 taking in consideration only the feature fragments and 3.12 considering the total counted fragments, whereas in the case of the shipwreck at Sykia tou Protara/Fig Tree Bay is 0.04 and at Cape Kiti 0.03, both based on the feature/diagnostic fragments counted. Thus, it seems that the shipwreck at Nissia is either less dispersed than the other two or larger. However, natural factors might have influenced their degree of preservation and dispersion. At Nissia, the fact that the cove where the ship wrecked is rather narrow, natural boundaries might have diminished the degree of dispersion and fragmentation of the artefacts.

There are many factors involved in a wreckage site formation processes, however one primary factor is the way a ship wrecked, i.e. as one piece, broken and therefore floating parts of the ship might have carried parts of the cargo further away from the place of impact, or capsized in which case, especially in shallow waters, the hull would be carried by the waves further away from the impact place and eventually completely destroyed. It seems that in the case of Nissia wreck, the impact was aggressive leading the ship to sink at once, as only few material correlated with the shipwreck remains could be identified in Area 2 and might have been dispersed there by natural or anthropogenic factors long after the wreckage event. Moreover no amphorae of the same fabric as in Area 1 have been found in Area 3. It is not possible to clearly understand based on the archaeological record if the ship was capsized or not. No wooden fragments have been identified during the survey, however under the bulk of conglomerated amphorae would not be impossible that wooden pieces might still be trapped. Moreover the fact that most of the upper amphora fragments are in an upright position, especially on the eastern side of the cove might also speak against this type of wreckage.

It is neither possible at this point to distinguish if the ship wrecked at Nissia represents a coastal sail or long trade activities. Although no petrographical analysis were conducted and based only on visual inspection of the fabric it seems that the amphorae were produced in Cyprus. The preserved part of the ship's cargo is exclusively represented by only one type of amphora, identical in size and fabric and no other possible secondary cargo has been identified, unless the

ship was carrying other perishable materials. This might point out to a single destination, rather than cabotage/tramping activities, although it was already proven with strong arguments that even homogenous cargos might represent complex commercial activities (Nieto 1997: 150-154, Rice 2016: 174-180). Based on the scarce evidence at Nissia we may only assume that the ship was loaded with local products and was either heading towards one of the large harbours of the island from where the goods would be loaded on larger ships or directly towards another location in the Eastern Mediterranean or further, when unfavorable winds pushed the ship against the rocks of the coves at Nissia.

Area 2 (the central cove) might represent an extension of the material in Area 1 as there are no natural boundaries between these two areas, with some additional material coming from different other maritime activities. The material of Area 2, scarce in nature and highly fragmented is represented by both characteristic ceramic material from Area 1 and other ceramic fragments of different typologies and fabrics. As Area 2 is separated from Area 3 by the fairly high rocky outcrops, it is thus impossible that ceramic material could be moved by natural causes between these two areas. It remains, of course, the human factor, and as noticed during the survey, occasional divers do have the tendency to collect ceramic material from one place and to drop it somewhere else at the end of the dive. In this case, we might consider that some of the loose material in Area 1 and 2 might actually come from Area 3.

5. Conclusions

Although the ceramic material at Nissia Coves is heavily disturbed by natural and anthropogenic factors, leading to a high degree of fragmentation, some important patterns were identified. Quantitative and spatial analysis proved that two maritime events can be distinguished: one shipwreck of the Late Roman period, with the highest concentration of fragments on the eastern side of Area 1, possibly the location of the wreckage impact and remains of possible shelter/anchorage activities concentrated mostly on the northwestern side of Area 3.

Comparing the intensive methodology used during this survey with the extensive methods used during the two previous ones conducted in the same area, we can conclude that a clearer interpretation was achieved. The simple presence of archaeological artefacts on the seabed doesn't represent an absolute evidence for anchorage activities. Albeit the presence of artefacts

belonging to a wide chronological sequence, it is only the increase of ceramic artefacts dated to the Roman-Late Roman period that might point out anchorage activities. Even so, this increase in artefact number should be cautiously interpreted.

In the case of the scattered remains of the shipwreck in Area 1, the intensive methodology, i.e. counting each fragment was not entirely justified as no further details were achieved, when compared with other less intensive surveys, where only diagnostic fragments were counted. No clear correlation between the artefacts recorded in Area 1 and 2 could be established in order to make further assumption regarding the original position of the wreck on the seabed, such as the location of the bow and stern. Non-transport ceramic fragments such as domestic and table ware, as well as roof tiles, were identified in Area 2. Even so we cannot directly correlate them with the shipwreck remains.

It is undisputable that the main factor involved in the distortion of the survey's results and interpretation is the heavily disturbed nature of the archaeological remains at Nissia. Moreover the lack of comparative data from other similar underwater sites leads to further issues regarding the interpretation. However, archaeological remains as the one at Nissia Coves are highly endangered and might completely disappear during the next decades; thus archaeological recording and especially detailed maps are important tools for future studies, especially related to the general evolution of the coastal and maritime landscape of the island.

It is just the misfortune and a rather unfair faith that left the area of Protaras in an isolated and obscure archaeological situation. In opposition, only by taking a look to the nearby region of Ayia Napa, just south of Cape Greco and extensively surveyed before the tourist era begun, rich material from a quite broad time span was recorded and many settlements were identified (Hadjisavvas 1997: 26-28 and Fig. 15). There is nothing that Ayia Napa could offer from an economic and geographical point of view that lacks in Protaras so we are justified when wondering about the reason that lies behind this archaeological void. Moreover, the many ceramic artefacts in the waters of Protaras show that the area was definitely not isolated from the otherwise busy maritime traffic of the island. Until further evidence, however, and based on the survey at Nissia Coves we can provide proves of only limited maritime activities and only for the Roman, especially Late Roman period, which was also a period of most intensive maritime activities in Cyprus, as proven by the archaeological record, both on land and under the sea.

As pottery fragments have been observed also in the waters of the next cove, north of Nissia, at Panayia a systematic survey of this entire area is highly recommended. Scattered pottery fragments on the shore are another argument that the entire area between the coves at Nissia and Sykia tou Protara/ Fig Tree Bay was used as a single space by a community that might have been located not far away from the coast, probably in the area of Mana tou Nerou, where also an important water source is located. Moreover local divers speak about several amphora tumuli in the deeper waters outside of the coves. Due to the sandy nature of the seabed mostly covered by Posidonia only an intensive and systematic survey, eventually combined with geophysical methods could reveal the actual function and importance of the area. As on land the entire coast is covered by tourist facilities, it is only research underwater that can still reveal the meaning of Protaras-Paralimni within the broader archaeological landscape of the island.

Figures

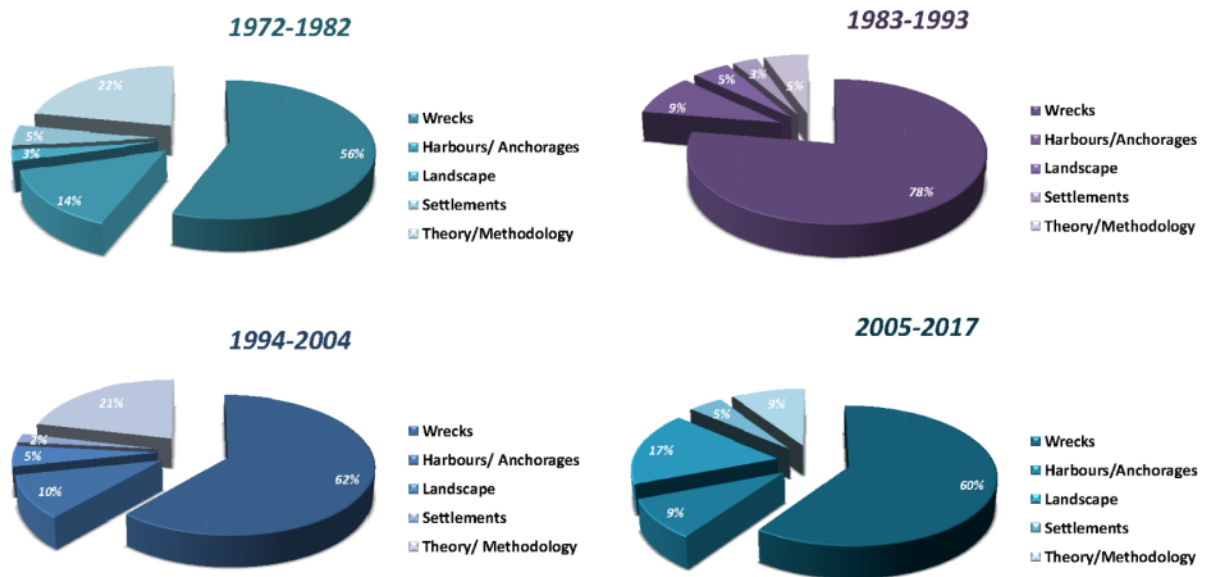


Fig. 1 *The International Journal for Nautical Archaeology and Underwater Exploration (IJNA)*. Main paper's topics

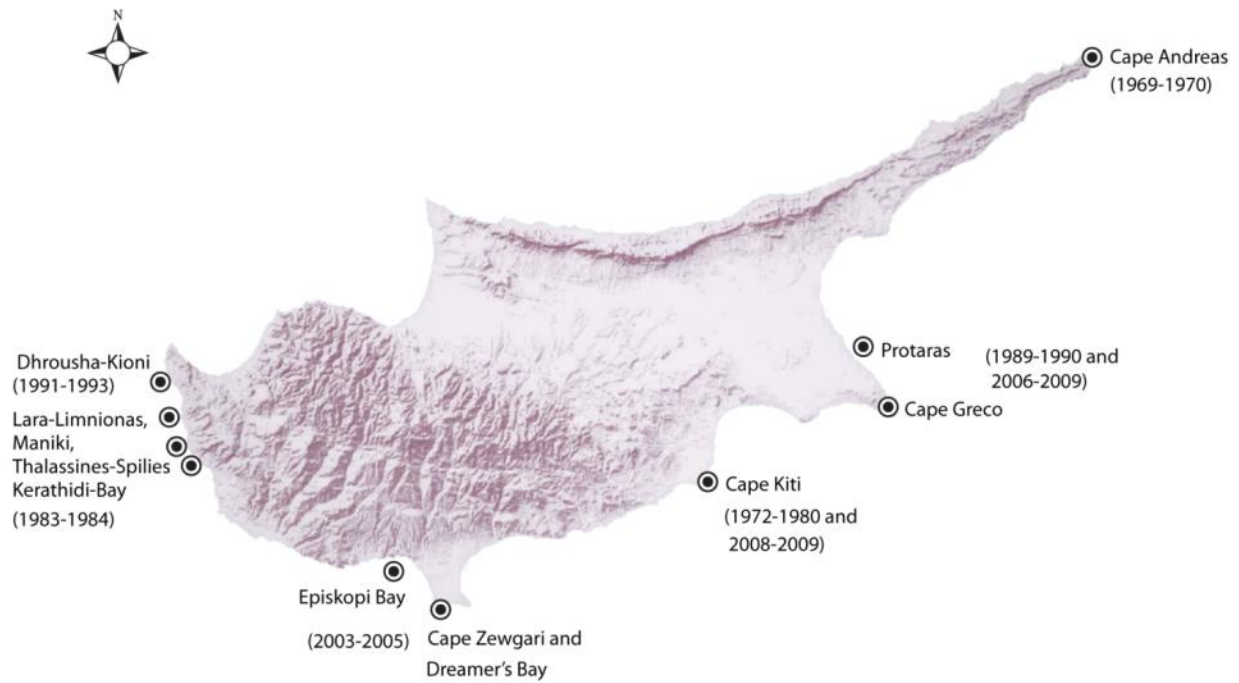


Fig. 2 Scattered archaeological remains in shallow waters surveyed in Cyprus

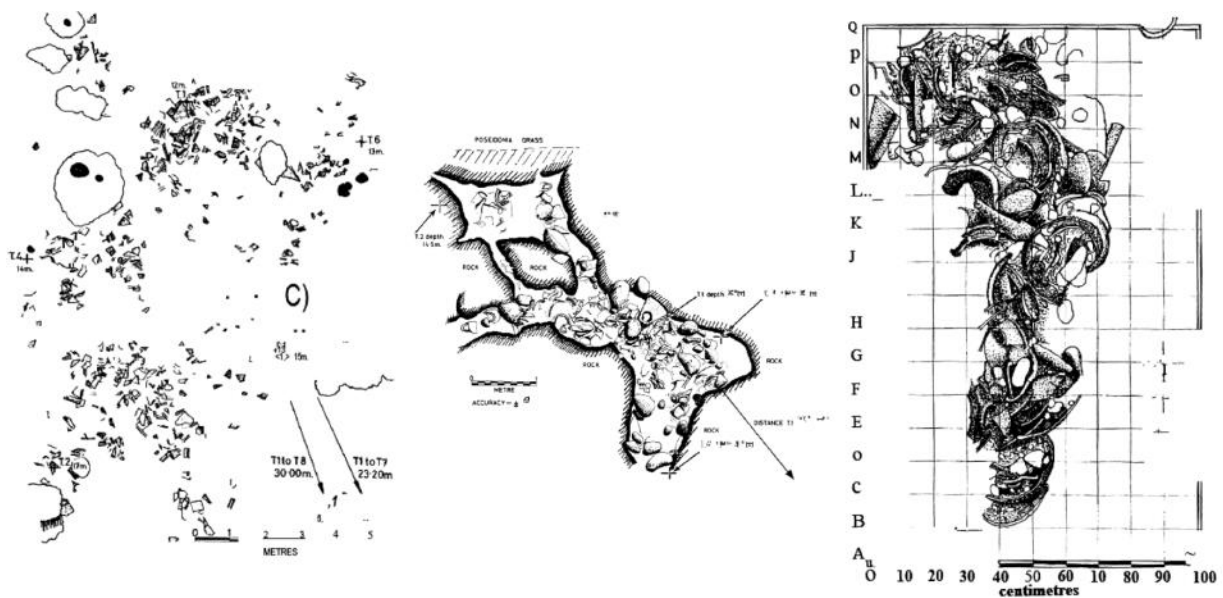


Fig. 3 Distribution maps of some of the sites recorded at Cape Andreas (Green 1973: Fig. 7, 11, and 12)

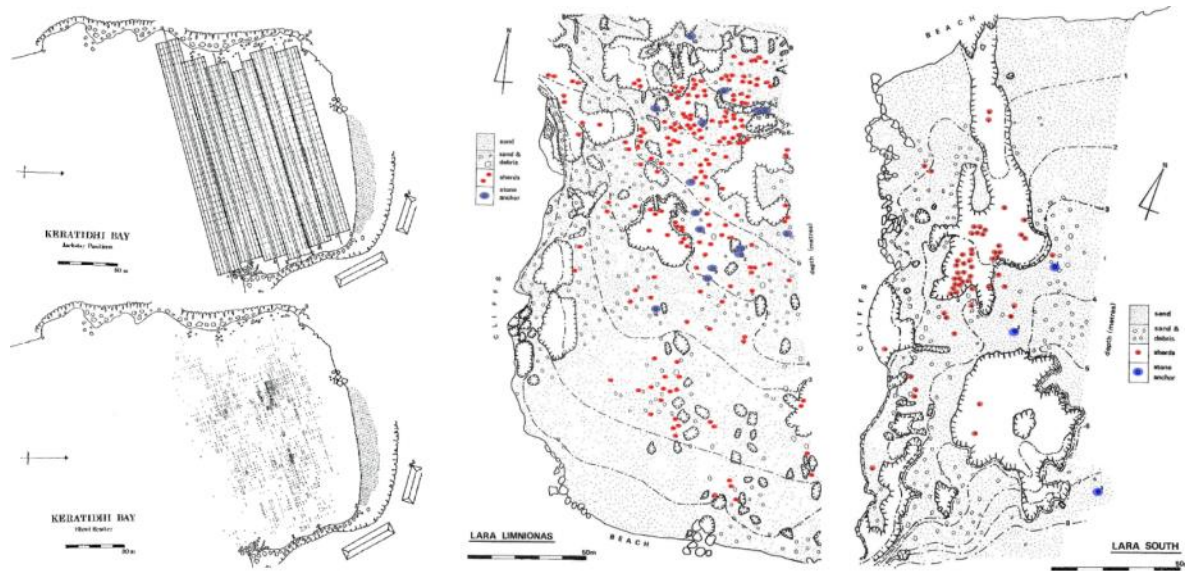


Fig. 4 Artefact's distribution maps at sites surveyed around Lara Promontory (after Giagrande et al. 1987: Fig. 2, 5, 8)

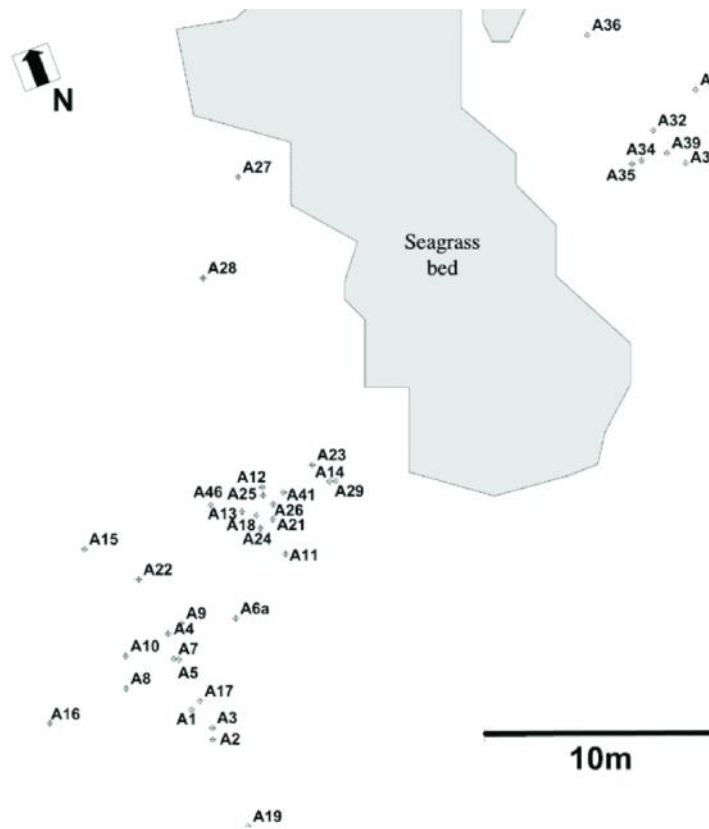


Fig. 5: Kiti N1 shipwreck: artefact's distribution (Demesticha 2015: Fig. 4)

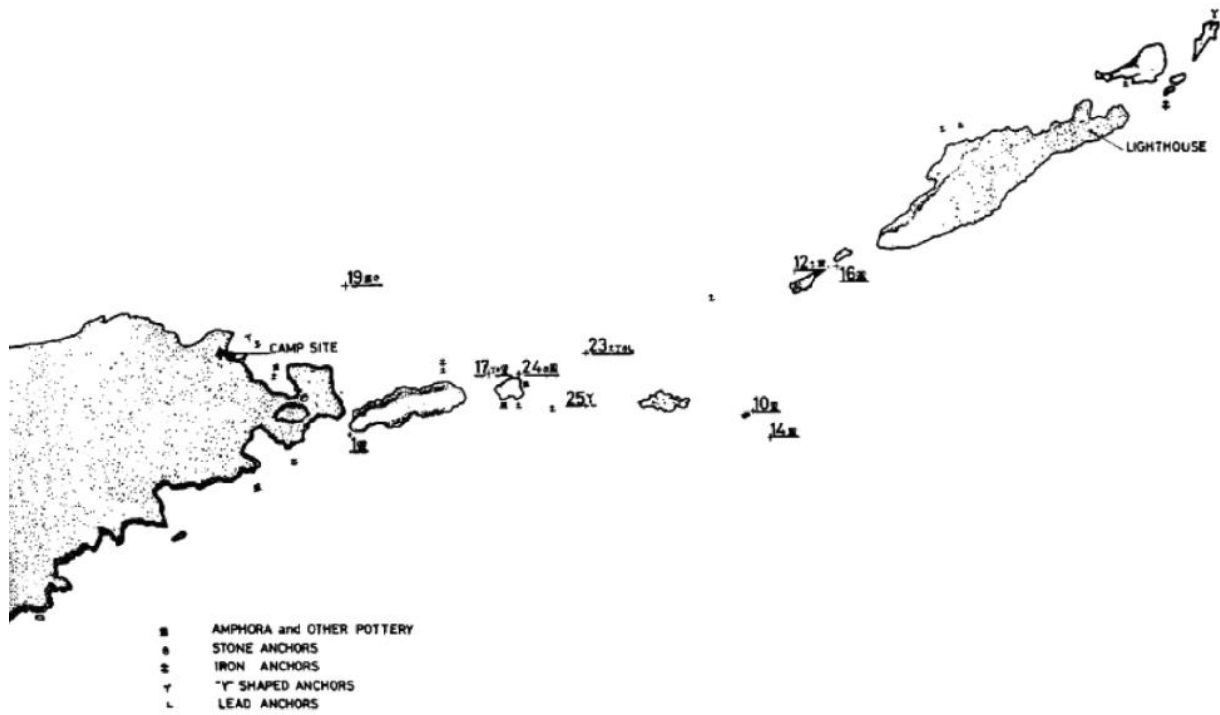


Fig. 6 Sites identified during the 1960 expedition at Cape Andreas (Green 1970, Fig. 6)

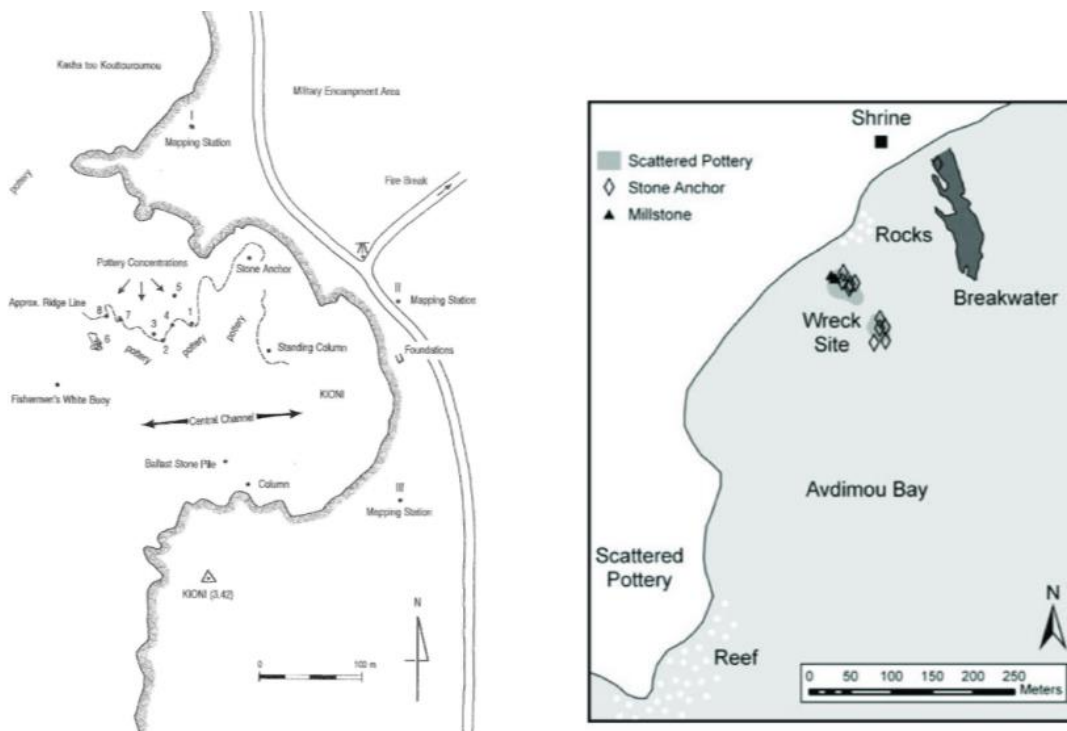


Fig. 7 Artefact's distribution maps at Dhrousha-Kioni (Leonard 1995: Fig. 6) and Avdimou Bay (Leidwanger 2007: Fig. 6)



Fig. 8 Location of the surveyed area at Nissia Coves, Protaras, Cyprus

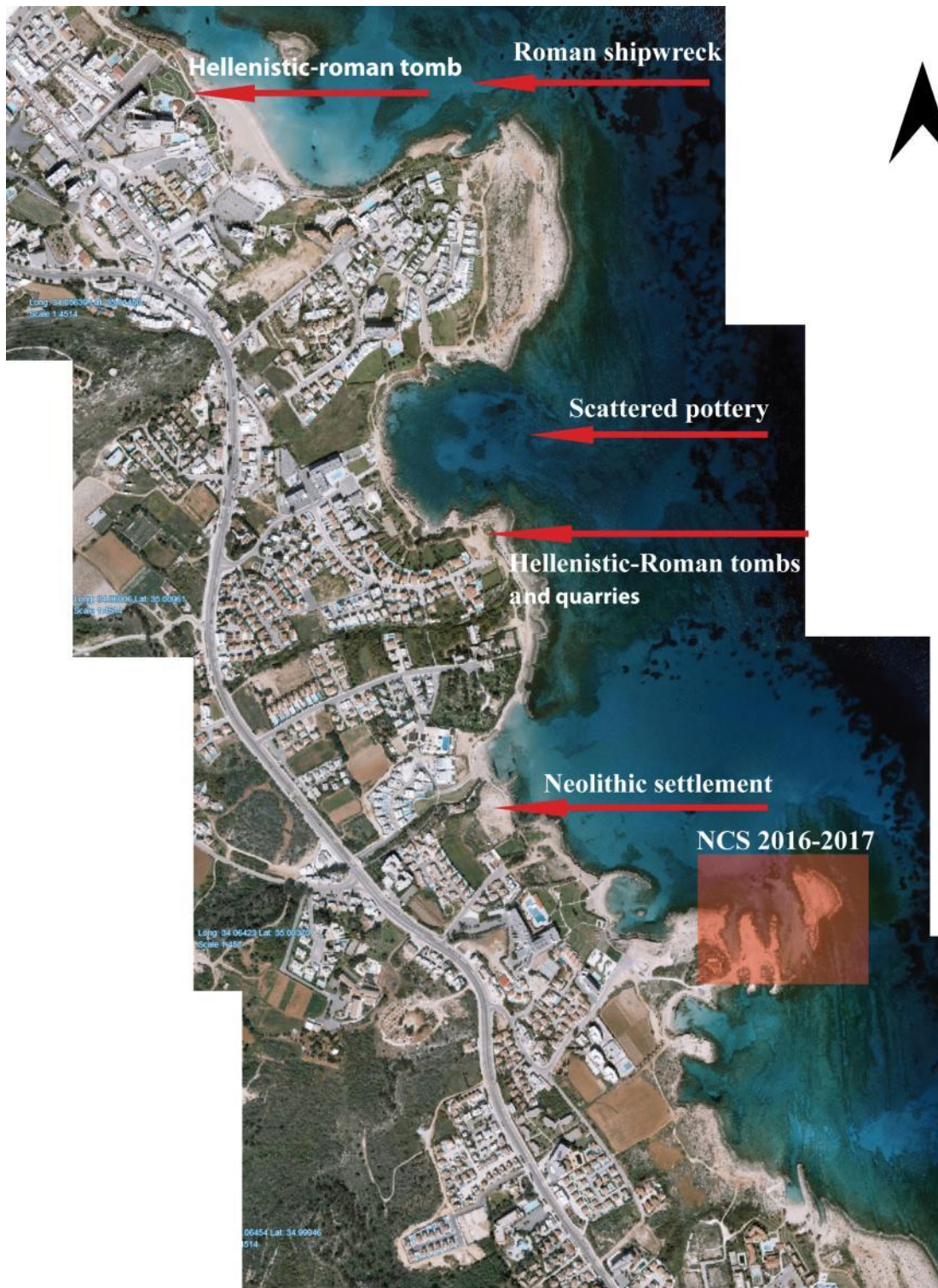


Fig. 9 Main archaeological remains in the area between Nissia Coves and Sykia tou Protara (Fig Tree Bay)

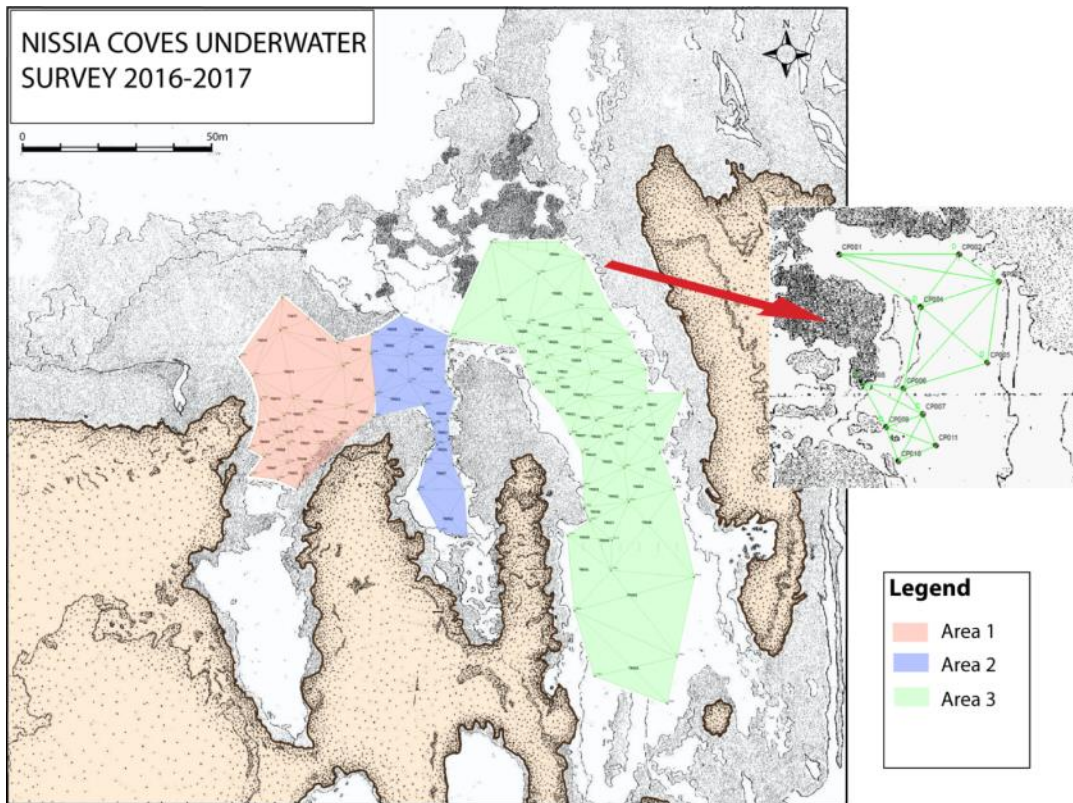


Fig. 10 The grid at Nissia Coves with a detail visualized in Site Recorder

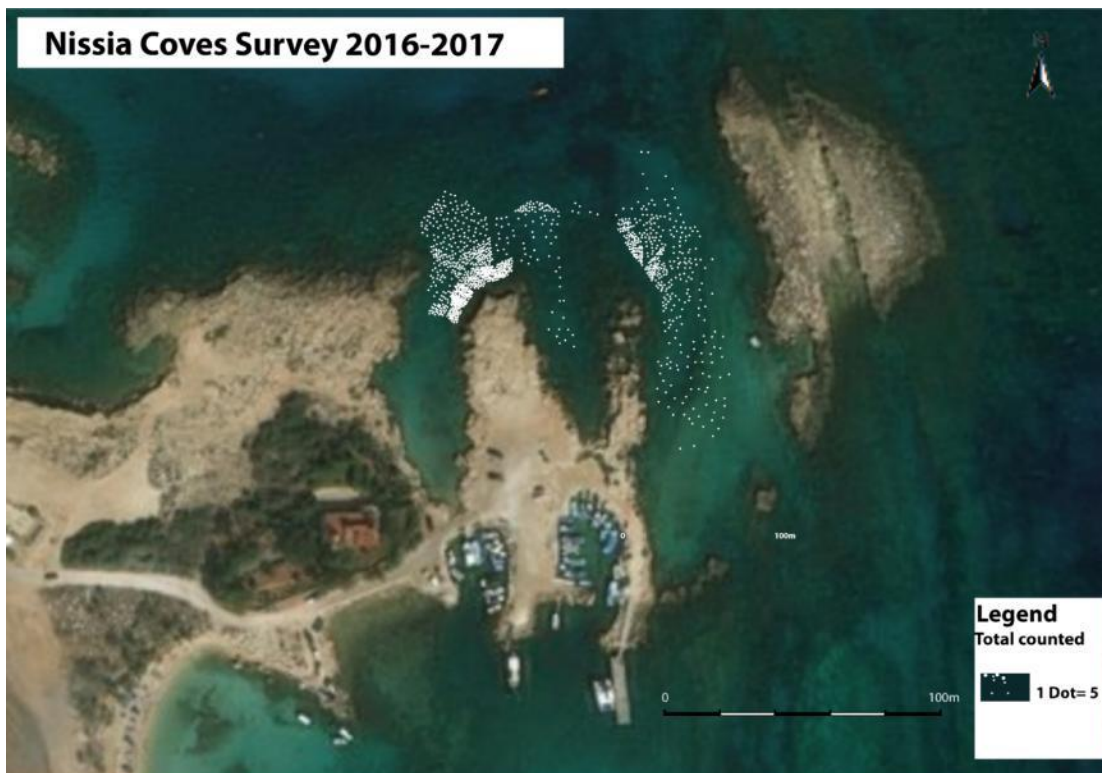


Fig. 11 Distribution map of the total counted artifacts at Nissia Coves



Fig. 12 Stone anchors at Nissia Coves

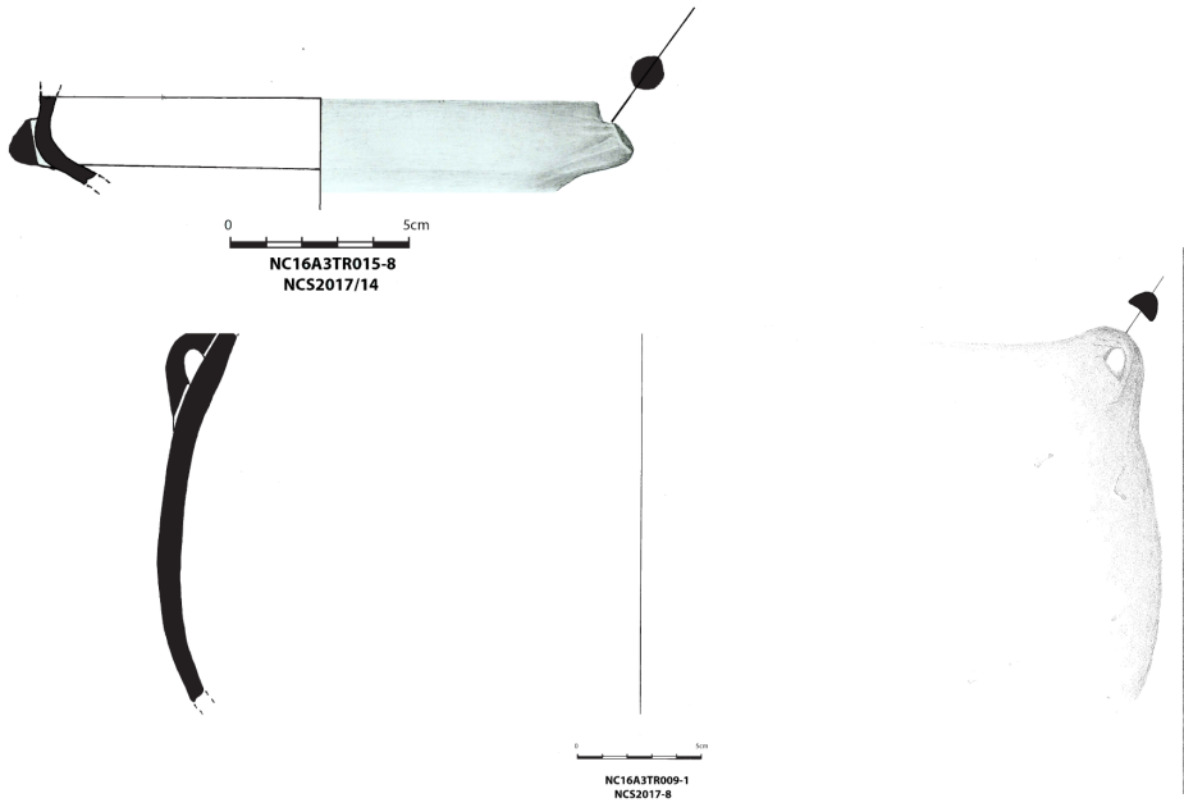


Fig. 13 Bronze Age artefacts sampled during the survey at Nissia Coves

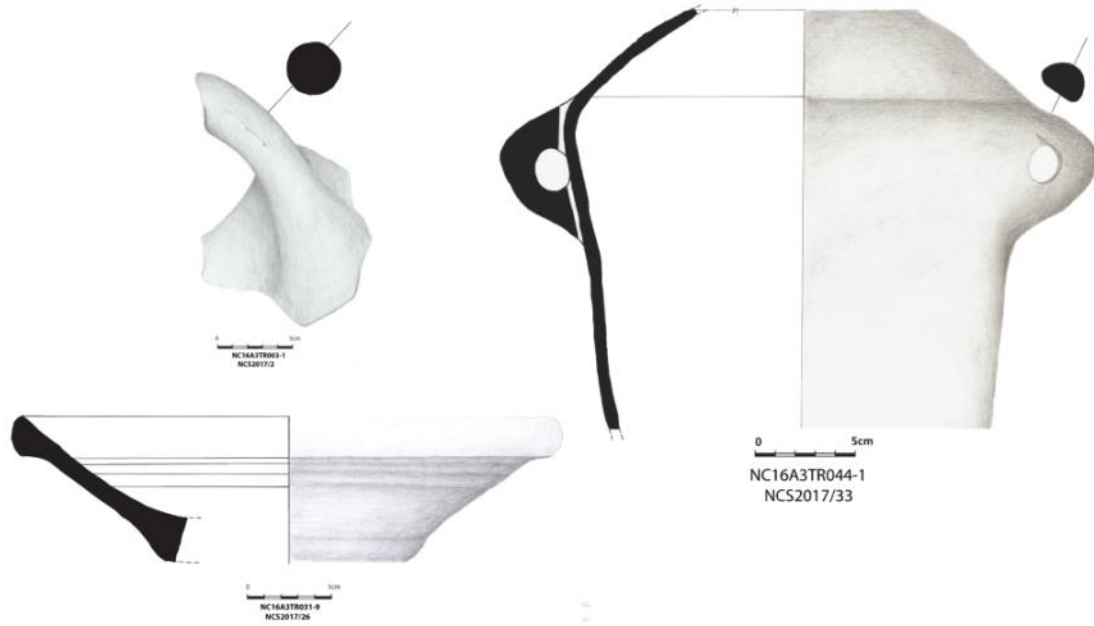


Fig. 14 Selection of sampled artefacts dated to the Cypro-Archaic -Hellenistic period



Fig. 15 Selection of amphora fragments dated to the Hellenistic-Late Roman period

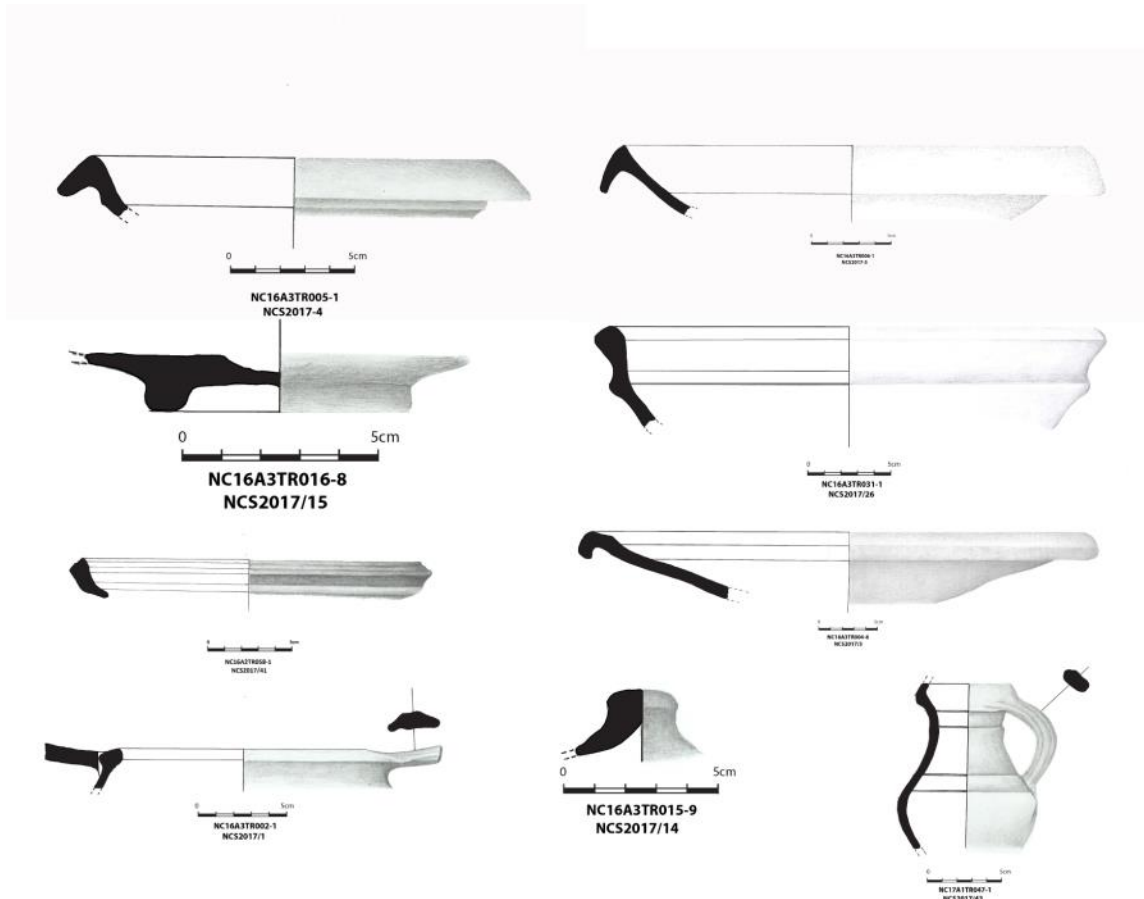


Fig. 16 Selection of non-transport vessels dated to the Roman-Late Roman period

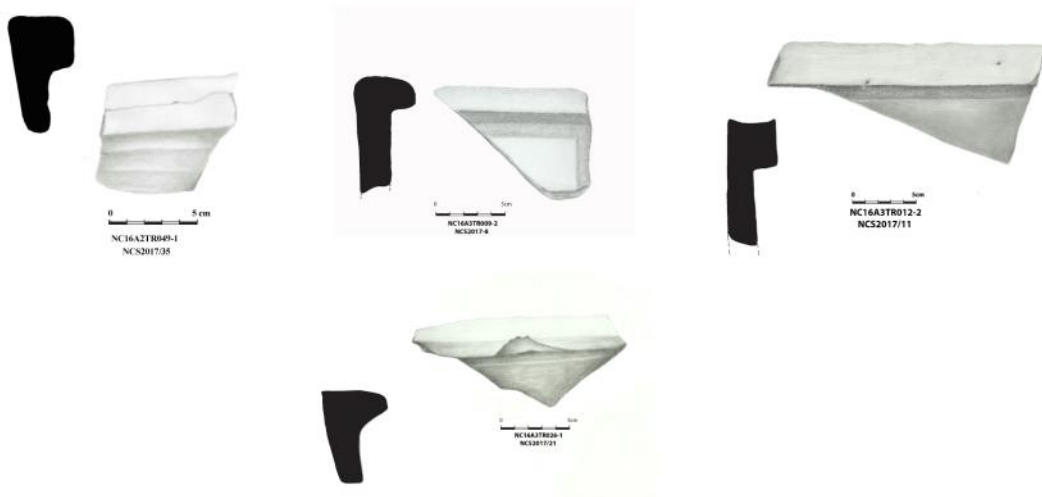


Fig. 17 Selection of roof tiles sampled during the survey at Nissia Coves

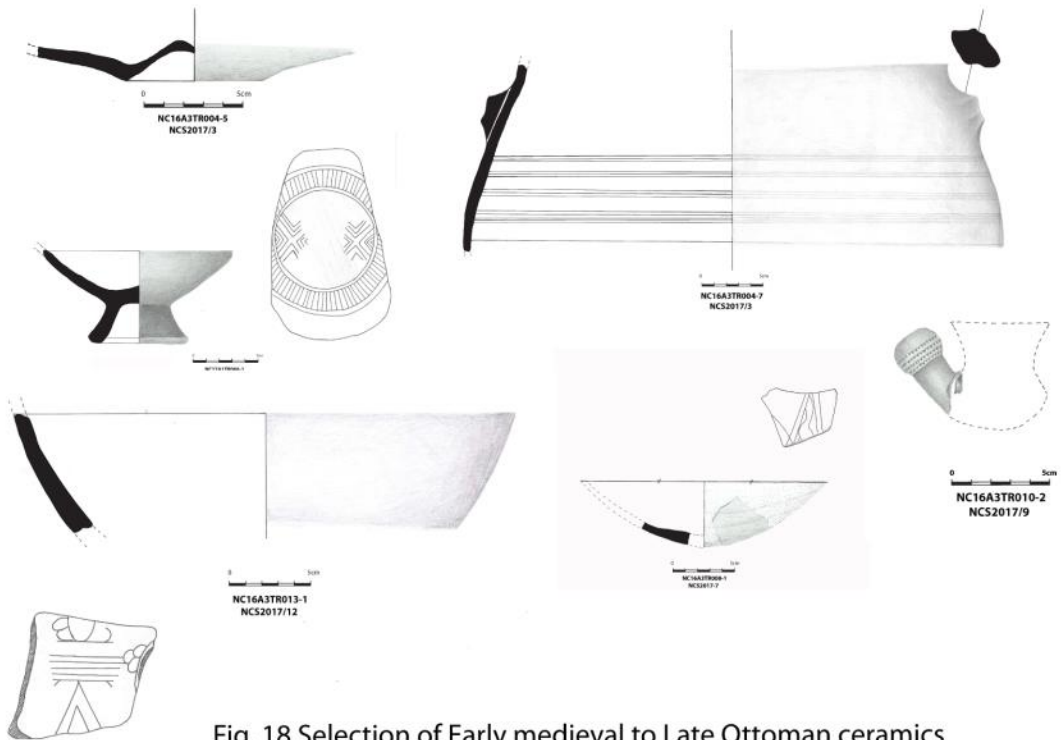


Fig. 18 Selection of Early medieval to Late Ottoman ceramics

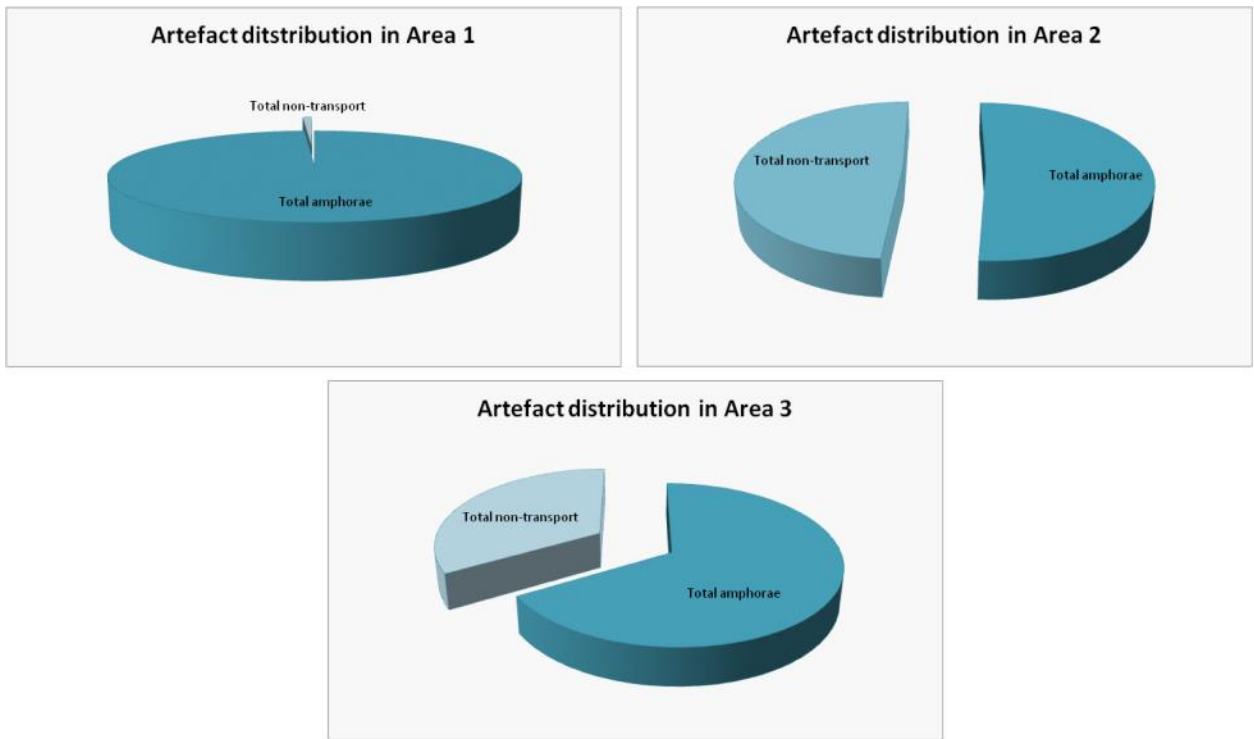


Fig. 19 Artefact's distribution chart

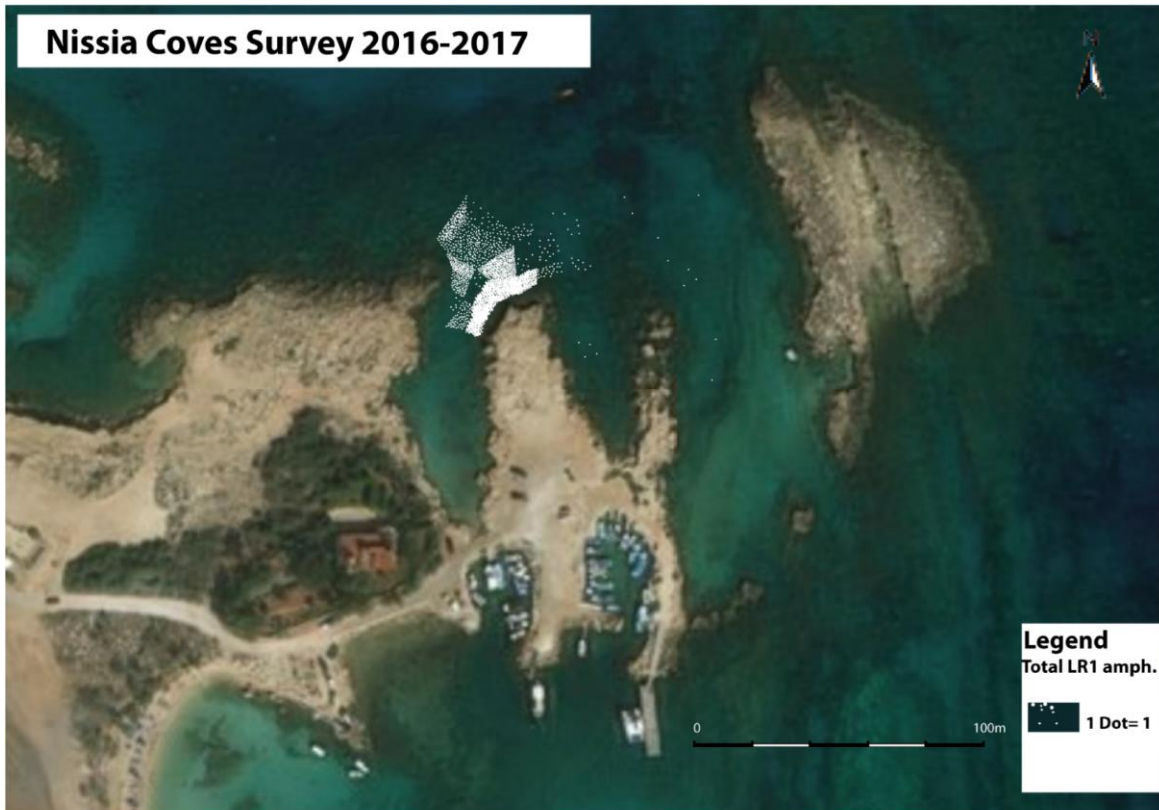


Fig. 20 Distribution map of the total counted Late Roman 1 amphorae at Nissia Coves

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