Episkopi Bay and Beyond: Recent Collaborative Fieldwork and New Prospects on Cyprus

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Over three decades ago, the Institute of Nautical Archaeology had quite a different appearance, despite some familiar faces. The early 1970s saw the newly-founded American Institute of Nautical Archaeology establish headquarters for its Mediterranean operations on the island of Cyprus. The Kyrenia ship, recently excavated off the island's northern coast, was then still in the early stages of research by INA Founder Dr. Michael Katzev, while another INA Founder, Dr. George Bass, resided not far away outside the capital at Nicosia. Unfortunately, the outbreak of war with Turkey and the occupation of the island in 1974 changed the situation markedly. Dr. Katzev and his team, despite these difficult political circumstances, managed to press forward with the restoration and study of their seminal wreck. Their decades of ground-breaking work continue to contribute immensely across a variety of disciplines, and have led to such innovative approaches as the ongoing *Kyrenia II* experiments. However, the future of INA fieldwork, and eventually an extensive research facility, would soon reside in Turkey.

The first efforts of the Episkopi Bay Survey in 2003 marked the return of active underwater INA fieldwork to the island, which remains a hotbed of archaeology. Throughout the three field seasons now completed, the magnitude and scope of INA's surveys have gradually expanded. The arrival of RPM Nautical Foundation in late July brought remote sensing from their research vessel *Hercules*, an exciting new technological aspect of the survey.

Joining in these efforts is the newly established Cyprus Foundation for the Protection of Underwater Cultural Heritage (THETIS). Based in Limassol, this non-profit organization is dedicated to fostering awareness and dialogue within the community regarding preservation of the Cyprus' submerged maritime heritage. Through the generous support of the THETIS Foundation, the 2005 INA survey was able to draw together an international team of archaeologists and students from the United States, the United Kingdom, Ireland, Canada, and Australia.

The summer of 2005 also inaugurated new collaboration with the Cyprus Underwater Project under the direction of Duncan S. Howitt-Marshall and the aegis of the University of Southampton's Centre for Maritime Archaeology. This project, also sponsored by the THETIS Foundation, has achieved significant success since 2002 off the west and southwest coasts.

The results discussed below are the first fruits of collaboration among these partners.

The 2005 Episkopi Bay Survey Season

Avdimou Bay

The team resumed brief investigations of a Late Roman shipwreck in the shallow waters of Avdimou Bay west of Kourion (Figs. 1 and 2). General scatters of pottery lay onshore, especially on the western headland, where

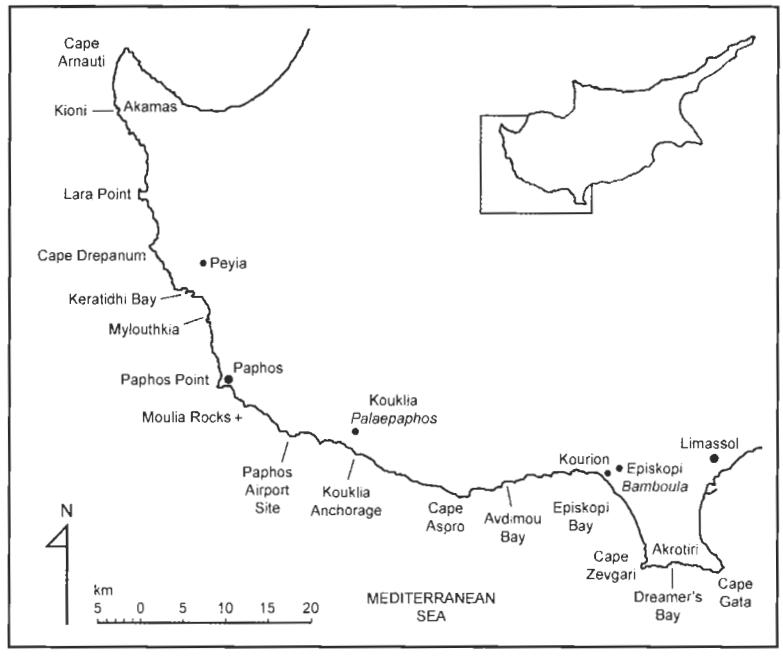


Fig. 1. *Map of southwest Cyprus showing locations of work. Map: J. Leidwanger*

Fig. 2. *Aerial view of Avdimou Bay from west. Photo: J. Leidwanger.*

amphora fragments perhaps mark the site of some past commercial activity. Two stone anchors were added to the nine recorded in 2004, as sands shifted by winter storms variously reveal and conceal details of a seabed that may still have additional anchors lying undetected.

A brief follow-up survey of the wreck assemblage near the center of the inlet yielded several new subtypes of Gaza amphoras from Palestine, confirming the previously suggested date in the 5th or 6th century AD. The keen eyes of former Nautical Archaeology Program student Toby Jones noticed that three overgrown rocks were actually partial ancient millstones (Fig. 3). Of course, these simple devices changed little over time. The compound round and conical type recorded here (*meta*) was in use on animal-powered grain mills from at least the early Hellenistic era into late antiquity. If they are contemporary and form part of the assemblage in which they are mixed, they presumably served as ballast or supplemented the primary cargo of wine. A detailed report on this wreck is forthcoming in *Enalia*, the journal of the Hellenic Institute of Marine Archaeology (see Leidwanger forthcoming).

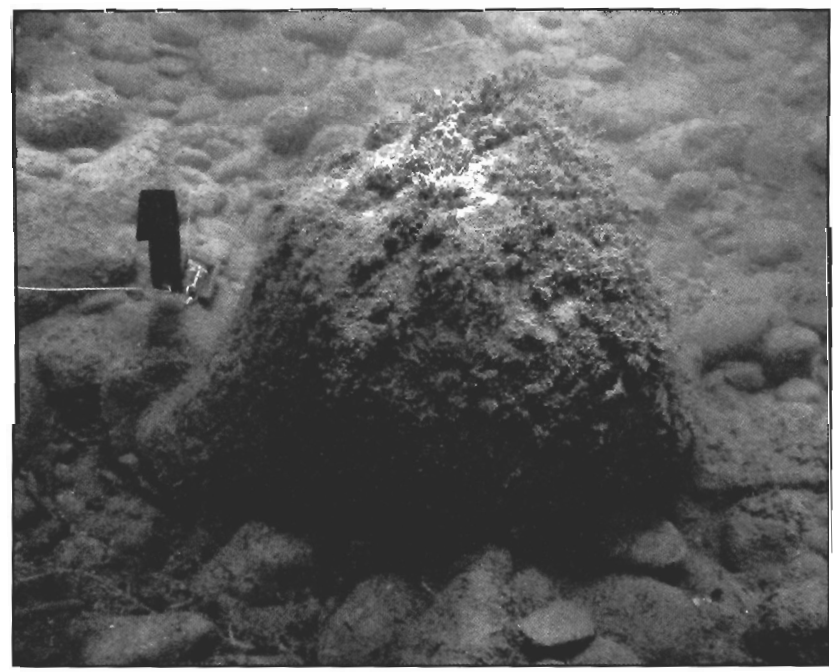
Dreamer's Bay

For the majority of two weeks, the team was able to concentrate efforts on Dreamer's Bay, a small south-facing inlet on the southern coast of the Akrotiri Peninsula (Figs. 1 and 4). A portion of the site was preliminarily surveyed during 2004, when visual inspection here yielded substantial amounts of late antique pottery. Surface sherds at Akrotiri-*Vounari tou Kambiou*, the corresponding site onshore, clearly indicate a strong Roman presence here with hints of occupation at least a half-millennium earlier (the Late Classical or Early Hellenistic era). J.R. Leonard and S. Demesticha have probably rightly linked this unnamed site with the mysterious "Kourias" mentioned by the Augustan geographer Strabo (Leonard and Demesticha 2004).

Since the site of *Vounari tou Kambiou* is unexcavated, it is difficult to judge its size and character. A number of what appear to be storage galleries can be found on the headland to the west, while cemeteries and foundations for additional structures span the cliffs here and to the north. There can be little doubt, however, that the port town maintained contacts by sea with other coasts along the island and beyond. The brief effort in 2004 had already revealed an assemblage of eight stone anchors in approximately 10 meters of water, along with several concentrations of Early Byzantine transport amphoras and roof tiles which leave little doubt as to the most intense period of maritime commerce.

This past summer, the team initiated mapping at an intriguing stone construction in the northwest sector of the bay. Though in places 1 meter or more of vegetation obscured the structure, it is certainly the wall of an ancient

Fig. 3. *Millstone from Avdimou Bay. Photo: T. Jones*



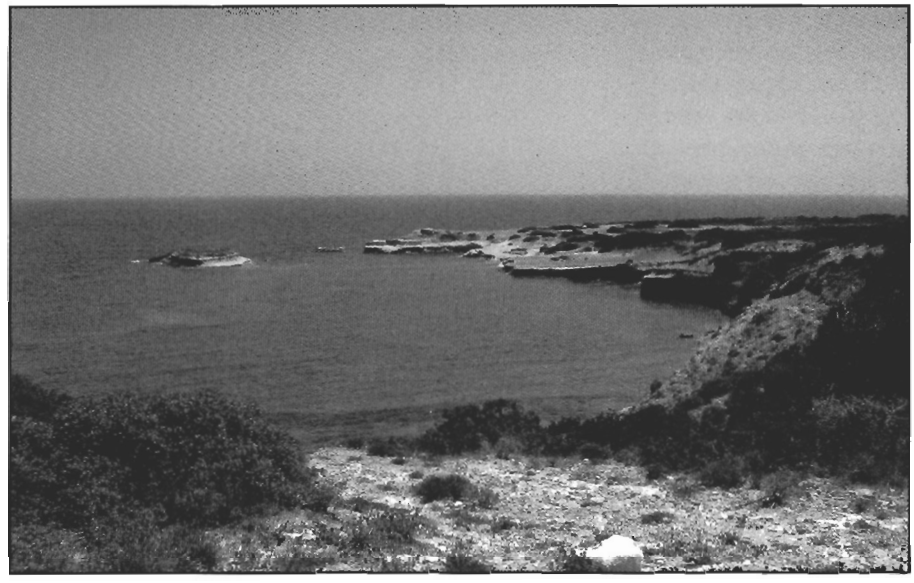


Fig. 4. *Western part of Dreamer's Bay looking west. Photo: J. Leidwanger*

harbor (Fig. 5). Its preserved length is over 140 meters, but the displacement of ashlars over the centuries has made the width difficult to gauge. Currently the mound reaches over 30 meters wide near its seaward end, confirming that the engineering endeavor was an ambitious one. A secondary mound just outside the northwestern terminus of the main wall may represent another feature of the port's quay. Among the other visible architectural elements are a single short pillar still protruding upright from within the wall (Fig. 6), and a second one lying toppled not far away.

More intensive work in the future should be carried out in the Dreamer's Bay area to determine the harbor's date and construction method, as well as its original dimensions. A closer look at the local geomorphology will also be vital to ascertaining the extent of change in the ancient coastline and thus the port's orientation. A subsidence of perhaps 2 meters over the past two millennia would move the ancient shoreline considerably east and create a more naturally protected shelter enhanced by this harbor engineering.

Episkopi Bay Remote Sensing

Following a successful endeavor by the Cyprus Underwater Project in the Paphos area during April (see below), a campaign of systematic remote sensing was undertaken in Episkopi Bay, the first effort of its kind along this southern stretch of the Cypriot coastline. The predominant winds from the west and south would have complicated any mariner's attempt to depart from ports at Kourion or Episkopi *Bamboula* (Fig. 1). Moreover, the seabed of sand and sediment here provides an excellent environment for the preservation and detection of the low mounds typically associated with ancient shipwrecks.

Thanks to the expertise of RPM Nautical Foundation, approximately 45

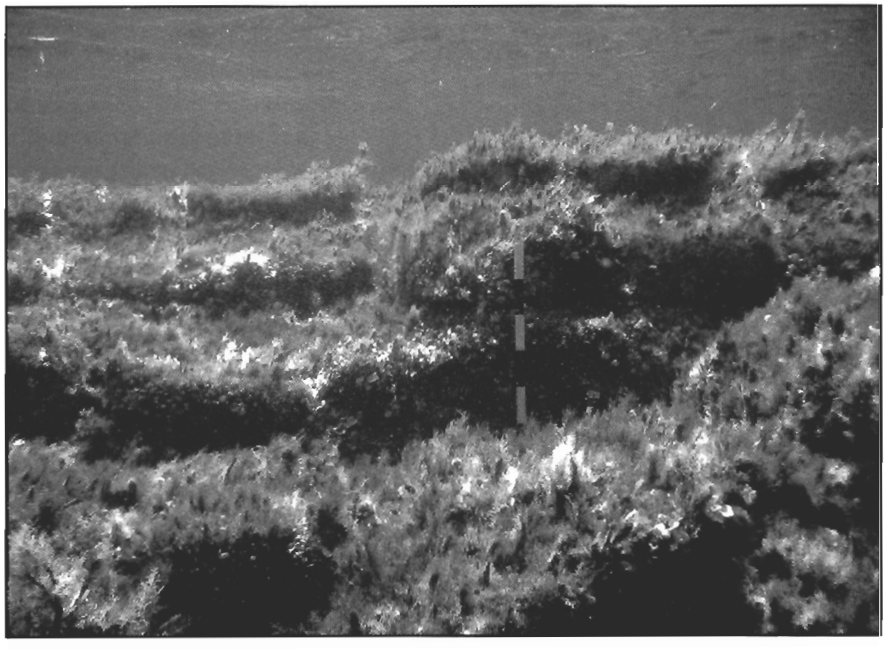


Fig. 5. *Underwater construction at Dreamer's Bay. Photo: T. Nowak*

Fig. 6. *Standing pillar in the construction at Dreamer's Bay. Photo: T. Nowak*

square kilometers of the seabed off Kourion and Akrotiri were surveyed with multibeam sonar. Two weeks' work with their R/V *Hercules* resulted in two sets of lengthy 12-kilometer lanes, one group running from Kourion to Cape Aspro in the west, and the second working from Kourion south to Cape Zevgari, at the southwest tip of the Akrotiri Peninsula. The *Hercules* crew recorded a total of 25 targets ranging from 29 to 92 meters deep. The 2006 season will therefore begin with dive surveys on a cluster of promising hits at depths up to approximately 40 meters. The remaining 14 targets lie beyond safe diving depths, and await inspection with an ROV.

The CMA/INA Collaborative Project

Background on the CMA Western Cyprus Underwater Project, 2002-Present

The rich historical potential of the island's western coastline has naturally drawn the attention of a few important surveys in the past, notably Cathy Giangrande's 1983-1984 project with the London Underwater Research Group (Giangrande et al. 1987), and J.R. Leonard's Cyprus Coastal Survey (Leonard 1995a). Generally speaking, however, the scale of maritime archaeological endeavors here, like elsewhere on the island, has still been rather limited. Thus, in 2002, the Western Cyprus Underwater Project was conceived by a small group of graduate students from Southampton University's Centre for Maritime Archaeology (CMA). With funding from the Joan du Plat Taylor Award, courtesy of the Nautical Archaeology Society, and permission for non-intrusive survey from the Department of Antiquities, the team embarked on a low-tech, diver-deployed expedition to explore six shallow water sites along a 10-kilometer stretch of coastline north of Paphos: Keratidhi Bay, two areas in the vicinity of Maniki Bay, two sites off Cape Drepanum, and South Lara Point (Fig. 1). Since 2002, 18 CMA student archaeologists have had the opportunity to hone an array of skills here, including underwater search and survey methods, position fixing, photography, and illustration.

Under the guidance of CMA Director Dr. Jon Adams, the team focused its 2002 season (three weeks in May-June) on re-assessing a limited stretch of coastline previously surveyed as part of Giangrande's 1983-1984 project (see Howitt-Marshall 2003). This first endeavor was crucial to establishing a primary research design that would endure through the project's successive seasons, namely incorporating the relationship between extant submerged and terrestrial archaeological records. For instance, in the case of Keratidhi, the direct correlation between two warehouses onshore and ceramic artifacts found in the adjacent bay was striking. Giangrande's local ethnographic research had discovered that the structures had been associated with the carob trade of the 19th-century. Ceramic material found submerged in the bay was largely consistent with the heavily glazed style of pottery typical of 19th-century. At Cape Drepanum, the association between the Hellenistic, Roman, and Early Byzantine settlements and extant material underwater was again salient, since here the team located only material conspicuously from these three periods, although without further analysis this is hard to substantiate.

Following this initial success, the CMA continued in 2004 its reanalysis of the changing coastal landscapes at Keratidhi and Maniki. It also incorporated a new area offshore from the Pre-Pottery Neolithic B site at Mylouthkia (Fig. 7), where the abundant terrestrial and submerged sites again synthesized a critical insight into the changing physical and human environment of the west coast of Cyprus (see Howitt-Marshall forthcoming).

Fig. 7. *Queen's Bay (Mylouthkia) looking southwest. Photo: D.S. Howitt-Marshall*

A significant shift in the project dynamic in April 2005, made possible by generous funding from the THETIS Foundation, incorporated an array of remote sensing not used for underwater archaeological investigation off Cyprus in over four decades. A four-member team from the UK's National Oceanography Centre, Southampton University CMA, and Cambridge University embarked on a two-week sidescan sonar survey of a 10-kilometer stretch of coastline south of Paphos harbor. Operating in depths from 50 to 200 meters far offshore from Paphos to Zephyros Point, the team searched for potential wreck sites in an area known to have witnessed intense sea traffic (Fig. 8). At the treacherous Moulia Rocks, for instance, a previous diving survey of the famous "Cave of Amphoras," conducted by R. Hohlfelder and C. Brandon, recorded an abundance of pottery sherds littering the seabed around the Moulia Rocks (Hohlfelder 1995).

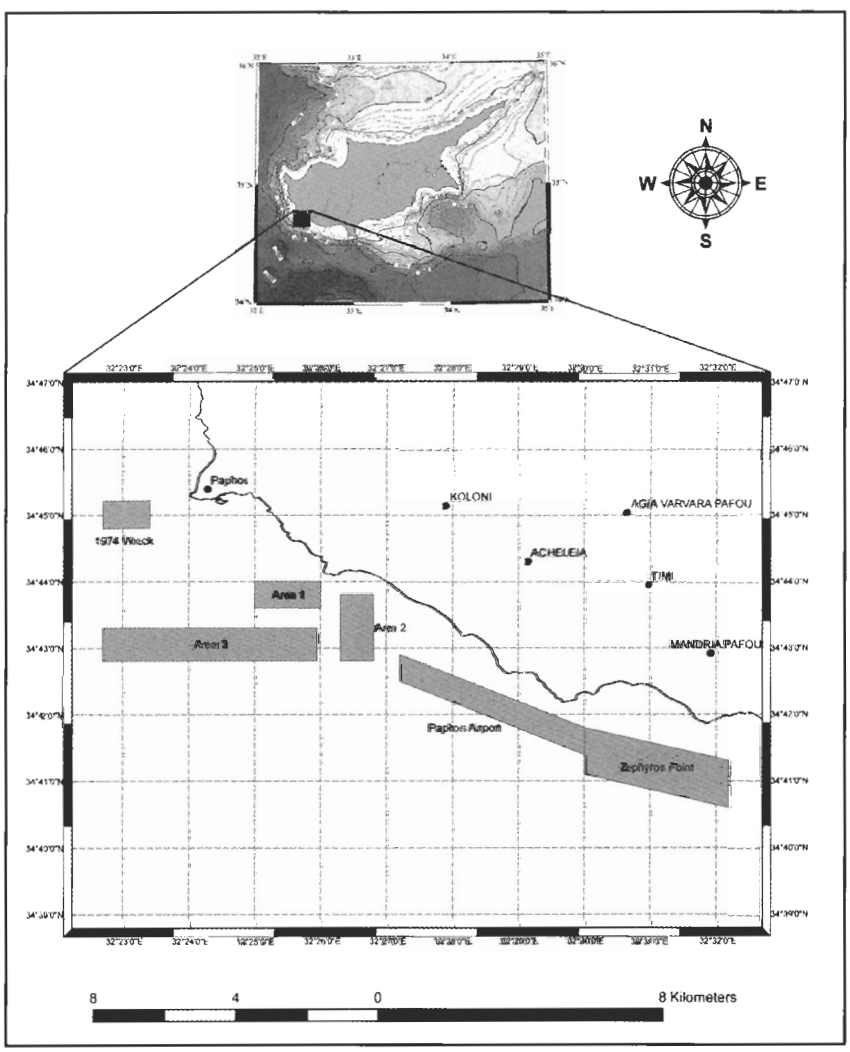


Fig. 8. *Sidescan sonar search areas from the 2005 field season. Map: Fraser Sturt*

Coupled with that objective was a geophysical survey of the seabed in collaboration with the Cyprus Geological Survey. The dual-frequency sonar facilitated a high-resolution topography of the seabed, a vital base map for future geological and archaeological investigations aimed at neo-tectonics and paleo-coastal research. Additionally, surveying a site 2 nautical miles off Paphos yielded a significant metal scatter that may be the remains of the Turkish destroyer *TCS Koçetepe*, sunk during the 1974 invasion. At 65 to 90 meters of depth, however, the scatter was far beyond the range of the diving team, and thus the find was not groundtruthed.

In addition to this remote sensing and geophysical prospection, a joint CMA/INA team in 2005 conducted two diver-deployed surveys offshore Paphos International Airport and Kouklia *Palaepaphos* in collaboration with the THETIS Foundation.

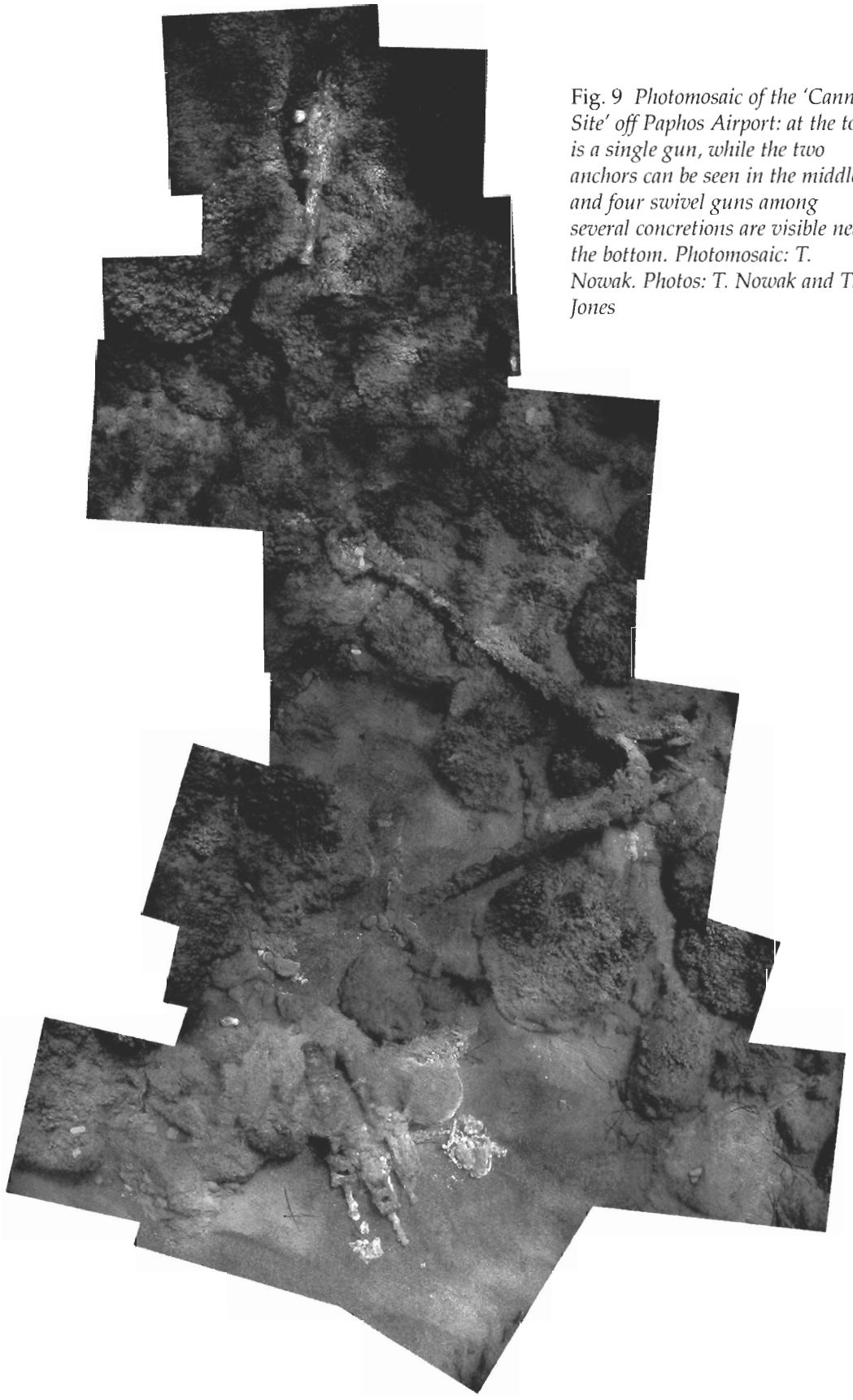


Fig. 9 *Photomosaic of the 'Cannon Site' off Paphos Airport: at the top is a single gun, while the two anchors can be seen in the middle, and four swivel guns among several concretions are visible near the bottom. Photomosaic: T. Nowak. Photos: T. Nowak and T. Jones*

Fig. 10. *Swivel guns from the Paphos Airport site, with breech block visible in front. Photo: T. Jones*

Paphos Airport – 'Cannon Site'

In early May 2005, Dr. Filios Sazeides showed to the THETIS Foundation two large anchors and a cannon offshore Paphos International Airport (Fig. 1). By late June, the joint CMA/INA team initiated non-destructive survey and local recording with a photomosaic. Located only about 200 meters offshore in 8 meters of water, the site immediately proved more extensive than reported, with four swivel guns, breech blocks, and several ferrous concretions possibly containing a pistol and a sword hilt, all clearly visible in the fine sandy patch of seabed (Fig. 9). The original cannon proved to be a bronze swivel gun at one end of the site, while the four new smaller swivel guns, made of iron, were found clustered together toward the opposite end of the recorded assemblage (Fig. 10). Between were two iron anchors which were missing their stocks, although one had its grapnels protruding conspicuously from the seabed. Tentative observations regarding the guns suggest a date around the earlier half of the 16th-century.

To date, the survey has revealed the potential for locating further archaeological material under the seabed here. Future work should thus aim to measure and quantify the true extent of the site either with the use of a metal detector, or more intrusively through test excavation with an airlift or water dredge. Continued monitoring of the site is essential to protecting the artifacts from illicit removal.

Kouklia Palaepaphos *Anchorage*

When Dr. Sazeides also reported a large assemblage of stone anchors to the THETIS Foundation, the CMA/INA team initiated a diving survey off a small, exposed beach southeast of the settlement at Kouklia *Palaepaphos*, between Kourion and Paphos (Figs. 1 and 11). After several dozen stone anchors were located during the first two days, it was apparent that the concentration was far greater than anticipated.

The first evidence of settlement at Kouklia *Palaepaphos* comes from the Late Bronze Age. During the 400 years following 1600 BC, there is archaeological evidence of imports from the Near East and Aegean. The site grew in status by 1300 BC, enhanced by the nearby Sanctuary of Aphrodite, a famous religious shrine that continued to draw visitors down into the 4th century AD. Pliny, Ptolemy, Strabo and the author of *Stadiasmos* all report here some element of an anchorage (Leonard 1995b), which the evidence amassed underwater in 2005 supports. Palaepaphos' facility may have served both as a terminus for religious pilgrims and as a point of mercantile trade.

The extensiveness of the site limited the survey team to position-fixing individual stone anchors with a hand-held GPS. Each anchor was also individually measured for height, width, thickness, hole type, size and diameter, along with any other distinguishing features. All anchors were catalogued and photographed with orientation and scale.

To date, 120 stone anchors have been recorded, although others may lie obscured beneath the sand or outside our delimited area. Of these, 24 are composite (with three holes), and 96 are simple one-hole weight anchors. The anchors range in size from 30 centimeters to over 1 meter high, and in shape from crudely carved ovals to carefully crafted trapezoids. One example is particularly significant, since it bears intentionally inscribed swirls on one face (Fig. 12).

The survey has demonstrated that this site is of paramount importance in the understanding of maritime communication networks on Cyprus and in the greater Mediterranean region. Further investigation should establish the true physical extent of the site. Preliminary observations were already made regarding geology, sediment types, and seabed topography. A more comprehensive inquiry into the changing coastal geomorphology and alluvial inundation would highlight issues of site attrition, and may help explain the reason for this anchorage's seemingly unsuitable exposure. The synthesis of information from both terrestrial and underwater records would enable a better understanding of the role of Kouklia *Palaepaphos* and the surrounding region in the wider maritime cultural landscape.

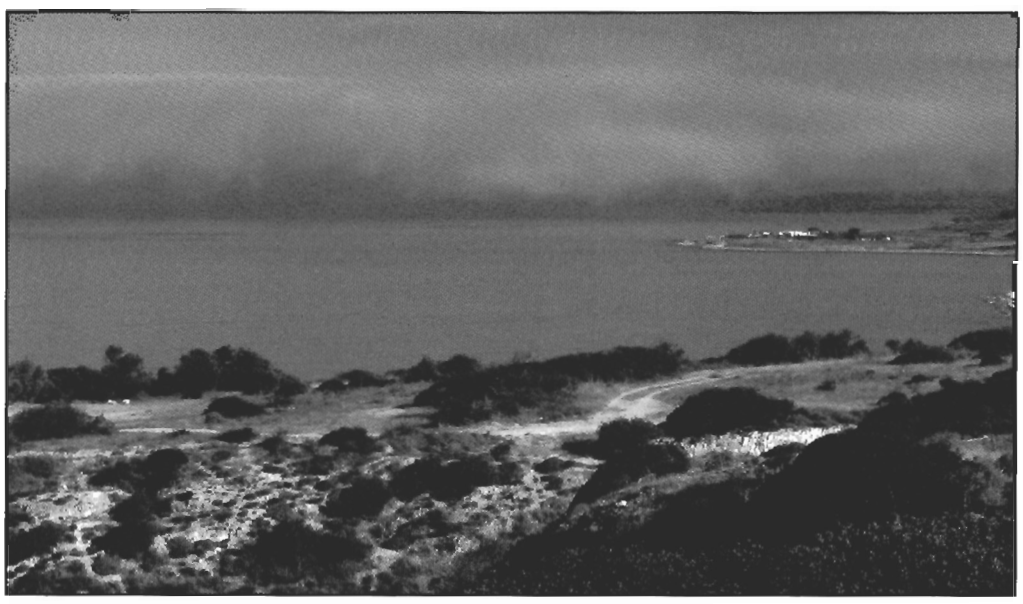
and Beyond...

For INA, the future promises to bring new work at the eastern end of the island, where some of its densest and most productive settlements maintained seaborne contacts with all corners of Cyprus and beyond. The treacherous promontory at Cape Greco, with its rough winds and sharply dropping seabed, provides an ideal setting, especially for remote sensing. Reports from local divers confirm the potential for finding well-preserved shipwrecks here. This new work underscores the steadily increasing pace of Cypriot maritime archaeology since the early days. The dual-authorship of this piece likewise reflects a trend toward more productive cooperative endeavors, in this case a joint CMA/INA team in association with the THETIS Foundation.

In addition to shallow diving work, the incorporation of wider ranges of more readily available remote sensing tools over the past few years promises not only to make shipwreck surveys more effective, but may also help provide answers to a variety of other maritime questions regarding, for instance, reconstruction of the ancient shoreline. One such large-scale multifaceted investigation is set to follow up at the Palaepaphos anchorage, where the largest underwater assemblage of stone anchors thus far recorded off the island attests vividly to the site's immense potential. The rough conditions of the presently exposed stretch of shore demonstrate the essential value of such lines of inquiry which aim to reconstruct the site as it existed in antiquity, and thereby ultimately help understand why the ancients chose to anchor at what today seems an unsuitable location. The already exciting but cursory results will thus be greatly enhanced through a program of remote sensing, coring, bathymetry, and GIS to provide new insight into Palaepaphos' relationship with the sea.

Likewise, the harbor constructions at Dreamer's Bay underscore the necessity of looking beyond merely the largest settlements to understand the island's apparently complex maritime landscape. The considerable proportions of the ashlar wall here represent an immense investment in commercial infrastructure for a port facility that was markedly different from the anchorage further west near Palaepaphos. Future investigations should aim to place the observed elements in the context of the reconstructed ancient coastline and underwater topography. Sonar bathymetry, combined with a better understanding of the localized subsidence, may help elucidate the harbor's original layout, including its

Fig. 11. *Palaepaphos anchorage site looking west toward the promontory. Photo: D.S. Howitt-Marshall*



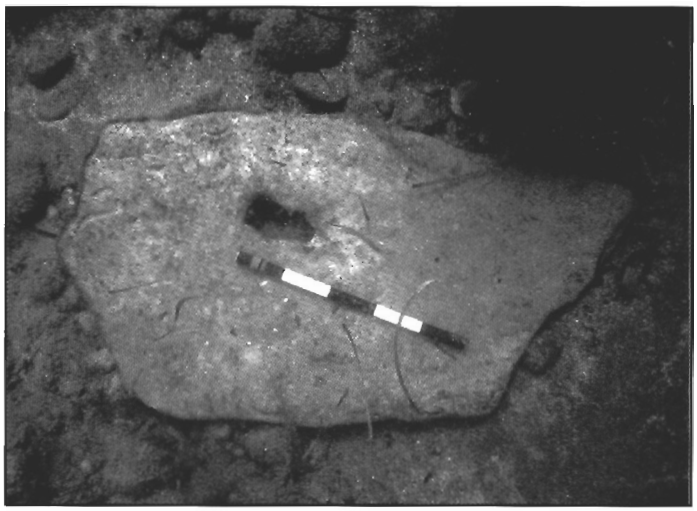


Fig. 12. *Stone anchor from Palaepaphos anchorage with carved swirls adorning one face. Photo: J. Leidwanger*

entrance channel and any potential outlying features.

At the same time, the threat of looting continues. Since the explosion of recreational diving and from the 1990s, the underwater realm has become increasingly accessible, prompting government agencies in the eastern Mediterranean to legislate carefully such developments. The dilemma has grown all the more acute as recreational divers' demand for a scenic site increases pressure on even the most scattered of ancient underwater debris.

The recent establishment of the THETIS Foundation, however, has provided an important step toward the public outreach and education so integral to promoting understanding between the archaeologists and the local diving community, which is a natural steward of submerged cultural heritage. After all, the Paphos Airport and Palaepaphos sites discussed above were found not by archaeologists, but by an eager spear-fisherman. The Kyrenia Ship off Northern Cyprus likewise was reported by sponge-diver Mr. Andreas Cariolou. Cooperation between archaeologists and amateur enthusiasts has been a longstanding tradition fundamental to the development of underwater archaeology in Cyprus, to the efforts of INA in particular, and to the general success of the discipline around the eastern Mediterranean throughout the decades.

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Acknowledgments: The authors would like to express their appreciation to the Department of Antiquities and its staff, including Director Dr. Pavlos Flourentzos, for support of these projects and the development of maritime archaeology on the island in general. Major debts are owed to the THETIS Foundation, and to Mr. Adonis Papadopoulos and Dr. Sophocles Hadjisavvas in particular for their deep dedication and encouragement. Of course, the season could not have been so productive and so exciting without the friendly guidance of Dr. Filios Sazeides, whose love of his country and its heritage is truly inspiring.

JL wishes to acknowledge the generous contributions, resources, and expertise from RPM Nautical Foundation, whose Executive Committee, staff, and crew have been vital to the project. Thanks to Dr. Gisela Walberg (University of Cincinnati) for her confidence and guidance throughout three seasons. The President and staff of INA have never failed to assist from near and far. The labors of the talented survey crew are too numerous to mention, and so one can only say "many, many thanks." Other archaeologists and friends on the island and abroad have made work not only more effective, but also more pleasant: Frank and Anthea Garrod (WSBA Archaeological Society), André Leverton (HQ British Forces Cyprus), Dr. Demetrios Michaelides (University of Cyprus), and Dr. J.R. Leonard (American School of Classical Studies at Athens).

DHM expresses his sincere thanks for the encouragement and support of Cathy Giangrande (Cyprus Underwater Survey 1983-1984), and the advice and guidance of Dr. Jon Adams and Dr. Lucy Blue (CMA, Southampton University). The Joan du Plat Taylor Award from the Nautical Archaeology Society facilitated the 2002 survey, and Dr. Paul Croft and Prof. Eddie Peltenburg (Lemba Archaeological Research Centre) kindly hosted the team on three successive seasons. The hard work and organizational proficiency of Jesse Ransley and Katy Croff in 2002 and 2004 were vital, as were the energy and enthusiasm of all past and present members of the Western Cyprus Underwater Project, to whom special thanks are due.

Suggested Readings

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