ΥΠΟΥΡΓΕΙΟ ΠΟΛΙΤΙΣΜΟΥ ΚΑΙ ΑΘΛΗΤΙΣΜΟΥ
ΤΑΜΕΙΟ ΑΡΧΑΙΟΛΟΓΙΚΩΝ ΠΟΡΩΝ

Βουτιά στα περασμένα

ΕΦΟΡΕΙΑ
ΕΝΑΛΙΩΝ
ΑΡΧΑΙΟΤΗΤΩΝ

ΑΘΗΝΑ 2018

ΒΟΥΤΙΑ ΣΤΑ ΠΕΡΑΣΜΕΝΑ

Η Υποβρύχια Αρχαιολογική Έρευνα, 1976-2014

Συντελεστές Οργάνωσης Ημερίδας

ΓΕΝΙΚΗ ΕΠΙΜΕΛΕΙΑ
ΑΓΓΕΛΙΚΗ Γ. ΣΙΜΩΣΙ
Δρ Αρχαιολόγος
Προϊσταμένη Εφορείας Εναλίων Αρχαιοτήτων

ΟΡΓΑΝΩΣΗ
ΣΤ. ΑΡΓΥΡΗ, Π. ΓΑΛΙΑΤΣΑΤΟΥ
Αρχαιολόγοι της Εφορείας Εναλίων Αρχαιοτήτων

ΜΕ ΤΗΝ ΟΙΚΟΝΟΜΙΚΗ ΥΠΟΣΤΗΡΙΞΗ

ΙΔΡΥΜΑ
ΑΙΚΑΤΕΡΙΝΗΣ
ΛΑΣΚΑΡΙΔΗ

Συντελεστές έκδοσης Πρακτικών

ΓΕΝΙΚΗ ΕΠΟΠΤΕΙΑ
Ελένη Κώτσου

ΥΠΕΥΘΥΝΗ ΕΚΔΟΣΗΣ
Βασιλική Κρεββατά

ΚΑΛΛΙΤΕΧΝΙΚΗ ΕΠΙΜΕΛΕΙΑ
Στέλιος Σκουρλής

Ομάδα εργασίας
Νατάσσα Κοτσάμπαση, Γιώτα Φιλιππίδη

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ΗΜΕΡΙΔΑ
6 Μαρτίου 2015
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ΕΚΔΟΣΗ ΤΟΥ ΤΑΜΕΙΟΥ ΑΡΧΑΙΟΛΟΓΙΚΩΝ ΠΟΡΩΝ ΚΑΙ ΑΠΑΛΛΟΤΡΙΩΣΕΩΝ

Η σύλληψη της ιδέας της πραγματοποίησης μιας Ημερίδας της Εφορείας Εναλίων Αρχαιοτήτων έγινε ύστερα από την επιθυμία που εκφράστηκε από το προσωπικό της και από τη δική μου βούληση για την ανάδειξη του πολυσχιδούς, υπέροχου και μοναδικού έργου της Υπηρεσίας αυτής.

Από το 1983 έως σήμερα, που υπηρέτησα στην Υπηρεσία αυτή, πήρα ό,τι καλύτερο μου έδωσε και πραγματικά **αυτό ήταν τόσο πολύ**, που όσες ζωές και να είχα θα ήθελα να βρίσκομαι στην Εφορεία Εναλίων Αρχαιοτήτων.

Ένα μεγάλο ευχαριστώ αξίζει στο εξειδικευμένο προσωπικό της, που με αυτοθυσία όλα αυτά τα χρόνια συνέβαλε αποτελεσματικά στη λειτουργία της Υπηρεσίας.

Μια "Βουτιά στα Περασμένα" μέσα στις σελίδες του βιβλίου αυτού θα μυήσει όλους του αναγνώστες στα μυστικά του βυθού – του Ελληνικού Βυθού – που είναι το μεγαλύτερο υγρό Μουσείο του Κόσμου.

Θερμές ευχαριστίες οφείλονται στην αντιπρόεδρο του «Ιδρύματος Αικατερίνης Λασκαρίδη», αείμνηστη Μαριλένα Λασκαρίδη, χωρίς την οικονομική υποστήριξη της οποίας η διαξαγωγή της Ημερίδας δεν θα ήταν δυνατή.

Η Προϊσταμένη της Εφορείας Εναλίων Αρχαιοτήτων
Αγγελική Γ. Σίμωσι
Δρ Αρχαιολόγος

ΠΕΡΙΕΧΟΜΕΝΑ

ΕΝΑΛΙΕΣ ΑΡΧΑΙΟΤΗΤΕΣ – ΠΡΟΟΠΤΙΚΕΣ ΑΝΑΔΕΙΞΗΣ

ΣΥΓΧΡΟΝΕΣ ΜΕΘΟΔΟΙ ΣΤΟΝ ΤΟΜΕΑ ΤΗΣ ΥΠΟΒΡΥΧΙΑΣ ΑΡΧΑΙΟΛΟΓΙΚΗΣ ΕΡΕΥΝΑΣ

ΘΑΛΑΣΣΙΟΙ ΔΡΟΜΟΙ, ΝΑΥΑΓΙΑ

RETURN TO ANTIKYTHERA

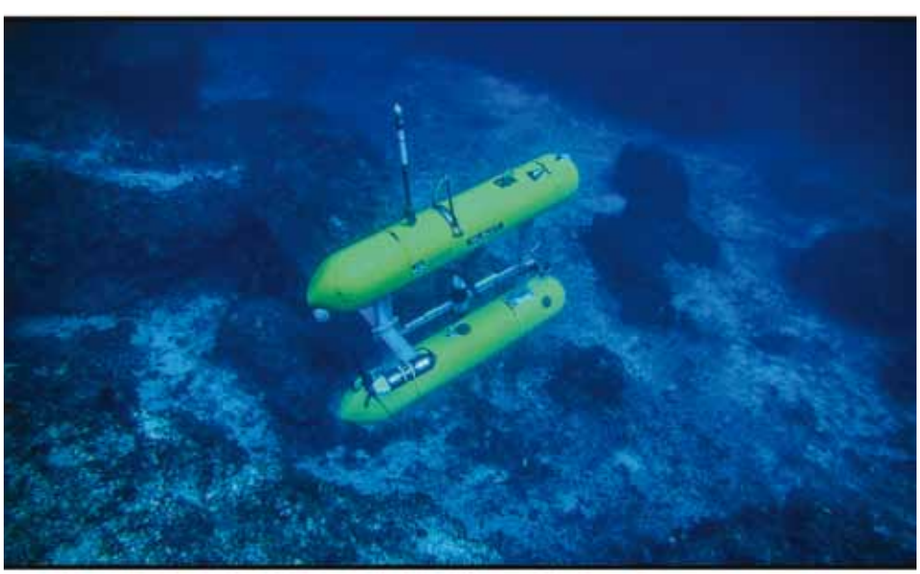
BRENDAN FOLEY - THEOTOKIS THEODOULOU

When sponge divers revealed the Antikythera Shipwreck in 1900, scholars and the public discovered underwater archaeology. More than a century later, with perhaps 1,000 ancient shipwrecks investigated by archaeologists, this first and still most important ancient wreck retains its grip on the imagination.

The site certainly holds many more secrets, and an untold wealth of information. Every visit delivers spectacular finds. In 1976, the Greek government invited Jacques-Yves Cousteau and his team to dive the site. They recovered nearly 200 artifacts from an area of just a couple of square meters, demonstrating that the site remains largely unknown. Since 2012, the EUA in partnership with the Woods Hole Oceanographic Institution and other participants has undertaken a systematic study of the wreck and the entire littoral of Antikythera island. By applying the most advanced technologies and methods available, our goal is to derive as much archaeological knowledge as possible from the site.

The advanced systems applied by our team to surveys at Antikythera include closed circuit rebreathers (CCR) and mixed breathing gases, diver propulsion vehicles (DPV), integrated sidescan and multibeam sonar, an Autonomous Underwater Vehicle (AUV) carrying a variety of sensors, a Remotely Operated Vehicle (ROV), and an experimental Atmospheric Diving System known as Exosuit (figs. 1a, b). These technologies extend human presence and capabilities in the sea, increase safety margins, and allow collection of enormous amounts of information. An additional goal for our team is to demonstrate possibilities for the future of marine research, and underwater archaeology in particular. Details of our experiences with these systems will be published in forthcoming articles.

In 2012 our researchers circumnavigated Antikythera by technical diving with CCR and DPV. In eight operational days, our dive teams averaged three nautical miles of



Figs. 1a-b. The Sirius Autonomous Underwater Vehicle produced precision maps of the wreck site and sea floor, while the experimental Exosuit Atmospheric Diving System suggests a possible future direction for archaeology in water to 300 m depth.

linear visual survey per day, from depths of 42 m. We also surveyed Poretti and Psira islets. Poretti revealed no cultural remains, while Psira holds scant wreckage from a metal-hulled vessel. After receiving local reports that cannons are visible on Nautilus Reef, we investigated that lonely rock.

The east side of Nautilus Reef holds the wreck of H.M.S. NAUTILUS, a fifth-rate 18-gun sloop of war that had a crew of 122 officers and men. The vessel was lost on 5 January 1807, en route from the Dardenelles to Cadiz with important dispatches. A survivor's account and Royal Navy Court Martial documents describe the wrecking event and its aftermath. After striking the rocks on a stormy night, the crew abandoned ship and sought shelter on the reef. Eighteen men were lost immediately, but the ship's whaleboat got away with six men. They rowed the boat to Pori islet, some six miles to the north. After six days, the storm subsided to allow the whaleboat to row to Antikythera for help. The local fishermen were able to rescue 64 survivors, some of whom had resorted to cannibalism in the interim[1]. This harrowing ordeal will be the subject of other publications.

At the time of our inspection, the visible remains of H.M.S. NAUTILUS consisted of iron shot, iron ballast bars, a few scattered concreted metallic objects. The most apparent features are four naval guns. Others likely escaped our brief inspection; Throckmorton reported seven guns from his dive in the 1960s[2]. The guns measure 2.05 m overall, with diameter 0.45 m at the cascabel, 0.35 m at the muzzle, and a bore of approximately 0.12 m in their concreted condition. These measurements correspond to a 6-pounder gun of 6 foot length, the standard armament for British sloops of war in that time[3].

Around Antikythera island itself, the archaeological record is inconsistent. The western coast of the island contains no traces of shipwrecks, although several are known to have occurred within the historic period[4]. The lack of extant wreckage is due to a combination of environmental factors: boulders and rubble eroding from the island's vertical cliffs bury some remains, and large waves and strong currents break up and disperse wrecks.

The eastern coast of the island is more productive archaeologically. Ceramic sherds are scattered over the sea floor near the lighthouse on the southern tip of the island. These probably indicate the area's use as a haven from north winds, when Potamos harbour is exposed to rolling seas. Isolated finds in Potamos harbour demonstrate its long use from the earliest periods. A variety of stone anchors could be dated to the Bronze Age or earlier. Classical and Hellenistic eras are represented by amphora sherds, including a 4th c. BC Chian jar on the south side of the bay. A lead anchor collar and several amphora sherds appear to be Roman. Several iron anchors, more ceramic sherds and an occasional intact jar date from the Byzantine and Ottoman periods era. An interesting and more recent naval artifact on the harbour floor is a sabre still in its scabbard. In the inner small boat harbour, a small (~1.5 m length) 19th century iron gun was perhaps dropped during a salvage attempt. To the north and south of the entrance to Potamos, we observed one lead anchor stock and several iron anchors, testaments to use of the broader area as an anchorage.

Antikythera's most important underwater archaeological site is of course the Shipwreck. It is not an isolated site, but part of a more complex underwater archaeological landscape. Some 300 m north of the shipwreck our team observed a box-like object of copper or bronze, concreted into the sea floor at 42 m depth. Near the same area, divers in 1976 recovered at least one amphora of an indeterminate type and age. About 250 m south of the Antikythera Shipwreck lies an artifact assemblage first observed by Jacques-Yves Cousteau's team in 1953. His colleague, Frederic Dumas, reported "huge, bulky amphoras" and a lead anchor collar and stock. Labeled "Antikythera B", the site has been judged to be as late as 5th c. AD[5].

At depths from 36 to 65 m on Antikythera B, our divers in 2012 observed a lead anchor stock and collar, several amphoras and amphora sherds, ceramic roof tiles, and countless small fragments of metal. The amphoras are Rhodian and Lamboglia 2, two of the types recovered from the Antikythera Shipwreck in 1901[6]. These artifacts place the

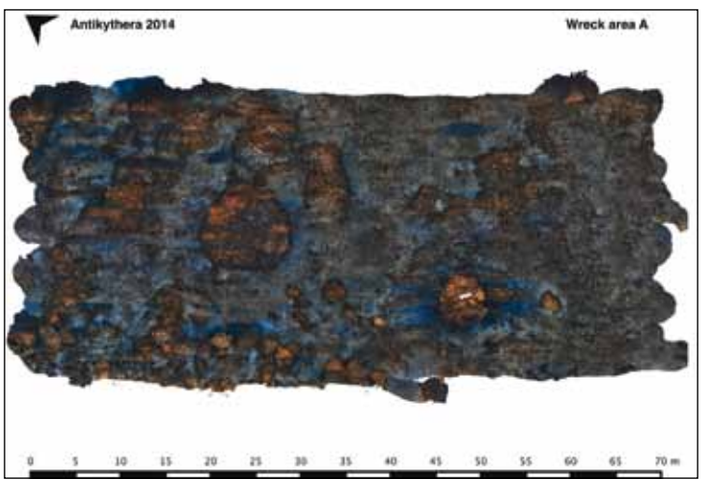
1. Boone 1827. Gosset 1986. Hepper 1994. Hayward 1807. Throckmorton 1969.
2. Throckmorton 1969.
3. Caruana 1997.
4. Emmanouil Lykoudis (1920, 34) wrote of shipwrecks at Antikythera: "This inhospitable seashore is an enormous workshop of wrecks. Each rock, each corner has a tragic story of numerous prizes against the seafarers. Here many years ago a supersized nava (commercial boat) got wrecked. There close by is a steamer, further down at Plakolythra an English frigate (*sic* - probably NAUTILUS) from the beginning of the last century. At Kamareli, which we approached yesterday morning, there are still scattered over the rocks sails, battens and planks of a Chian brig, sunken a few months ago".
5. Dugan 1953. Dumas - Facey 1976. Parker 1992.
6. Weinberg *et al.* 1965. Kaltsas - Vlachogianni - Bouyia 2012.

date of sinking sometime in the first half of the 1st c. BC, contemporary with the Antikythera Shipwreck. We recovered one intact but cracked Lamboglia 2 amphora (artifact registration number BE 2012/23-2), and the lead anchor stock and collar (BE 2012/23-1).

In 2013 during an archaeological and geological survey of the coast of northwest Crete, we dedicated two days of activity to Antikythera island. We deployed an EdgeTech 4600 combination multibeam/side scan sonar to map the entire coast of Antikythera, to a depth exceeding 150 m. Over the Antikythera Shipwreck and Antikythera B, we made several high-resolution passes to map the bathymetry accurately. Divers then made two dives on the Antikythera Shipwreck to collect video footage and assess the site. We recovered one ceramic roof tile (BE 2013/22-5), and observed a lead anchor stock at the northern end of the site. Interpreting these artifacts as possibly indicating the bow (anchor) and stern (roof tile), we hypothesized that the hold of the ship would be located between these areas.

We planned the 2014 field season to test this hypothesis, and to prepare for eventual systematic excavation of the site. The campaign employed sophisticated technologies. Equipment included AUV, ROV, Exosuit, CCR, and a variety of sensors. The Hellenic Navy supplied the support vessel, THETIS, complemented by the yacht GLAROS of the Aikaterini Laskaridis Foundation.

We began by mapping the site in great detail, using the AUV equipped with calibrated stereocameras. We concentrated mapping efforts on an area 70x30 m, delineated by the anchor stock and roof tile on the northern and southern ends respectively, and by the toe of the underwater slope to the west and the vertical shelf break to the east. The resulting map has a resolution of 4 mm per pixel, and the bathymetric plot underlying the photomosaic is a very useful base map for all further investigations of the wreck (figs. 2a, b).



Figs. 2a-b. Stereocamera photomosaic and underlying bathymetry maps produced by the Sirius AUV.

After studying the map and plotting on it some of the artifacts recovered in 1976, the dive team prepared for hand-held metal detection surveys. Storm-force winds and high seas delayed operations for several days. When the weather improved, the divers descended to the wreck and marked several metal detection targets. After plotting these locations on the map, we retrieved seven metallic artifacts. The objects included an aluminum light bulb base (BE 2014/11-3) subsequently identified as an underwater strobe bulb from the 1976 intervention, a piece of galvanized steel pipe (BE 2014/11-8) probably also from 1976, a bronze ring (BE 2014/11-1) and bronze bed ornament (BE 2014/11-2) very similar to those recovered in 1901, a bronze rigging ring with attached bronze nail and wooden remnants (BE 2014/11-5), likely part of the ship's rigging, a small piece of lead foil (BE 2014/11-6), perhaps part of the ship's hull sheathing, and a solid 2.02 m bronze spear weighing 10.28 kg (BE 2014/11-4), certainly a statue element (fig. 3). We also recovered the lead anchor stock (BE 2014/11-7) which we observed in 2013, along with a fragment of lead (BE 2014/11-10) detached from it.

Fig. 3. Bronze spear recovered from the Antikythera Shipwreck.

From the southern extremity of the site map, we recovered a single lagynos (BE 2014/11-9). This jar is identical to several recovered in 1901 and 1976, and brings the lagynoi total to 50 jars[7]. *In situ* the lagynos was upside-down and full of sediment. The sediment was extracted in the laboratory of the EUA, and prepared for phytolith and grain starch analysis. Our divers collected sediment samples from four other points on the wreck site; these samples will also be subjected to phytolith and grain starch analysis.

The presence of so many artifacts in the southern extremity of the stereocamera map challenges our hypothesis of the wreck's layout. The bronze bed adornments may have originated in a high-status cabin near the stern of the vessel. Artifacts recovered in 1976 by the Cousteau team near the same area included gold jewelry, unguentaria and skeletal remains of a young woman. The 1976 team also recovered galley ware from the same area. All of these artifacts could have been located in the stern of the vessel. Perhaps the wreck is oriented with the stern at the northern extremity of the observed artifact assemblage, with bow to the south. If this is true, then the wreck extends over a much larger area than previously believed. The wreckage may be continuous all the way to Antikythera B.

In an attempt to determine the relationship between the Antikythera Shipwreck and Antikythera B, we dived the southern site three times and swam between it and the shipwreck. At Antikythera B, a few meters downslope from the location of the anchor stock and collar recovered in 2013, we discovered remains of a lead pipe approximately 1.5 m long. This is likely part of the ship's water removal system. A few meters away, we identified a concreted mass of approximately 20 amphoras, apparently stacked in their original tiered loading positions (fig. 4). Several other amphoras and many sherds lie nearby on the seafloor; we have not taken an exact count, but there are more than 30 additional jars in small groups or alone. Amidst these artifacts, we observed a very large lead anchor collar approximately one meter in length. The collar was heavily encrusted, and only a small corner was immediately apparent before clearing away marine growth. We did not observe its partner stock; perhaps it is nearby but completely overgrown and invisible. Some meters to the north lies a quadrilateral lead piece, possibly part of a wooden anchor.

We debated at length whether Antikythera B is in fact a second shipwreck contemporary with the Antikythera Shipwreck, or if the Antikythera Shipwreck broke up and was scattered along the underwater slope. Future investigations must precisely map the entire 60x300 m stretch of sea floor encompassing both areas of artifacts. A metal detection survey could help determine if the debris trail is continuous. Systematic excavation of carefully selected grid squares at both locations may yield a conclusive answer.

Scientific analysis of the artifacts from the wreck and Antikythera B could also aid in determining if it is one site or two. Lead isotope analysis of the bilge waterpipe, anchor components and fragments of foil spread throughout the area could determine the source of the lead. Ancient DNA analysis of the contents of ceramic vessels could similarly offer insights. Beyond determining what products were carried and consumed on board the vessel, identical aDNA contents in jars recovered from the two sites may indicate that they are part of the same vessel. Permit applications have been submitted at the time of this writing, and if permission is granted then the analyses can be conducted within weeks. Those results will form the basis of subsequent publications.

7. Kaltsas - Vlachogianni - Bouyia 2012. Papadakis 1976.

Fig. 4. Concentration of amphoras on Antikythera B.

In coming seasons, we will continue mapping the sea floor at the Antikythera Shipwreck and Antikythera B. In addition to stereocamera bathymetry and photomosaicking, we will precisely map the entire area with a ROV-mounted metal detector. These data may help determine if the debris trail between the two areas is continuous, and therefore may indicate that Antikythera B is actually part of the Antikythera Shipwreck itself. Metal detection will also inform our excavation strategy and allow us to focus on any concentrations of metallic "hot spots" indicated in the map. The combination of advanced technologies and methods, employed by a well-trained and interdisciplinary team, will result in a new understanding of this most important ancient shipwreck.

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Περίληψη

BRENDAN FOLEY - ΘΕΟΤΟΚΗΣ ΘΕΟΔΟΥΛΟΥ

ΕΠΙΣΤΡΟΦΗ ΣΤΑ ΑΝΤΙΚΥΘΗΡΑ

Το άρθρο αποτελεί σύντομη παρουσίαση των αποτελεσμάτων των νέων υποβρύχιων ερευνών στη θάλασσα των Αντικυθήρων, οι οποίες ξεκίνησαν το 2012 και συνεχίζονται (2015) από την Εφορεία Εναλίων Αρχαιοτήτων, με την υποστήριξη του αμερικανικού Ωκεανογραφικού Ινστιτούτου Woods Hole.

Η μεικτή ομάδα Ελλήνων και ξένων επιστημόνων με τη χρήση υψηλής καταδυτικής τεχνολογίας περιέπλευσε υποβρυχίως το νησί των Αντικυθήρων το 2012. Με αντίστοιχη υψηλή τεχνολογία απεικόνισης αποτύπωσε την περίμετρο του νησιού και τη θέση του Ναυαγίου των Αντικυθήρων και μια δεύτερη γειτνιάζουσα θέση με κατάλοιπα ναυαγίου το 2013. Την επόμενη χρονιά έγινε λεπτομερής χαρτογράφηση και τρισδιάστατη μοντελοποίηση της περιοχής του ναυαγίου και πραγματοποιήθηκε λεπτομερής επιφανειακή οπτική έρευνα και ανίχνευση μετάλλων στην περιοχή που καταλαμβάνουν τα σπαράγματά του, καθώς και προετοιμασία για την έναρξη ανασκαφικής διερεύνησης. Αυτή κατέστη δυνατή το 2015, επιβεβαιώνοντας τις ενδείξεις για την ύπαρξη τεχνέργων καλυμμένων από το ίζημα του βυθού. Η παρουσίαση ολοκληρώνεται με τον προγραμματισμό των επόμενων στόχων της ερευνητικής ομάδας.