

## Deep discoveries from the seabed of the Pontine Islands: the shipwrecks of Ventotene, Santo Stefano and Zannone

by MANUELA RITONDALE

*Since 2008 the Superintendence of Cultural Heritage of Lazio (on behalf of the Ministry of Culture) has cooperated with AURORA Trust, an international not-for-profit organisation, in the field of underwater archaeology, to carry out an extensive survey of the seabed surrounding the islands of Ventotene, Santo Stefano and Zannone, out to the 150m contour, in order to create an archaeological map of the seabed of the Pontine Islands. Research was conducted using a Klein System 3900 side scan sonar, Klein 3310 sub bottom profiler, and Seaeye Falcon ROV. After three seasons, nine ancient shipwrecks were found, dating back to different phases of the Roman period. All wrecks were well preserved with cargoes of amphorae found still stacked in their original position. The study of these nine wrecks and their cargo is currently on-going. Further, the Superintendence is planning to install cameras on the sites to allow for simultaneous monitoring and accessibility.*

*These important discoveries shed light on many current problems and future considerations for underwater archaeology. Chief among these issues are preservation in situ and accessibility, as highlighted by the UNESCO Convention of 2001. Due to the evolution of technologies available for surveys, deeper sites represent a convenient new frontier for maritime archaeology. Deep water sites are in fact quite often well preserved, scarcely affected by waves or looters. These nine shipwrecks potentially represent a useful and challenging test for the ability of sites to preserve in situ whilst ensuring a full understanding of their context and import.*

*Keywords: underwater archaeology, shipwrecks, trade, surveys, UNESCO Convention*

### Introduction

In recent years underwater archaeology has changed, mainly due to the use of new technologies and the increasing application of sophisticated instrumentation used for marine geophysics, such as side scan sonar, sub bottom profiler, multi-beam, magnetometry and Remote Operated Vehicles (ROV). These instruments and techniques give access to previously unreachable depths which in turn have led to significant new archaeological discoveries and have been essential, in Italy, within the 'Archeomar Project – Register of underwater archaeological sites'. The principal aim of the project, coordinated by the Ministry of Cultural Heritage, was to identify, locate and document all the submerged sites in order to create an archaeological map and a registry of the underwater cultural heritage. The first regions to be investigated since 2004 as part of the 'Archeomar 1 Project', were those in the south of Italy: Campania, Basilicata, Puglia, and Calabria. Since October 2009 the project, called 'Archeomar 2', involved the Regions of Toscana and Lazio; the results will be available shortly on the official website of the project<sup>i</sup>.

Included in the Archeomar Project, are the Pontine Islands, located off the Tyrrhenian coast between Lazio and Campania, which were already the object of a specific deep water research project (Figures 1 and 2). The Superintendency of Cultural Heritage of Lazio (on behalf of the Ministry of Culture) has entered, since 2008, into a partnership with an international organization, the AURORA Trust<sup>ii</sup>. AURORA is involved in the exploration of the seafloor aimed at studying and spreading the marine cultural heritage of the Mediterranean Sea. The main aim of the ongoing project is to carry out an extensive survey of the seabed surrounding the islands of Ventotene, Santo Stefano, Ponza and Zannone, from the 50 to the 150 metre contour.

### Study Area and methodology

The choice of location and depth for the investigation was the result of a careful series of considerations. Deep sites are still relatively

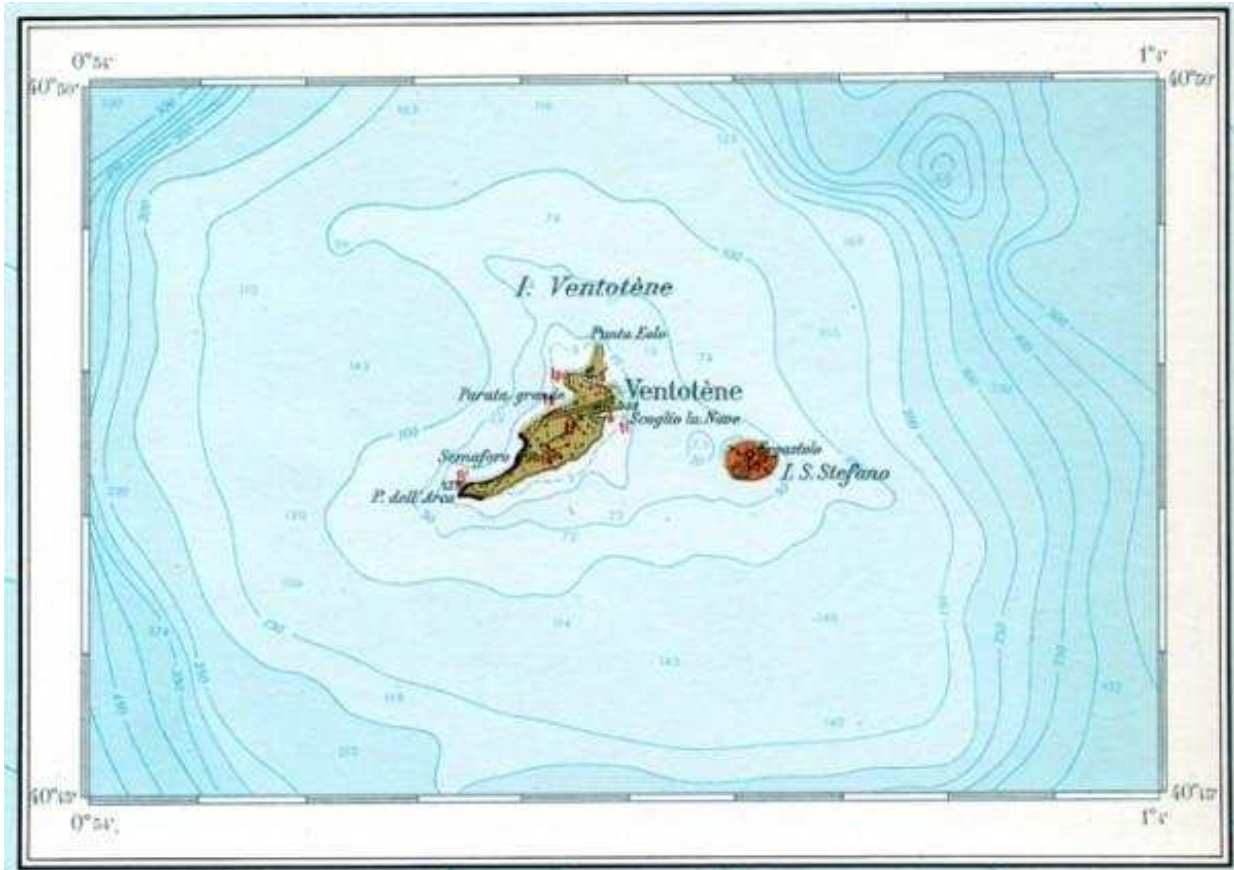


Figure 1 Nautical chart of Pontine Islands. (Image courtesy Aurora Trust 2009).

poorly known because it is only recently that new technologies allow reaching and investigating them. Compared to shallow sites, deeper ones are generally better preserved because they are scarcely affected by wave action and looters. Due to the evolution of technologies available for marine geophysics, such as the use of sonar to map the sea bed, several important deep water research project have been carried out during the last decades. In this context, during the last thirty years, France and America have been the pioneers both experiencing increasingly innovative technologies, although with a rather different methodological approach. In 1977 French carried out a remote sensing survey on the shipwreck of *Bénat 4* (328 metres deep); in 1987 both French and Americans used submarines on archaeological sites (Long 1987: 99-108; McCann and Freed 1994: 93-98). In 1985 the joint French-American expedition carried out by Jean-Louis Michel of IFREMER and Robert Ballard of the Woods Hole Oceanographic Institution in 1985, led to the discovery of the *RMS Titanic* (A detailed overview on the main French projects is in Drap 2012: 111-136). Recent innovative applications of underwater photogrammetry for archaeology and marine biology were discussed at the Digital Heritage International

Congress 2013 held in Marseilles, France, organized by CNRS (French National Center for Scientific Research) in collaboration with Aix-Marseille University, Arts et Métiers ParisTech, CICRP, School of Architecture and INRIA (Chemisky, Long and Garrabou 2013: 97-104).

Besides the main American projects, the archaeological maritime exploration carried out by Robert Ballard between 1989 and 2003 in the site of Skerki Bank (about 80 km NW of Sicily), during which eight ancient shipwrecks were found at a depth of about 800 m, and the archaeological maritime exploration that he has been carried out in the Black Sea between 2000 and 2003 within a long term project developed by the Institute for Exploration (IFE) in collaboration with the University of Pennsylvania, the Massachusetts Institute of Technology and the Institute of Nautical Archaeology (Ward and Ballard 2004:2-13).

In Italy, in addition to the already mentioned 'Archeomar Project', several deep sea archaeological exploration have been carried out in Sicily by the 'Soprintendenza del Mare' covering specific areas in the Egadi, Aeolian and Pelagie Islands, Syracuse and Messina harbours and coastal belts. The

Superintendency has worked in association with two American foundations: the AURORA Trust and the RPM Nautical Foundation.

The sea around Syracuse and around Panarea in the Aeolian Islands, has been investigated by the AURORA Trust along with the RPM Nautical Foundation. There has been an extensive survey in the Egadi Islands, where alongside the discovery of some ancient wrecks were also found bronze rams in the north of the island of Levanzo, suggesting it was the site of the famous battle between the Romans and Carthaginians in 241 BC (Tusa 2009).

The Pontine Islands are a group of islands in the Tyrrhenian Sea, lying off the Gulf of Gaeta, with the ancient names of Pontia (today Ponza), which is the largest island; Palmaria (now Palmarola); Sinonia (now Zannone) to the northwest; and Pandataria (from the Greek Pandoteira, today Ventotene) and Santo Stefano to the southeast (Plin.Nat. 3.6. s. 12; Strabo, 5.3; Mel. 2.7.18). The possibility of finding shipwrecks on the seabed of Pontine Islands was high. There are two main reasons behind this statement. First, navigation in this region is more dangerous due to the presence of headlands and reefs which create an increased risk of sinking. Second, the islands of Ventotene and Ponza are located along some of the main shipping routes of antiquity. Even before the arrival of Romans (De Rossi 1993: 10-25; Gianfrotta 2002: 67-90), the Pontine archipelago had been at the centre of maritime trade due to the presence of obsidian in the nearby island of Palmarola (Camps 1986:37-38). Already inhabited by the Volscians, Ponza, became a Roman military outpost named *Pontia* during the IV century B.C. (Liv. 9.28 ; Liv. XXVII.10; Diod. 19.101); it is possible that all the Pontine Islands would have been used as strategic bases even before the IV century B.C, since after the first treaty with the Carthaginians in the VI century BC. (De Rossi 1993: 10-25; Gianfrotta 2002: 67-90) For several scholars the obsidian trade is an important proof of the existence of prehistoric navigation.

The obsidian of Palmarola seems to have been carried from the island to the continent even before the Neolithic era (Camps 1986: 37-38; Tykot 2002: 618-627). During the Roman Empire, when both Ventotene and Ponza became places of exile for members of the Roman imperial family (De Rossi 1993: 11-16), these Islands were essential waypoints for vessels travelling to and from the port of Rome along almost three main directions: the North African coasts, the island of Sardinia, and the

Gallic Provinces. Thousand of boats must have certainly passed by the Pontine Islands through the centuries. With historical precedence the remains of numerous Roman shipwrecks have been noted in the vicinity of the islands, in particular:

- the shipwreck of Punta dell'Arco (Ventotene), dating back to the first century BC, carrying lead ingots with inscribed names of famous metal dealers from Spain (Gianfrotta 1986: 213-222; Parker 1992, 351 no. 932);
- the so-called shipwreck of 'Secca dei Mattoni' (Ponza) with its cargo of Dressel 1A, Dressel 1B and Lamboglia 2 amphorae, oil amphorae from Brindisi and Campanian pottery (De Rossi 1993a: 95-97; Gianfrotta 1986: 213-222; Bertuzzi 1988: 312-315; Galli 1993: 117-129; Galli 2002: 157-166; Galli – La Russa 2011).
- the shipwreck of 'Le Grotelle', discovered in the seabed between Ventotene and Santo Stefano which was carrying Dressel 1B amphorae, precious furniture, several artefacts in bronze, and plates of bone and ivory, which were part of the typical Roman bed-couch called a *klinai*. This wreck dates back to the middle of the first century BC (De Rossi 1993a: 95-97; Gianfrotta 1986: 213-222; Bertuzzi 1988: 312-315; Galli 1993: 157-164). All of these materials, together with several other sporadic finds, are now collected in the local Museum and recorded in the forthcoming database of the 'Archeomar2 Project'.
- the shipwreck of Cala Rossano (wreckage AD 30 - 60 (c. 1st AD) a partially looted site discovered at a shallow depth, not far from the coast. The ship, excavated in 1990, was carrying amphoras Dressel 8/9 containing fish paste and wine, and amphoras Dressel 20 on some of which several *tituli picti* have been noticed. A tin ingot described IUN(ii) is also present (Parker 1992: 153; Arata 1994: 477-496).

The survey of the seabed of Pontine Islands started in Ventotene and Santo Stefano in the summer of 2008 and since the summer 2010, has expanded to cover the isles of Zannone, Palmarola and Ponza. Phase one of the survey consisted of the investigation of the seabed through the deployment of a Klein model 3900 dual-frequency Side Scan Sonar integrated with a GPS navigation system. In order to ensure methodical coverage of the areas earmarked for survey, the sonar was towed along a series of predetermined lines laid out around the islands. An area of approximately

50 square kilometres was covered off the isles of Ventotene and Santo Stefano with a total of 49 survey lines; for Zannone over 20 survey lines over 100 nautical miles were covered during the first season's survey (June-July 2010). In May 2010, the survey was later extended to the seabed of the island of Ponza (Figures 2 and 3).

The lower frequency of the sonar (450 kHz) was used in order to build a preliminary georeferenced map of the seabed, including the most interesting targets, both natural and potentially manmade ones. The anomalies detected in the survey, which were considered

most interesting because of their regular, uniform sizes and shapes, were surveyed again using the higher frequency of sonar (900 kHz) (Figure 4).

During Phase two, targets were visually verified using a Remotely Operated Underwater Vehicle (ROV) Seaeye Falcon. Due to the high quality camera mounted on ROV it was also possible to produce copious video-photographic documentation of the sites.



*Figure 2 Mosaic of the sonar lines followed for survey around Ventotene and Santo Stefano. (Image courtesy Aurora Trust 2009).*

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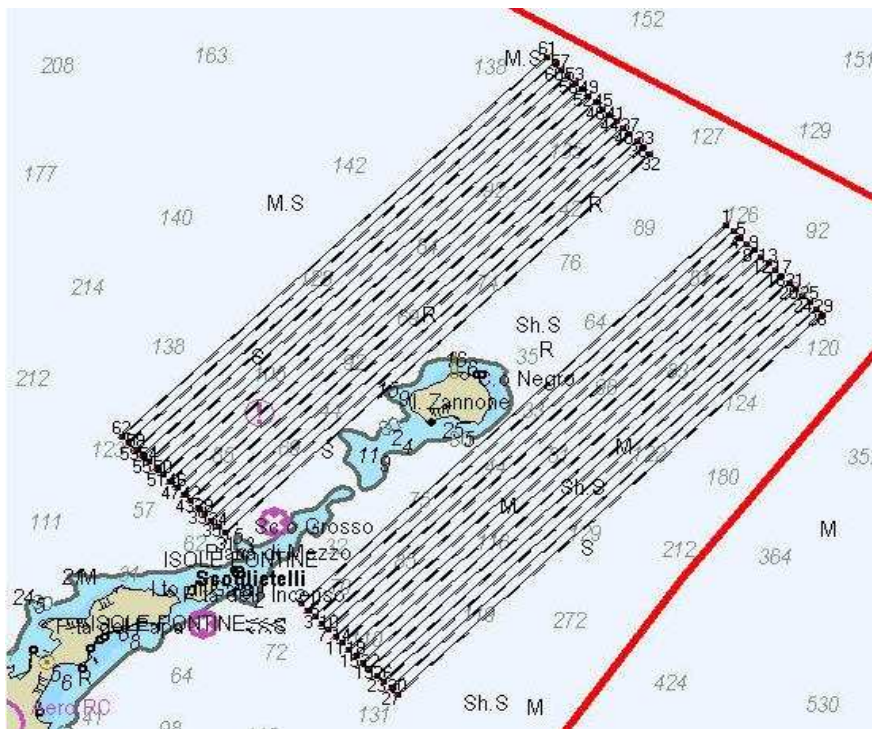


Figure 3 Survey of Zannone Island (Season One). (Image courtesy the Superintendence of Cultural Heritage of Lazio).

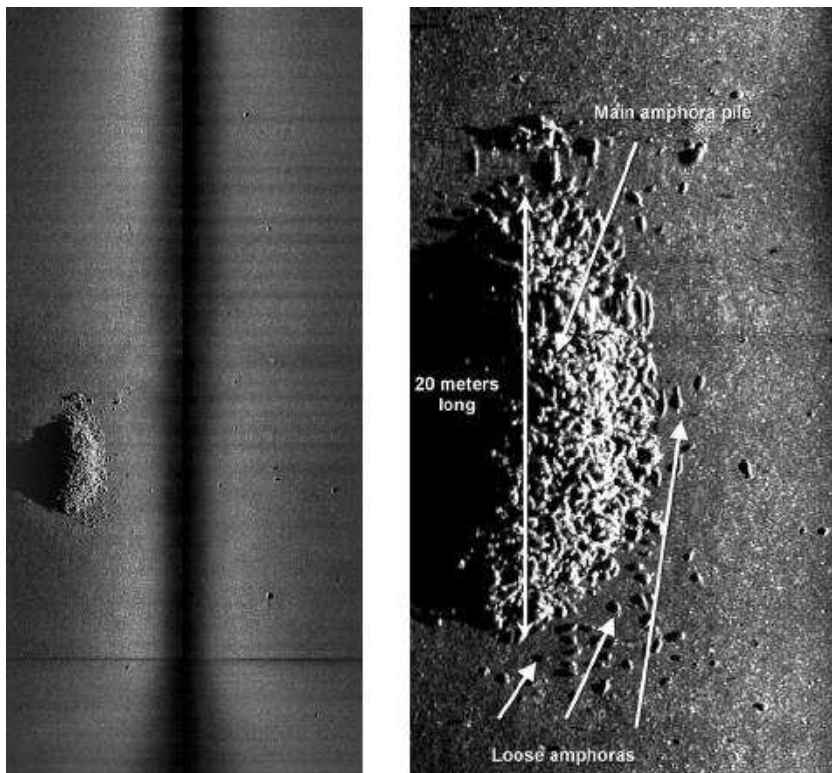


Figure 4 Sonar Images. (Image courtesy the Superintendence of Cultural Heritage of Lazio).

## Operations Results: Preliminary outlines

The use of the aforementioned tools has led to the discovery of nine shipwrecks. Five of which were detected on the seabed off Ventotene and Santo Stefano, four on the seabed off Zannone (Figures 1, 1a, 2, and 3). The shipwrecks of Ventotene and Santo Stefano date back to various phases of the Roman period; they are almost all well-preserved and thanks to the video-photographic documentation obtained by the ROV it is possible to propose a preliminary analysis of their cargos. As their study has just begun and no archaeometric analysis has yet been made, caution is necessary in the identification of the typologies. Preliminary outlines of the discoveries were discussed by Gambin, Zarattini, and Ritondale (Gambin *et al.* 2009: 337 - 341) during 'Lazio e Sabina' conference on March 2009 and during the AIA sub-conference (Italian Association of Underwater Archaeologists) held in Genova in October 2010.

*Site 1:* The purported shipwreck of Santo Stefano is very well-preserved. Its length is about 15 metres, its width of about 5 metres. The cargo seems to be composed of Spanish amphorae from *Baetica* many of which are still stacked in their original position. In particular, the following forms can be identified as Haltern 70 and Beltrán IIA (Pelichet 46-Dressel 38) (Manacorda 1977: 121- 132; Pelichet 1946: 198; Beltrán 1970: 421), the latter often confused with Dressel 7-11 (Panella 1974/75:153) [*e.g.*, Tav XLI, 3; C.I.L. IV, suppl. 2). The aforementioned types, intended for the transportation of seafood product like *garum*, *muria*, and *liquamen* are associated in many other Mediterranean shipwrecks (Tchernia 1969: 498, fig. 53 e), the cargo of which can be dated to the first century AD (Figure 5).

*Site 2:* The Ventotene 1 shipwreck is also well-preserved measuring approximately 18 metres long and 5 metres wide. According to the video-photographic documentation collected in 2009, the cargo appeared to contain only Dressel 1C amphorae (Panella 1973: 492-494; Panella 1981: 55-74; Manacorda 1981: 3-53) still stacked in their original position (Figure 1). In light of new data collected in the survey of 2010 it has been possible to detect the presence of Lamboglia 2 amphorae (Volpe 1982-1983: 27-36) and oil amphorae from Brindisi (Palazzo 1989: 548-553; Volpe 1990: 226-249). The latter were typically produced

along the Adriatic coast of Italy during the Republican Period. The abovementioned association is frequent and attested to at various Mediterranean sites such as those along the French coast (*e.g.*, Dramont A, Planier II; Parker 1992: 826), on the shipwreck of Spargi off the coast of Sardinia Island (Maddalena) or on the shipwrecks along the Iberian Peninsula (Estartit in the north of Barcelona, Sa Nau Perduda, near Gerona and San Jordi, on the island of Majorca (Parker 1992: 165; Gianfrotta and Pomey 1981: 328). The cargo of this wreck can be dated between the second and first century BC.



Figure 5 Santo Stefano Shipwreck with its cargo of Haltern 70, Beltrán IIA (Dressel 38), and Dressel 7-11 amphorae. (Image courtesy Superintendence of Cultural Heritage of Lazio).



Figure 6 Dressel 1C amphorae still in their original position from the shipwreck of Ventotene 1. (Image courtesy Superintendence of Cultural Heritage of Lazio).

*Site 3:* Well-preserved although divided into two sections, the shipwreck of Ventotene 2 measures approximately 13 metres long and 4 metres wide. The possible presence of two

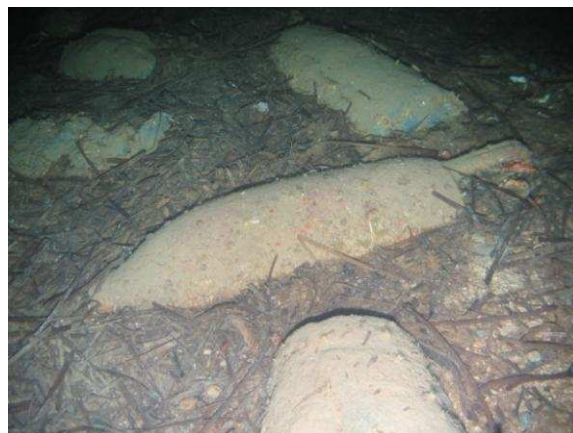
different wrecks, as the division into two sections may suggest, was excluded by observing the site with the ROV. The uniform composition of the cargo clearly points to a single shipwreck. Its mixed cargo was made up of Italian wine Dressel 2-4 amphorae (Panella, Fano 1977: 133-177) and mortars (Beltràn 1990: 215, Fig. 106; Matteucci 1986: 239-277) still stacked into each other (Figure 7). Since different *amphorae* clearly emerge from under the pile of mortars, a Sub Bottom Profiler was towed over the site during the second season of survey so as to determine how much of the cargo is still buried under the sediment. Archaeological deposits appear to be extended at least 1.5 metres below what is currently visible. The cargo of this shipwreck can be dated to the first century AD.

*Site 4:* The shipwreck of Ventotene 3 is not as well-preserved as the above. Materials belonging to the cargo are dispersed over a wide area measuring approximately 20 metres long and 5 metres wide. The mixed cargo was made up of Dressel 2-4 and Forlimpopoli type of *amphorae* (Aldini 1989; Panella 2002; Sciallano and Sibella 1991). Also belonging to the cargo are several fragments of glass frit and cylindrical objects not yet identified (Figure 2). The cargo of this shipwreck can be dated between the first and the second centuries AD.

*Site 5:* The shipwreck of Ventotene 4 measures approximately 12 metres long and 4 metres wide. Its cargo of North African Keay XXV amphorae (Keay 1984: 184-212; Ostia IV: fig. 142-160) is well-preserved, with *amphorae* still stacked in their original positions (Figure 3). The cargo of this wreck can be dated to the fourth century AD.



*Figure 7 Mortars and Dressel 2-4 amphorae from the Ventotene 2 shipwreck. (Image courtesy Superintendence of Cultural Heritage of Lazio).*



*Figure 8 Dressel 2-4 amphorae and blue cylindrical object from Ventotene 3. (Image courtesy Superintendence of Cultural Heritage of Lazio).*



*Figure 9 North African Keay XXV amphorae from Ventotene 4. (Image courtesy Superintendence of Cultural Heritage of Lazio).*

In order to carry out archaeometrical analysis aimed at increasing the knowledge of the discovered sites, the recovery of a sample of objects from the shipwrecks was planned during the second season of survey. Four mortars were recovered from Site 3 and one amphora from Site 1 during deep dives carried out by expert technical divers supported by AURORA and the Nucleo Subacqueo dei Carabinieri. This operation also aimed at shooting high resolution video images of the sites. Archaeological remains were then transferred to the Museum of Ventotene to be desalinated and restored.

The survey of the seabed of Zannone and Ponza began in June 2010 following the same operative phases as those used for the surveys of Ventotene and Santo Stefano (Figures 1 and 3). Among the numerous anomalies detected by Side Scan Sonar in phase one, four targets turned out to be ancient shipwrecks after

having verified them through the deployment of the ROV.

*Site 1:* The shipwreck of Zannone A is well-preserved and measures just over 10 metres in length and just less than four metres wide. According to the video-photographic images collected in 2010 the cargo is composed only of Keay LII *amphorae* (Keay 1984: 262, fig. 114, 4) (Figure 4). Since the abovementioned type (Joncheray 1975: 113) is found between the fourth and the seventh century AD, the shipwreck can be dated to this chronological period.

*Site 2:* The shipwreck of Zannone B measures approximately 12 metres long and just less than four metres wide. Preliminary observations point to the presence of Keay XXV *amphorae* (Keay 1984: 184-212; Ostia IV, Fig. 142-160) as the main cargo. Associated with them were globular *amphorae* still unidentified. Samples of both types are still stowed in primary position and all of them are well-preserved (Figure 5). As well as the abovementioned Ventotene 4 presenting the same type of *amphorae*, this cargo can be dated to the fourth century AD

*Site 3:* The shipwreck of Zannone C carried a mixed cargo of *amphorae*. Associated with Dressel 2-4 (the samples of Zannone C are similar to type number 100, group 3 of the repertoire of Pompei; Panella and Fano 1977: 165, fig. 4) were Dressel 20 and Dressel 21-22 (Botte 2009a: 149-169; Botte 2009b: 105). Besides the main deposit of *amphorae* (Figure 6), many of which are still stowed in their original position, there were also still unidentified smaller two-handled jars, with large mouths, which are partially buried under the sediment. The *amphorae* are datable to the first century AD.

*Site 4:* The shipwreck of Zannone D measures approximately 18 metres long and five wide. The main cargo seems to consist of square-shaped blocks, probably building bricks of uncertain material. Further studies are needed to ascertain the origin and date of the cargo (Figure 13).



Figure 10 Keay LII *amphorae* from Zannone A. (Image courtesy Superintendence of Cultural Heritage of Lazio).



Figure 11 Unidentified globular *amphorae* and Keay XXV *amphorae* from Zannone B. (Image courtesy Superintendence of Cultural Heritage of Lazio).



Figure 12 *Amphorae* from Zannone C shipwreck. (Image courtesy Superintendence of Cultural Heritage of Lazio).



Figure 13 Square-shaped blocks from Zannone D. (Image courtesy Superintendence of Cultural Heritage of Lazio).

## Conclusions

The importance of the aforementioned discoveries is enormous. The well-preserved shipwrecks of Zannone and Ventotene, covering a very wide chronological arc from the second century BC to the sixth century AD, can increase the knowledge of shipping routes and trade in the western Mediterranean basin over those centuries. Further studies are needed to ascertain the exact origin and composition of the cargos.

The discovery of the shipwreck of Ventotene 2 is certainly exceptional with its cargo of mortars. Although attested to in some other shipwrecks, this particular pottery class used to separate the grain from its fibrous sheath (Matteucci 1986: 239-277), constituting here the main cargo. There are only two other shipwrecks known to carry just mortar: Dramont D (France, Ile d'Or) and Mellieha (Malta) (Parker 1992: 167; Joncheray 1972). Interesting and still unidentified are the cylindrical blocks from the shipwreck of Ventotene 3. The available images do not permit the precise identification of the material making up these objects nor their function.

A rather different set of considerations can be made about the objectives and challenges of the on-going project. The General Conference of UNESCO has pointed out for the first time in the Convention of 2001 on the Protection of Underwater Cultural Heritage the urgent need to preserve such heritage. Preservation *in situ* of underwater cultural sites (Article 2.5) and the use of non-intrusive search technologies

(Article 2.10) have been set out as prior principles (UNESCO 2001).

As better explained within the guidelines to the Annex of the UNESCO Convention the context and setting of these remains are an integral part of their authenticity. This is true for underwater cultural heritage as for any other category' (UNESCO 2013: 24). Any intervention and excavations is always destructive, that's why, in order to cause "no more impact than necessary" (as pointed out by Rules 3, 4, 5 and 6), it should be given priority to non-intrusive search technologies; 'If excavation or recovery is necessary for the purpose of scientific studies or for the ultimate protection of the underwater cultural heritage, the methods and techniques used must be as non-destructive as possible' (UNESCO 2013, Rule 4). The Convention underlines both positive and negative aspects connected to recoveries of extensive underwater heritage and clearly points out the exceptional reasons to decide against *in situ* preservation: for instance 'the intention to make significant contribution to protection; a significant contribution to knowledge; a significant contribution to enhancement' (UNESCO 2013, Rule 1).

As for the shallow sites the choice to leave heritage *in situ* does not clash with the need to ensure their safety as well as their full accessibility, the protection and the management of deep sites appears more problematic also because they are even less unreachable, therefore more vulnerable, than in the past.

As far as protection is concerned, the instability of the environment, for instance the on-going erosion, may be a reason to decide for intrusive, although expensive excavation when stabilization *in situ* would have exorbitant cost (UNESCO 2013: 39). Many other risks are connected to public access and to the sharing and full fruition of underwater heritage that the Convention seeks to promote through Rule 7 and Rule 8 within the Annex. In particular, Rules 14 and 16, concerning vulnerability assessments, list beside physical-mechanical, biological and chemical threats, the human ones: 'treasure hunting, souvenir collecting, fishing, dredging, infrastructural or development works, pollution, ship movements, archaeology, oil drilling and pipeline laying' (UNESCO 2013). For all these reasons, the Convention expresses some dilemmas regarding the public access to archaeological sites, especially to vulnerable or fragile ones: 'The much debated dilemma

arises on whether these sites should be the exclusive domain of archaeological researchers' (UNESCO 2013).

Although recovery is still considered in case of necessity a possible although expensive solution, the challenge is to find alternative ways and non-intrusive solutions in order to leave such heritage *in situ*, preserving it from both natural and human threats, while ensuring its knowledge, its study and its full and public fru-ition. The application to underwater cultural heritage of remote sensing techniques used in hydrographical and geophysical survey has already yielded very significant results in terms of knowledge, offering an alternative to the excavations of deep sites.

Within this general debate, deep sites, like the shipwrecks found in the Pontine Islands, pose further problems: as for the shallow sites the increasing spread of underwater archaeological parks<sup>iii</sup> has suggested that ultimately they could be the appropriate practice in underwater archaeology; regarding deep sites, the creation of underwater archaeological parks appears more problematic. Moreover, another important aspect should be taken into consid-eration: that's of accessibility of underwater heritage for non-divers.

This leaves the question of the management of underwater sites partially unresolved. On one hand in fact, as far as control and sharing is concerned, the Convention suggests through Rule 7, how 'A site can be made accessible through closed circuit television, webcams, Remotely Operated Vehicles, 3-dimensional reproductions or other means of visualisation. Such techniques allow for indirect access and have a long history. Some such solutions are maintenance intensive, certainly, but not necessarily expensive' (UNESCO 2013, Rule 7: 54).

On the other hand it must be noticed how an indirect access could offer 'the vision' of the site without offering the same emotional experience of a direct visit of the historical remains.

The challenge is the increasing application of non-intrusive technologies in this direction. Virtual archaeology and digital applications could be a convenient solution in future; beside 3D reconstructions and other ICT innovative tools, the increasing developments of sophisticated technologies connected to the so called 'Augmented Reality' could be useful

for the management and the promotion of sites difficult to be reached, such as underwater archaeological contexts, particularly the deep ones.

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## Abbreviations

- Ostia I* AA. VV. 1968. Ostia I. Le Terme del Nuotatore. Scavo dell'ambiente IV, *StMiscRo*, 13.
- Ostia II* AA. VV. 1970. Ostia II. Le Terme del Nuotatore. Scavo dell'ambiente I, *StMiscRo*, 16.
- Ostia III* Carandini, A. and Panella, C. 1973. Ostia III. Le Terme del Nuotatore. Scavo degli ambienti III, VI, VII, *StMiscRo*, 21.
- Ostia IV* Carandini, A. and Panella, C. 1977. Ostia IV, Le Terme del Nuotatore. Scavo dell'ambiente XVI e dell'area XXV, *StMiscRo*, 23.

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<sup>i</sup> Official Webpage of 'Archeomar' Project: <http://www.archeomar.it/>

<sup>ii</sup> Official Webpage of AURORA Trust: <http://www.auroratrust.com/>

<sup>iii</sup> The examples are numerous all over the world. A list of the main submerged Museums and of the main recent initiatives managed in order to offer visitors in situ experiences is available at

<http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/museums-and-tourism/>. Here are also enumerated and listed by country, all the land-based Museum recovering material from underwater sites <http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/museums-and-tourism/land-based-museums/>