

GROPLAN

Généralisation du Relevé, avec Ontologies et Photogrammétrie, pour l'Archéologie Navale et Sous-marine

Ontology and Photogrammetry ; Generalizing Surveys in Underwater and Nautical Archaeology

Programme ANR : [Contenus numériques et interactions \(CONTINT\) 2013](#)

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Partenaires

1. CNRS CCJ Centre Camille-Jullian, UMR 7299
2. CNRS DR12_L SIS Centre National de la Recherche Scientifique Délégation Provence Corse_Laboratoire des Sciences de l'Information et des Systèmes, UMR CNRS 7296
3. COMEX, SA, Marseille
4. Société d'études et de travaux photogrammétriques SARL
5. TAMU Texas A&M University, Texas, USA
6. UoM University of Malta, Department of Classic and archaeology

Scoglietto survey, Tuscany.

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Isola d'Elba (LI), Portoferraio. The wreck of Scoglietto

In 2004 the wreck was discovered in consequence of a fortuitous recovery of various material in the nets of a fishing boat, next to Scoglietto di Portoferraio, 73/78 mt deep. It contained twelve decorated jugs (figure 1), which were immediately consigned to the Capitaneria di Porto di Portoferraio and thereby to the Soprintendenza per i Beni Archeologici of Tuscany. These finds have already been restored and they proved particularly useful to identify the load and its date.

Based on the location of the fishing boat, the Nucleo Carabinieri Subacquei of Genoa, equipped with a *ROV* Pluto, was able to detect the wreck and realize a first film in 2005. The wreck appears as a little hill, composed by an enormous mass of jugs and other pottery (figure 2): a noticeable load of majolicas, glass and plain pottery dating back to the pontificate of Clement XI Albani (1700-1721), as proved by the pontifical coat of arms on a few jugs. The importance of the wreck is given by two main elements: its sure date (1700-1721), which lies upon a known production (furnaces of Lazio/Rome of Clement XI's period); the absolutely prevailing occurrence of post-Renaissance wrecks in the Tuscan sea, which are rare and still not enquired.

The company *Colmar* (La Spezia), which specializes in underwater surveys, led a second enquiry in 2004, by means of a *side scan sonar*; an anomaly rose from the audio survey, which certainly corresponds to the wreck. A second film, which was realized through *ROV* in 2004 by the *Comex* of Marseille, has confirmed the extent and variety of the load. This load clearly contained various typologies and shapes of pottery, including especially jugs, plates, and bowls at the centre of the load mass, and other shapes at the margins (figure 3).

In May 2010. A further in-depth survey was conducted by the *Comex* in the framework of the project *Archeomar* (*Ministero dei beni e delle attività culturali e del turismo*). The wreck has been verified with GPS, filmed, and photographed with photogrammetric system. The deposit is 14x7m wide and ca. 50 cm high. The load occupied only the inferior part of the hold, as shown by the fragile nature and shape of the evidence.

By means of the *ROV*, the following finds have been collected: two plates in decorated majolica, one carafe, one polychrome jug with melon flowers decoration, one piece of glazed pottery and two glazed double-handle pots, decorated by light yellow vegetal motifs. The evidence was extracted at the sides of the load, in an isolated position, in order to detect the various shapes of pottery, without modifying the stratigraphy of the deposit.

The recent trend of underwater archaeology demands to preserve the wrecks *in situ* and to opt for a virtual documentation, which is nowadays made possible thanks to instrumental and computer based technologies.

In July 2010, the no profit oceanographic organization *Aurora Trust*, which specializes in hight deep surveys, monitored again the wreck. The excellent conditions of visibility allowed for an even better video-photographic documentation by means of *ROV*. A further scan was implemented with *sub bottom profiler*, a tool which can read under the sea bottom. This scan revealed an at least 1 mt thick mass: probably the remains of the hull and perhaps of other parts of the load. No wooden parts of the boat are visible in the video-photo documentation: the remains clearly lay under the bottom and under the visible part of the load. It is only possible to hypothesise that it might have been either a *leudo*, ca. 15 mt long and with a ca. 30 tonnes load capacity; or a *feluca*, with two masts with latin sails. Another typology of eighteenth-century commercial boat is the *tartana*, with one single mast with latin sail and a load capacity similar to the one of the *leudo*.

The image of the *side scan sonar*, which was also realized by *Aurora Trust*, shows the shape of the deposit in great detail: an oval elongated mass is visible, with a regular shape, which clearly recalls the original position of the stowage (figure 4).

Finally, in July 2014, the *Comex* carried on two further dives with a submarine, which was equipped with three photo cameras for photogrammetric system. It realized the first 3d images

almost in real-time. The deep position of the wreck certainly prevents from a traditional submarine archaeological survey, due to the short duration of dives allowed by scuba tanks. The deposit therefore creates problems from the perspective of the survey with divers.

A possible procedure to follow is to resort to scuba divers with TRIMIX. In this case, the available time is a 20-25 minutes permanence on the sea bottom, which allows measurement, GPS by means of *transponder*, sample taking, and photographs. The costs of such operations are quite considerable, since they imply the one boat, a great number of scuba divers, and the supply of TRIMIX (

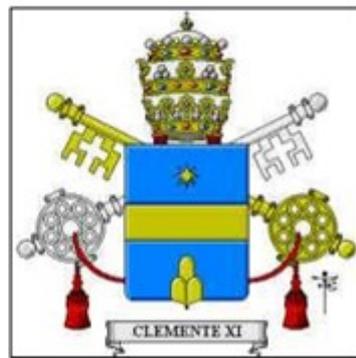
The 3d processing is still ongoing and it will surely allow a punctual analysis of the pottery load.

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The Scoglietto Wreck is a shipwreck that carried a big load of not painted and painted “majolica” (a very peculiar enameled Italian pottery) produced in Lazio in the early years of the XVIII century. This production can be referred to Pope Clemente XI Albani (1700-1721), thanks to the papal coats of arm drawn on some beakers recovered from the wreck.

This site is very significant because there are very few wrecks of the early XVIII century and its recovery will be fundamental for studying the commercial, economic and artistic history of the early years of this period. The complete study of the wreck will help to define the economic and social background of the N-W part of the Tyrrhenian Sea. The shipwreck is located at 1 mile from Scoglietto and 2 miles from Portoferraio, at a depth of 73/75 m, in a muddy backdrop with little rocks. A fishing boat that found in the nets some beakers discovered the wreck. A first inspection (2005) was made by MIBAC-SBAT in cooperation with Italian ”Carabinieri” divers with their Pluto ROV equipped with a camera: this inspection has confirmed the archaeological hypothesis. A second inspection



Beaker Recovered from wreck (left) Pope Clemente XI papal coats (right).

Another inspection, in cooperation with Comex-Marseille (France) in July 2007, with the Super Achille ROV, has been realized to define the dimension of the wreck: this was estimated about 28 meters length, 3 or 4 meters wide and 2 meters high. . There are no more details about this ship, but archaeologists hypothesize that under there is probably a big part of the shipwreck (a Feluca or a Tartana), that can also give information about the life of the crew. The recovery of this wreck is of a

big importance due to the high degree of risk that is subject to: nets of fishing boat and thefts are the main motivations for its protection considering the cultural importance of this site. The excavation of this site will define the real consistency of the wreck, the existence of a ship structure. It will quantify also the needed resources for its study and recovery and for its musealization. In July 2014 a photogrammetric campaign was made by COMEX, AMU and MIBAC in the framework of GROPLAN project.

This operation was done to realize a photographic recognition from the Comex submarine Remora 2000 in order to obtain some new input data for the recognition process.

Currently a first high resolution orthophoto was made and the first results are visible here A high resolution orthophoto is available through the image below:



Orthophoto produced after the complete photo orientation of the underwater survey.

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