

#ISCUA2019 PROCEEDINGS

The 1st International Symposium of Conservation
for Underwater Archaeology

IBEAM

Institut Balear d'Estudis en Arqueologia Marítima

Edited by: Andrea Sanz, Enrique Aragón, Javier Rodríguez

#ISCUA2019. Proceedings

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Index

One Vision, One Mission 9

Andrea Sanz, Javier Rodríguez, Enrique Aragón
Institut Balear d'Estudis en Arqueologia Marítima

Session 1

The in-situ preservation: Conservation, Management and Protection Strategies of Underwater Archaeological Sites

The SASMAP project.

A process based approach to managing underwater cultural heritage 13

David Gregory

The National Museum of Denmark, Department of Research, Collections and conservation

Responsible accessibility as the better protection and preservation of Underwater Cultural Heritage.

An ongoing effort in Greece 25

Angelos Manglis, Anastasia Fourkiotou, Dimitra Papadopoulou
Atlantis Consulting S.A

Conservation and Protection actions in situ in the “Ses Llumetes” wreck of Porto Cristo (Manacor, Mallorca) 33

Andrea Sanz Catalá

IBEAM (Institut Balear d'Estudis en Arqueologia Marítima)

Preventive protection and management of underwater archeological sites.

Algeria as a case 47

Rafik Khellaf

University Center Morsli Abdellah (Algeria), Department of Human Sciences, History and Archeology

Conservation Challenges before the Submerged Heritage of Nessebar on the Western Black Sea Coast 59

Nayden Prahov

National Institute of Archaeology with Museum, Bulgarian

Protection of Coastal Archaeological Sites 69

Giulia Toniato

Scuola Interateneo di Specializzazione in Beni Archeologici (SISBA)

Session 2

Applying new digital methodology for the Conservation & Diffusion of Underwater Archaeological Heritage

New technologies and methods for the documentation and dissemination of the Underwater Cultural Heritage 85

Fabio Bruno, Loris Barbieri, Antonio Lagudi

University of Calabria & 3DResearch S.r.l.

How film reflects shallow-water archaeology? As a practice and a communication tool 99

Aurélie Albaret, Franck Brechon, Óscar Encuentra

University of Perpignan & ARESMAR (Association for Sub-MARines

REsearches in Roussillon)

Condition Reporting of Underwater Archaeological Finds from A to Z with the use of an interactive database . 111

Eirini Mitsi, Markos Garras, Giorgos Agavanakis,

Angelos Tsompanidis

Korseai Institute & Ephorate of Underwater Antiquities

Session 3

Past – Present and Future of applying treatments to the Conservation & Restoration of underwater archaeological materials

Prolonging Vasa's journey.

Past and present preservation challenges

at the Vasa Museum 123

Malin Sahlstedt

Collections Unit Vasa Museum

The conservation and deconcretion process of the American Civil War submarine H.L.Hunley (1864). . . 139

Johanna Rivera

Warren Lasch Conservation Center

Conserving the Borna, a model of a Bronze Age boat made in wicker and leather. 153

Victoria Folgueira Fariña

Session 4

New techniques and materials applying to the conservation & restoration of underwater materials

Tools, materials and techniques for in-situ conservation of underwater cultural heritage: recent ISCR experiences . . 169

Barbara Davidde Petriaggi

Director of the Underwater Archaeology Operations Unit

Underwater in situ mechanical reinforcement and stabilization of cracked pottery with the use of zip tie 183

Angelos Tsompanidis, Helen M. Bardas, Aggeliki Bei

Ephorate of Underwater Antiquities & Korseai Institute

Recognizing colours in the cargo of sunken ships: detection and identification 195

Katarina Batur

University of Zadar. Department of Archaeology

Session 5

Conservation science application

Science, part of DNA of conservation 211

Philippe De Viviés, Marine Bayle, Paul Houssin,

Jean-Bernard Memet

A-CORROS

Interpretation of past and present environments through in-situ decay measurements A personal review of the past 40 years 221

Ian D MacLeod

Fellow, Western Australian Museum

Condition Reporting of Underwater Archaeological Finds from A to Z with the use of an interactive database

Eirini Mitsi*, Markos Garrast,
Giorgos Agavanakis, Angelos Tsompanidis

Korseai Institute & Ephorate of Underwater Antiquities

* meirinim5@gmail.com

Abstract

Condition reports of underwater finds should ideally include information from the very moment they are located on the seabed. In most cases, such information is nonexistent or mentioned separately in different field reports. The non-standardized methodology of condition reporting in an underwater archaeological survey or excavation and the limited number of underwater conservators are the main factors that such data is dispersed. This paper presents a condition reporting procedure focused on ceramic objects, the most common of archaeological finds in the Mediterranean basin. The aim is to record as much information as possible into one report, which will be a useful tool for all researchers. This report is displayed on an online multi-tab form with a database back-end, and contains information about the finds' ID, burial conditions, preservation state, first aid treatment carried out in the field and the temporary laboratory, chemical and biological analysis, treatment after its transportation to the conservation laboratory, storage place and publications. It is also connected to a tablet-based GIS application, which shows the exact locations of the find from the sea bottom till storage. The online database provides access to updated information of the finds, anytime, anywhere; it gives the option to search for specific information and to provide the data in many different formats, as requested. This database relates information about conservation to the project, on a daily basis and for future reference. This condition reporting procedure, in connection with the database, was created within the framework of the Underwater Survey in Fournoi.

Keywords

*Condition report
underwater finds
ceramics
marine artifacts
data base
Fournoi project*

*To the memory of
our beloved colleague
and friend, Markos Garras.*

1. Introduction

In the eastern Aegean Sea between Samos and Ikaria lie a small collection of 20 islands and islets known as the Fournoi archipelago. From 2015 to 2018 a systematic underwater archaeological survey was held divided into 4 expeditions in collaboration of the Greek Ephorate of Underwater Antiquities and the RPM Nautical Foundation (Campbell and Koutsouflakis, 2017; Koutsouflakis and

Campbell, 2019), with the support of Korseai Institute. Over the 73 days spent in the field; 58 shipwrecks were located as well as concentrations and individual finds. Also, a great number of finds were lifted during each expedition.

Archeological information such as the divelog and the shipwrecks was recorded using an online interactive database and a Geographic Information System (GIS). Information regarding the state of preservation and the conservation of the retrieved objects was recorded in a condition report. During the first years of the project, these condition reports were first filled in using printed forms at the temporary laboratory and then digitized in Word Office® documents. This condition reporting process was time consuming and as a result the time of the on-site conservation was reduced. Additionally, there was a risk of information being lost as paper can easily be damaged or lost in the temporary open air conservation laboratory situated next to the sea. Therefore, the need for a different condition reporting process, one that would also match the philosophy of the reporting system of the project, became apparent.

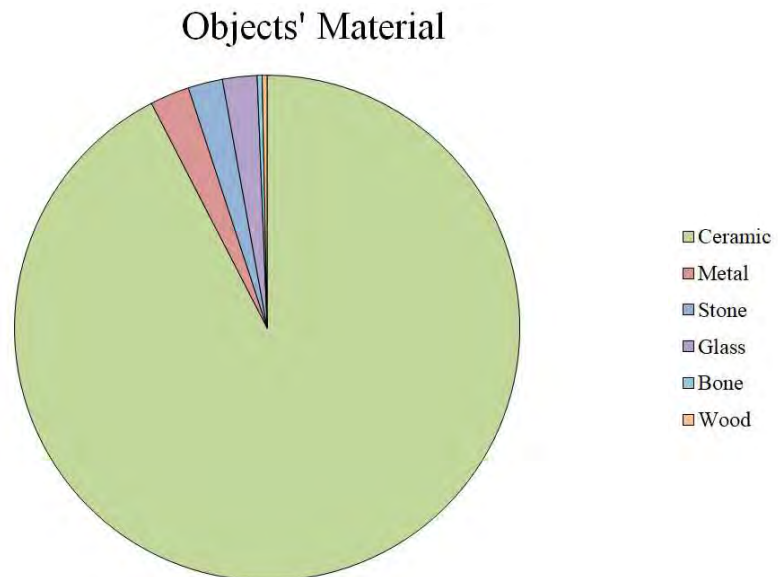
During the past underwater excavations and surveys in Greece, the preservation state and the conservation treatments of an object was rarely recorded in the field and more rarely underwater, due to the lack of conservators and especially diving conservators in the expedition. In the case where conservators are involved in the expedition, different condition reports were filled in about the object in the temporary laboratory and in the central conservation laboratory of the Ephorate of Underwater Antiquities. Moreover, information regarding the condition of the object and the first aid treatment received underwater, is scarcely mentioned in the different field reports. As a result, it was difficult to have an overview about an object. A team of five conservators worked on the Fournoi project, the majority of whom were also divers. Thus, a great amount of first aid treatment both underwater and in the temporary laboratory, as well as first steps of conservation (e.g. mechanical cleaning), took place during the expedition. Hence the need for a new condition report arose.

In the literature little is known about recording marine artifacts especially in the field. Although in some cases the documentation process for marine artifacts is referred to only after their transportation to the central conservation laboratory (Saramanti and Moraitou 1991; Dizo *et al.*, 2013; Papanikou *et al.*, 2018), in general the importance of documentation in the temporary laboratory is underlined (Pearson, 1987; Robinson 1998; Hamilton, 1999; Bowens, 2009; Bekić *et al.*, 2014). However, the ideal condition reporting process is not mentioned and the available published condition reports are mainly about waterlogged organic materials and architectural structures and elements (Petriaggi and Davidde, 2004; Malea *et al.*, 2016). The only strong recommendations about the documentation process for marine artifacts are that they should include the state of the object as it was found *in situ*, to record the find before any treatment and at all conservation phases as well as information regarding lifting (e.g. lifting technique, divers) (Muncher 1991; Bowens, 2009; Bekić *et al.*, 2014, Vasilliadis, 2002). Also, it is important to record the number of the site, the unique object's number and its archeological description and dimensions along with a sketch or a picture (Saramanti and Moraitou 1991; Robinson 1998).

In the Fournoi project, the majority of the objects were ceramics (Fig. 1). Thus, none of the mentioned reports in the literature was applicable; and since there

is no official standard for the documentation of marine artifacts in the field (Malea et al., 2016), the conservation team of the project developed a condition report based on the European Standard regarding the condition recording of movable cultural heritage (EN16095:2012), using the preexisting forms issued by the Greek Ephorate of Underwater Antiquities for the needs of the project.

Figure 1. Pie chart of the material of the lifted objects during the four expeditions in the Fournoi project / ©Korseai Institute



Generally a condition report based on the EN16095:2012 should include:

- General information
- Information regarding the identification of the object
- The description of the object
- Information about the environment of the object
- Information about the preservation state of the object

The format of a condition report can be in paper or digital. The layout can be textual including free-text, essay style, check-list style etc., visual, or most likely a combination of both (Moore 2001, EN16095:2012). Digital forms are easier to fill and edit and more specific databases ensure better information management (Sayre 1986, Moore 2001). Thus, condition reports tended to be digital over the last years even in the data acquisition phase using a mobile or tablet (e.g. Horus Condition Report® Application).

The aim of the condition report that was created by the Fournoi project was to gather all the information from the very moment of the discovery of an object on the sea bottom till its final exhibition/storage into a single report, in digital form, which would be easy to fill in, in order to minimize the documentation time.

2. Materials and Methods

The condition report (Fig. 2-6) was divided into three main sections:

- a. On-site field work
- b. Analysis
- c. Conservation laboratory

CONDITION REPORT OF CERAMIC OBJECT



CONDITION REPORT No:		U/W SERVEY:	
A. FIELD			
PHOTOGRAPHIC DOCUMENTATION			
IN SITU	BEFORE		
AFTER (the end of survey)	AFTER (the end of conservation)		

Section A. Identification details such as the photographic documentation, the ID number of the object, the location and the depth at which it was found, the number of the dive and the day of the lifting as well as the names of the diving couple and a brief archaeological description along with the basic dimensions of the find are included. Another subsection, regarding the condition of the find on the sea bottom, the nature of the seabed as well as the first aid conservation treatments conducted underwater. The last two subsections outline the condition of the find and the conservation treatments that were done in the temporary laboratory during the project.

CONDITION REPORT OF CERAMIC OBJECT



OBJECT ID	
OBJECT No: <input type="text"/>	LOCATION OF FIND: <input type="text"/>
SHIPWRECK No: <input type="text"/>	CONCENTRATION: <input type="text"/>
<input type="checkbox"/> SINGLE FIND	
LIFTING DATE: Κάντε κλικ εδώ, για να εισαγάγετε μια ημερομηνία.	DIVE No: <input type="text"/>
COUPLE: Επιλέξτε ένα στοιχείο. , Επιλέξτε ένα στοιχείο.	DEPTH OF FIND: <input type="text"/>
FIND/DIMENSIONS: 	
SEA BOTTOM	
BOTTOM: <input type="checkbox"/> Sandy <input type="checkbox"/> Rocky <input type="checkbox"/> Poseidonia <input type="checkbox"/> Concretion <input type="checkbox"/> Muddy	
CONDITION OF FIND: <input type="checkbox"/> Free on the surface <input type="checkbox"/> Semi buried <input type="checkbox"/> Buried <input type="checkbox"/> Packed	
CONSERVATION TREATMENTS UNDERWATER: 	
DOCUMENTATION	
PRESERVATION STATE:	INTACTNESS:
<input type="checkbox"/> Intact <input type="checkbox"/> Part of pottery	<input type="checkbox"/> Almost intact <input type="checkbox"/> Broken Sherds: <input type="text"/> Coherent: <input type="text"/>

Section B. This section includes the results of analysis which the object may have undergone, such as biological identification, petrographic analysis or others.

Section C. It includes all the information about the object after it has been transferred to the Ephorate of Underwater Antiquities' conservation laboratory. At the end of both sections A. and C. the names of the conservators who worked on the object in each laboratory are listed. At the end of the report, there is also a section for the publications where the object found has been referred to.

CONDITION REPORT OF CERAMIC OBJECT



BREAK SURFACES:	
<input type="checkbox"/> Recent break <input type="checkbox"/> Degraded <input type="checkbox"/> With deposits	
PRESERVATION STATE OF THE BODY:	
<input type="checkbox"/> Robust <input type="checkbox"/> Fragile <input type="checkbox"/> Friable	
PRESERVATION STATE OF THE SURFACE:	
<input type="checkbox"/> Cracks <input type="checkbox"/> Flaking <input type="checkbox"/> Scratches <input type="checkbox"/> Friable <input type="checkbox"/> Holes	
STAINS ON THE SURFACE:	<input type="checkbox"/> Iron <input type="checkbox"/> Copper <input type="checkbox"/> Sulfur-reducing bacteria
DEPOSITS:	<input type="checkbox"/> Concretions
	<input type="checkbox"/> Biological deposits BIOLOGICAL SAMPLING: <input type="checkbox"/> Yes <input type="checkbox"/> No
CONSERVATION TREATMENTS ON THE FIELD	
FIRST AID TREATMENTS AT THE DOCK:	
REMOVING THE CONTAINING OF THE POTTERY:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Objects found inside Object No: <input type="text"/> <input type="checkbox"/> Sample from the containing Object No: <input type="text"/> Object No: <input type="text"/>
	<input type="checkbox"/> Living organisms <input type="checkbox"/> Biofilm <input type="checkbox"/> Concretions
CLEANING:	

The condition report was first created in a Word Office® document with enabled macros. In order to be easy to fill in, especially in a digital form, check boxes, dropdown lists and other types of elements were used wherever possible.

CONDITION REPORT OF CERAMIC OBJECT



PACKAGING:	
NOTES/OBSERVATIONS:	
CONSERVATORS WORKED AT THE FIELD:	
B. ANALYSES	
RESULTS OF THE BIOLOGICAL IDENTIFICATION:	
PETROGRAPHIC PHOTOS:	
OTHER:	
C. CONSERVATION TREATMENTS ON THE E.U.A. LAB	
DAMAGES NOTED DURING UNPACKING:	
DAMAGES NOTED AFTER DESALINATION:	
SPREADING OF CRACKS DURING DRYING:	
DESALINATION PROCESS TABLE:	
CLEANING:	
CONSOLIDATION:	
ADHESION:	
FILLINGS:	

CONDITION REPORT OF CERAMIC OBJECT



AESTHETIC RESTORATION:	
NOTES:	
CONSERVATORS AT THE LAB:	
LOCATION / YEAR:	
PUBLICATIONS	

The condition report was also added in an online multi-tab form at the open source database of the project (Fig. 7). The database has MySQL™ back end and Form Tools® front end which talk with each other through PHP script. The database supports all field types such as textbox, checkbox, pull-down menu, drop down list, etc. It can be extracted to various formats such as HTML and Excel.

A tablet-based GIS application was also used within the project for the data acquisition in the field. The database was then connected to the GIS application also forming a data source. The GIS data is imported in an open-source cross-platform desktop GIS application, QGIS®, for further editing. This GIS system so far is focused on the localization of the shipwrecks and the finds in the seabed.

3. Results

During the expedition of 2018 the condition report in the Word Office® document, with the enable macros, was used instead of the printed forms and at the same time a pilot scheme using the new condition report in the database was started. The condition report that had been created, which gathered all the information about an object into a single report and both digital forms, achieved to minimize the documentation time.

4. Discussion and Conclusions

The condition report made for the Fournoi project provides an overview for each object as it gathers together all the information from the seabed till storage/exhibition into one report. It also emphasizes the treatment conducted underwater and in the temporary laboratory, both of which are an integral part of the history of an object. So, both the material history and the conservation history of an object are included in one condition report, hence fulfilling the criteria of such a document (EN16095:2012).

Furthermore, the new digital forms of the report were found to be easy to fill in at the temporary laboratory by using a tablet, as the section of the field documentation is mostly standardized. In this manner the information does not change according to the person who wrote the report and the time spent on documentation was reduced. As a result much of the time available is focused on on-site conservation and so a higher percentage of marine organisms are removed; which is considered to be very important in such projects (Ianna and Richards, 1996; Viduka, 2012).

However, when coming to compare them; the online multi tab forms with the database back end seems to be more promising as it has the major advantage of relating the conservation information to the project. Apart from that, using a database had many advantages against the Word document because it can ensure the consistency of the report by using restrictions of skipping specific crucial fields. Through the search tool that the database includes, reports that contain specific information can be listed in seconds instead of opening all the Word files one by one to find those of interest. The reports from the database can also be extracted anytime to multiple formats including HTML and Excel documents. Using the Excel export, the statistics are also easier to process. Moreover, the online database gives access to updated information anytime, anywhere to all the researchers involved in the project.

The GIS application and the database are connected; thus all information (both quantitative and qualitative entities) gathered during the project is visualized. Up

to now, the GIS application is mainly used for archeological information but in the future it will be developed and adapted to trace the route of the objects from their location on the seabed till their storage/exhibition. Moreover, planners of both temporary and central conservation laboratories, storage and exhibitions are considering adding the GIS system in order to better track the objects during each phase. Final visualizations of the GIS editing will be then exported to web-based GIS platforms, so that they can be accessible to all scientists involved in the project, as well as reach a wider audience or other interested groups.

The context of this condition report was adjusted for an underwater survey and modifications can be made to suit an underwater excavation, which will be the next phase of the Fournoi project. Additionally, condition reports for other materials (organic and inorganic) will be created.

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