

**DEGUWA Annual Meeting on Underwater Archaeology
IN POSEIDON'S REALM XXVI**
Safety and Waterways

from May 8, 2021 through May 9, 2021

Online Conference in Cooperation with the TRANSMARE Institut of
the University of Trier

Under the Patronage of the President Prof. Dr. Michael Jäckel



VICTORIA and LUSORIA RHENANA at joint patrol on the "Haltener See"

Photo: transmare institut

Organizing Committee:

Julian Heinz, Ralph Kunz, Katharina Meyer-Regenhardt, Georg Osterfeld, Thomas Reiser, Christoph Schäfer, Peter Winterstein

Scientific Committee:

Ronald Bockius, Christoph Eger, Winfried Held, Marcus Nenninger, Christoph Schäfer, Peter Winterstein

Executive Committee:

Julian Heinz, Ralph Kunz, Katharina Meyer-Regenhardt, Patrick Reinard, Christian Rollinger, Christoph Schäfer, Birgit Sommer, Piotr Wozniczka,



Program

Saturday, May 8, 2021

Lectures I

Instructions

Chair Schäfer, Christoph

Time: 09.15-09.30 a.m.

Opening and Greetings

Winfried Held, President of the DEGUWA

Michael Jäckel, President of the University Trier

Time: 09.30-10.30 a.m.

Spanos, Stefanos

Schiffsdarstellungen auf Mykenischer Keramik. Die seltsame Darstellung eines Schiffswracks von Koukounaries auf Paros

Coffee break

Time: 10.30-11.00 a.m.

Lectures I (cont.)

Chair: Reiser, Thomas

Time: 11.00-12.30 p.m.

Reich, Alexander

Terra et aqua. - Untersuchung der Hafenbecken Milets unter nautischen Gesichtspunkten

Auriemma, Rita et al.

The underwater archaeology tells of Salento: Recent research in the Adriatic and Ionian seas

Auriemma, Rita et al.

Shipwrecks stories in a "trap bay": Research and valorization in Torre S. Sabina (Brindisi, Italy)

Discussion

Time: 12.30-1.00 p.m.

Lunch break

Time: 1.00-2.30 p.m.

Lectures I (cont.)

Chair: Schmidhuber, Gabriele

Time: 2.30-3.30 p.m.

Wintjes, Jorit

Quartered safe out there? Towards a typology of Roman naval bases

Warnecke, Heinz

Safety first: the Mahdia wreck as a result of improper loading

Coffee break

Time: 3.30-4.00 p.m

Lectures I (cont.)

Chair: Heinz, Julian

Time: 4.00-5.00 p.m.

Reinard, Patrick

“Jeden Tag warten wir auf unsere Entlassungsurkunde”. Ägyptische Seefahrer und die stadtrömische Verwaltung

Selke, Valeria and Franke, Regina

Neue Ergebnisse zu den Grabungen am Hafen der CUT

Discussion

Time: 5.00 p.m.

(Public) Evening Lecture

Schäfer, Christoph

Die römischen Militärschiffe von Oberstimm und Mainz und der Nasse Limes an Rhein und Donau – Rekonstruktion, Tests, Ergebnisse

Time: 7.00 p.m.

WONDER & WINE – Evening Event

Time: 8.00 p.m.

Sunday, May 9, 2021

Lectures II

Chair: Held, Sebastian

Time: 9.00-10.30 a.m.

Reinfeld, Michaela

“Don’t marry a skipper, you have no husband in summer, no money in winter”

Novichenkova, Maria V.

About the Roman Military Equipment of Augustus’ reign from the sanctuary Gurzufskoe Sedlo as the archaeological evidence of the Roman military actions in the Northern Black Sea region

Olkhovskiy, Sergey et al.

Phanagorian port construction according to archaeological and geological data

Coffee break

Time: 10.30-11.00 a.m.

Lectures II (cont.)

Chair: Osterfeld, Georg

Time: 11.00-12.00 a.m.

Fiederling, Max

Hin und wieder zurück. Das Wrack Portiței A: Interdisziplinäre Erforschung eines römischen Handelsschiffes vor der Schwarzmeerküste Rumäniens

Discussion

Time: 12.00-12.30 p.m.

Lunch break

Time: 12.30-2.00 p.m.

Lectures II (cont.)

Chair: Wozniczka, Piotr

Time: 2.00-3.30 p.m.

Grossmann, Eva

Glass from Apollonia/Israel

DellaPorta, Katerina P.

«Μηδέϊς φοβείσθω το πέλαγος» Ιωάννης Χρυσόστομος (PG 50)

Σωτήρες γαρ εισίν οι θεοί, Αρτεμίδωρος, Ονειροκριτικά

Opait, Andrei; Davis, Dan and Brennan, Michael L.

A Case Study of Rhodian Wine Export: The Knidos K and J Shipwrecks

Coffee break

Time: 3.30-4.00 p.m.

Lectures II (cont.)

Chair: Thurn, Maurice

Time: 4.00-5.30 p.m.

Byford-Bates, Alistair

The Assessment of the Environmental Risk from Casualties of War

Cundy, Ian and Hristov, Hristomir

NAS – Welsh Wreck Web – Research Project (2020)

Heine, Eike-Christian

Research in an extreme environment: Historical perspectives on underwater archaeology

Discussion

Time: 5.30 p.m.

Farewell Words

Chair: Schäfer, Christoph

Subject to alteration.

Abstracts

Auriemma, Rita - Buccolieri, Mino - Coluccia, Luigi - D'Ambrosio, Paolo - Picciolo, Andrea - Rugge, Michela

The underwater archaeology tells of Salento: Recent research in the Adriatic and Ionian seas

During September through October 2020, underwater surveys were carried out by the University of Salento in the crystalline waters of southern Puglia.

In the Porto Cesareo MPA of (Ionian sea), new evidence has been added to the numerous ones already known (among which the submerged area of a Bronze Age settlement, the navis lapidaria wreck of the Roman Imperial age, other wrecks of mediaeval and modern epoch, etc.): some spectacular formations (“blocks”) scattered in a vast area of the sea bottom, between 3.5 and 5.5 m deep, and composed uniquely by cemented sherds of Tripolitanian amphorae (2nd cent. AD), have been identified as remains of a supertanker sailing from the North African province to the Eastern Mediterranean, along a direct route.

Also in the “Le Cesine” Natural Reserve (Adriatic) the survey led to the identification of new archaeological evidence. Of great interest is the discovery of a big pier perpendicular to the coast that lies a few meters deep. Investigated for a hundred meters, it has two parallel curtains of large squared blocks, 8 meters thick. The structure, which may have belonged to a port complex of the Augustan age, could prove crucial to the understanding of other buildings, closely located.

Some of this evidence seem to be significant markers of sea level changes and the seascapes evolution; furthermore, they have a big potential for sustainable projects of in situ preservation and valorization.

Auriemma, Rita; Coluccia, Luigi; Rugge, Michela, University of Salento – R. Auriemma first author

Buccolieri, Mino, Coordinamento Ambientalisti pro Porto Cesareo ONLUS

D'Ambrosio, Paolo; Picciolo, Andrea, Porto Cesareo MPA

UnderwaterMuse

www.italy-croatia.eu/web/underwatermuseum

www.facebook.com/Project-UnderwaterMuse-106106884192806/

Archeologia Subacquea – Università del Salento

www.unisalento.it/scheda-utente/-/people/rita.auriemma/didattica/1182442019/scheda

<https://www.facebook.com/ArcheoSubUniSalento/>

**Auriemma, Rita - Antonazzo, Antonella - Calantropio, Alessio -
Chiabrando, Filiberto - Coluccia, Luigi - Leone, Danilo - Maschio, Paolo
Felice - Turchiano, Maria - Spanò, Antonia – Volpe, Giuliano**

Shipwrecks stories in a “trap bay”:

Research and valorization in Torre S. Sabina (Brindisi, Italy)

The 2020 underwater archaeological research in the inlet of Torre Santa Sabina - Baia dei Camerini (Municipality of Carovigno, Brindisi, Italy) represented the first phase of the pilot intervention of the Interreg Italia-Croatia UnderwaterMuse project, which aims to enhance and make accessible the huge underwater heritage of the areas involved through the creation of submerged archaeological parks and the narrative and communicative use of the virtual reality. The Puglia Region - Department of Tourism, Economics of Culture and Valorization of the Territory, partner of the UnderwaterMuse project, launching these researches aimed at valorisation, has involved the three regional Universities thanks to an agreement.

The fruitful synergy between the various actors involved and the support of the territory and the community have allowed the achievement of the objectives of this campaign, preliminary to the broader and more articulated intervention foreseen for the next year.

Auriemma, Rita; Coluccia, Luigi, University of Salento – first author

Antonazzo, Antonella, TPP – Regione Puglia

Calantropio, Alessio; Chiabrando, Filiberto; Maschio, Paolo; Spanò, Antonia, Polytechnic University of Turin

Leone, Danilo; Turchiano, Maria, University of Foggia

Volpe, Giuliano, University of Bari

UnderwaterMuse

www.italy-croatia.eu/web/underwatermuseum; www.facebook.com/Project-UnderwaterMuse-106106884192806/

Archeologia Subacquea – Università del Salento

www.unisalento.it/scheda-utente/-/people/rita.auriemma/didattica/1182442019/scheda

<https://www.facebook.com/ArcheoSubUniSalento/>

Thanks to the collaboration with the Polytechnic of Turin, the entire stretch of coast was mapped with drone flights, in order to reconstruct the coastal landscape in the various phases, starting from the Bronze Age.

Targeted interventions were carried out on the Roman wreck of the imperial age, beached and abandoned at the ancient shore and now submerged due to the relative rise in sea level, and on the remains of on-board equipment of a ship of the *Serenissima*, the *Galea Magna* (1598).

Another important focus was represented by the stratigraphy of cargos resulting from the various shipwreck episodes, accumulated at the foot of the western cliff.

Keywords: underwater cultural heritage, in situ protection and valorization, underwater archaeological park, VR, seascapes archaeology, wrecks, Roman ship, galley, cargo.

Auriemma, Rita - Antonazzo, Antonella - Beltrame, Carlo - Costa, Elisa - Kamenjarin, Ivanka - Leone, Danilo - Pizzinato, Claudia - Šuta, Ivan - Turchiano, Maria - Volpe, Giuliano

The “invisible” heritage to the challenge of the valorization:

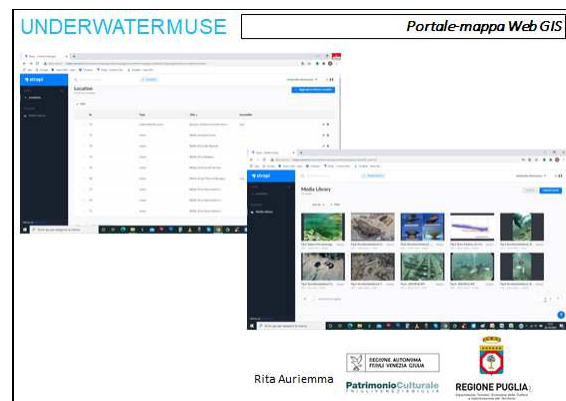
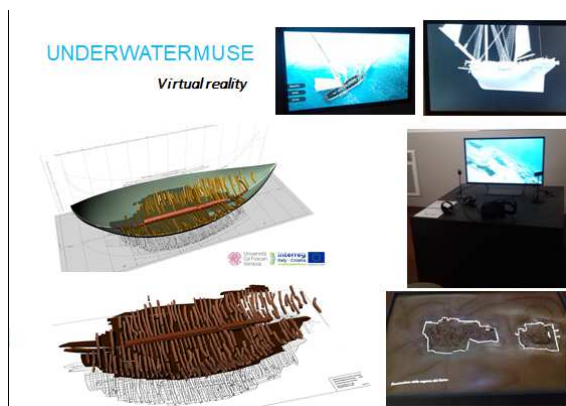
The UnderwaterMuse Project

The Adriatic sea is dotted with wrecks and its coasts are scattered by a lot of underwater sites. The routes, the types of hulls and their cargos, the different types of coastal sites in some cases have been well studied, in others only the coordinates are known. The UM project focuses on some of them, in order not only to increase knowledge, but above all to make them visitable by as many people and in different ways as possible, always paying the utmost attention to their integrity.

The project aims at applying on sample areas (maritime landscapes of Torre Santa Sabina, Grado, Resnik/Siculi, Caorle) a methodological and technological protocol based on research/knowledge and development/communication of underwater archeological sites that are complex and multi-stratified, characterized by strong diversity. The project’s objective is therefore to transform the site into an underwater

archaeological park (or eco-museum) through innovative and/or experimental methodologies and techniques in order to try to reduce the loss of important cultural heritages as well as to guarantee an economic spin-off deriving directly from the creation of a sector linked to the tourist-cultural promotion of the context of reference.

An immersive virtual reality (VR) approach renders underwater sites accessible to a wider public, including people with different kinds of disabilities. Training diving guides will improve the immersive experience of underwater sites. Based on the experience gained, an innovative promotional GIS tool, the ‘UnderwaterMuse MAP’ for promoting underwater sites with accessibility standards, will be developed. The ‘UnderwaterMuse MAP’ will be promoted at transnational, national and local level, in the Adriatic and beyond.



Auriemma, Rita, University of Salento – first author
Antonazzo, Antonella, TPP – Regione Puglia
Beltrame, Carlo; Costa, Elisa, Ca’ Foscari University of Venice
Kamenjarin, Ivanka; Šuta, Ivan Civic Museum of Kaštela
Leone, Danilo; Turchiano, Maria, University of Foggia
Pizzinato, Claudia, Informest – FVG
Volpe, Giuliano, University of Bari

Byford-Bates, Alistair

The Assessment of the Environmental Risk from Casualties of War

In 2015 Wessex Archaeology were commissioned by the UK Ministry of Defence's Salvage and Marine Operations to carry out a study examining the environmental risk from vessels under their purvey, predominantly lost during the conflicts of the 20th Century, or sunk in the immediate aftermath, as part of the disposal of hazardous munitions at the end of the Second World War. These vessels include warships lost between 1870 and 1982, and merchantmen and tankers from both World Wars, as well as later conflicts, that were under Admiralty control. Geographically these vessels are spread across the world, and in some cases potentially under multiple national jurisdictions.

We demonstrate how using a combination of publicly available primary and secondary sources related to the construction, history and loss of the vessel combined with recent published research into environmental pollution risks, hazard analysis and assessment have allowed vessels at risk to be ranked and remediation put in place. This allows for more targeted pre-emptive action to be planned, replacing the current more reactive approach to responding to environmental emergencies brought about by the effects of decades underwater. The caveat to this is ongoing issue of ordnance and its mitigation. The use of standardized approaches to environmental risk assessment of potentially polluting wrecks, allows for an international multiagency/governmental approach to be developed in the future for managing existing, and future military and civilian ship casualties.

Alistair Byford-Bates
Senior Marine Archaeologist
Wessex Archaeology

Cundy, Ian - Hristov, Hristomir

NAS – Welsh Wreck Web – Research Project (2020)

In 2002, the Welsh Government's Historic Environment Service (Cadw), asked the Malvern Archaeological Diving Unit (MADU) to examine a shipwreck in Cardigan Bay, West Wales, that is designated under the United Kingdom's Protection of Wrecks Act (1973). The exercise was to determine whether the remains on the seabed were from a vessel known as the Diamond that wrecked in 1825.

During MADU's investigations, a database was compiled of 453-vessels known to have been involved in maritime incidents in the vicinity of the site.

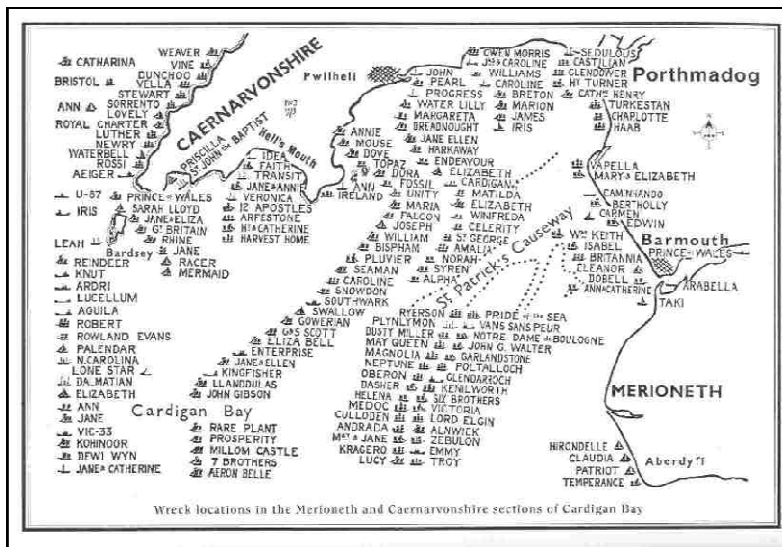
In 2020, with Covid-19 restrictions being imposed on many people around the world, a project was developed for anyone interested in carrying out on-line research and reporting on some of the many vessels on the database, see:

<https://www.nauticalarchaeologysociety.org/welsh-wreck-web-research-project>

The project is due to run until the end of 2020, and at the time of writing, 61-researchers, based in 13-countries, are engaged in researching 185-vessels, and 45-reports have already been submitted. For the latest information, see:

<http://www.madu.org.uk/Page%2042%20-%20www%20Research%20Project%20-%202020.dwt>

One of the project's researchers Dr. Hristov took on research into the loss of two vessels from the database which would serve as examples underlining the project's variety as to different types of ships investigated, chronological range and nature of incidents – the sailship De Jung Jacob that was driven ashore in 1800, and the tanker Lucellum that caught fire in 1941. He will recount his experience of taking part in the project, and the results derived from his locked down, on-line, investigations during the Covid-19 pandemic.



Map of North Cardigan Bay, West Wales, taken from "Shipwrecks of North Wales" by Ivor Wynne Jones, (This map shows around 33% of the wrecks on the "www Research Project's" database)

Ian Cundy B.Sc. M.A. (principle at the Malvern Archaeological Diving Unit (MADU), & Welsh regional representative for the Nautical Archaeology Society (NAS), United Kingdom)

Dr. Hristomir Hristov (senior expert and researcher at the Naval Museum Varna Branch of the National Museum of Military History, Sofia, Bulgaria)

DellaPorta, Katerina P.

«Μηδείς φοβείσθω το πέλαγος» Ιωάννης Χρυσόστομος (PG 50)

Σωτήρες γαρ εισίν οι θεοί, Αρτεμίδωρος, Ονειροκριτικά.

According to Greek mythology, many were the sea gods and demons that sailors turned to either to seek their protection, or to appease them with sacrifices and prayers and to prevent impending calamities.

For today's sailors, Saint Nicholas is the most popular saint and his cult, as the protector of sailors, is widespread throughout the Christian world from the Middle Ages until today.

However, until the 7th century and for the entire early Byzantine period, the patron saint of the Byzantine sailors was Saint Phocas, with his center of worship was in Sinope in the Black Sea, while much less known as the patron saint of sailors was Saint Isidore the sailor from Chios island.



It seems that the cult of St. Phocas as the patron saint of sailors was displaced by the cult of St. Nicholas, but was saved, like that of St. Isidore in the coastal and island toponyms of the Greek seas, declaring capes and generally dangerous areas for navigation.

These places are located and preserved in ruins in chapels and small churches dedicated to the worship of the two Saints Phocas and Isidore, in proportion to the ancient Greek sanctuaries of Poseidon scattered throughout Greece. The present study on the worship of these saints for the protection of seafarers is based on information from the lives of the saints, on the indications of medieval and modern maps, on the insularia as well as on the iconography.



Archaeologist
Ministry for Culture
Director of the Byzantine and
Christian Museum

Fiederling, Max

Hin und wieder zurück. Das Wrack Portiței A

Interdisziplinäre Erforschung eines römischen Handelsschiffes vor der Schwarzmeerküste Rumäniens

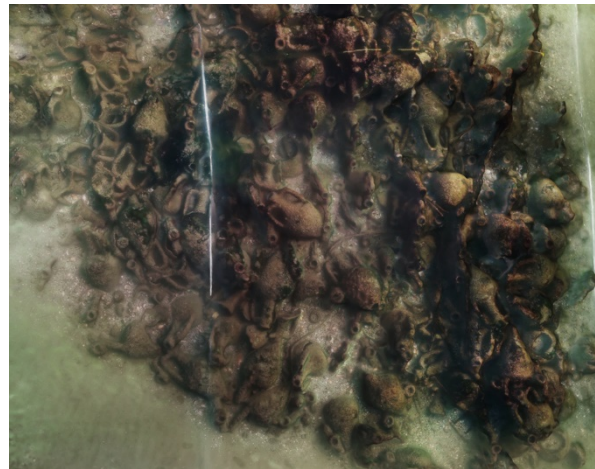
Im Zentrum des Dissertationsvorhabens von Max Fiederling steht die archäologische Auswertung des kaiserzeitlichen Schiffswracks Portiței A, welches im März 2016 im Rahmen eines Kooperationsprojektes der Bayerischen Gesellschaft für Unterwasserarchäologie, der LMU München und dem ICEM Tulcea entdeckt und anschließend bis Ende 2018 erforscht werden konnte.

Das vorrangige Ziel ist die detaillierte Auseinandersetzung mit der Bautechnik und konstruktiven Merkmalen, sowie der Ladung des Schiffes. Ebenso stehen die Herkunft, das Ziel und die Besatzung sowie die genauen Umstände seiner Havarie im Fokus.

Das Wrack ist aufgrund seiner exzeptionellen Erhaltung von herausragender (schiffs-) archäologischer Bedeutung. Im Gegensatz zu den bisherigen, durchaus spektakulären antiken Wrackfunden im Schwarzen Meer, die im Rahmen der Forschungsmissionen von Robert Ballard und dem MAP Projekt in den letzten Jahren gemacht wurden, liegt das Wrack Portiței A im Flachwasser. Es ist daher im Schwarzmeerraum das erste seiner Art, das umfassend und mit modernen Methoden prospektiert und ergraben werden konnte.

Dadurch wird es möglich sein, neue Erkenntnisse zu regionalspezifischen Schiffsbautechniken und römischen Handelsrouten im Schwarzen Meer zu liefern. Aufgrund der Erhaltungsbedingungen stehen auch bisher in der Forschung wenig beachtete Objektgruppen wie das Ballastmaterial oder kleinste botanische Reste im Fokus der Untersuchungen.

Bei dem Handelsschiff mittlerer Größe handelt es sich außerdem um den ersten in situ erhaltenen Leerguttransporter seiner Zeit, was weitere Fragen zum Handelsnetz und den Spezifika des betreffenden Wirtschaftsraumes in römischer Zeit auf den Plan ruft.



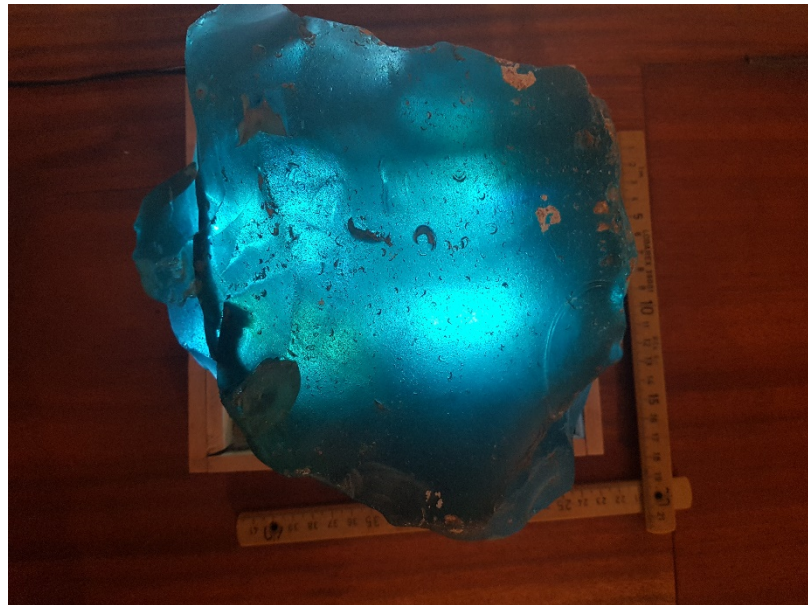
Glass from Apollonia/Israel



Glass production and glass artifacts can be traced on the eastern Mediterranean coast as early as the first century AD, but excavations show that one of the most important centres during the Byzantine period was at Apollonia. At our maritime survey at Apollonia we discovered chunks of glass ingots at the store-houses and next to the break-waters, which most probably fall when loading to ships.

Through this period were at Apollonia numerous glass furnaces, which when out of use were abandoned and new constructed.

The glass from Apollonia was clear blue, but there are places where greenish glass, due to change of temperature, can be traced



Heine, Eike-Christian

Research in an extreme environment:

Historical perspectives on underwater archaeology

I am neither an archaeologist nor a diver. I am, however, a historian who ended up being interested in the history of both activities. While researching for my second book I stumbled upon the papers of Honor Frost (1917-2010), which are collected in Southampton.

For me, the DEGUWA-meeting would be an excellent forum in two respects:

First, it would offer the possibility to discuss findings with actual underwater archaeologists.

Second, I hope to be pointed towards historical material that would allow an understanding of the formation of underwater archaeology as a discipline.

In my presentation I would like to do two things.

In a first step I will tell the story how and why Frost, Peter Throckmorton (1928-1990) and Frédéric Dumas (1913-1991) initiated fieldwork in 1958. They started one of the first projects to carry out a systematic campaign under the water surface. I will present the archaeological questions asked as well as the concrete problems and working methods employed at the coast of Asia Minor. After this first step tells a story from a narrow perspective of the history of science, the second part of my presentation widens its angle. I will argue that underwater archaeology was only one field, in which technological innovation opened up new research possibilities. Under the specific conditions of the Cold War, global extreme environments increasing became new spaces for research in various disciplines.

Dr. Eike-Christian Heine, TU Braunschweig, Institut für Geschichtswissenschaft
eike-christian.heine@tu-bs.de

Novichenkova, Maria V.

About the Roman Military Equipment of Augustus' reign from the sanctuary Gurzufskoe Sedlo as the archaeological evidence of the Roman military actions in the Northern Black Sea region

About the Roman Military Equipment of Augustus reign from the sanctuary Gurzufskoe Sedlo as the archaeological evidence of the Roman military actions in the Northern Black Sea region.

The paper deals with questions of archaeological sources of Roman military naval actions with high probability which took place in the Northern Black Sea region during the Augustus reign, in particular, M. Vipsanius Agrippa Roman military naval expedition in Bosphorus (Oros. VI. 21. 28; Dio. Cass. LIV. 24; Jos. Ant. XVI, 2).

The most massive archaeological source which correlates with these events are the materials of the Scytho-Tauri sanctuary Gurzufskoe Sedlo in Mountain Taurica (fig. 1) where the war trophies of Roman armour of the 2nd c. BC – the 3rd c. AD were revealed, and the major and the largest for this period for the Northern Black Sea region



Fig. 1. The view on sanctuary near the pass Gurzufskoe Sedlo (1434 m) from the North-East.

group of the Roman military equipment is presented by Roman military equipment of Augustus rule. It contains the details of gladii of type Mainz (fig. 2), helmets, shields, chain-mail Lorica Hamata, cingulum militare, early Aucissa fibulae, surgical instruments, military camp tools, an Arezzo Terra Sigillata, metal ware. By this period date the 53 of Roman Augustus coins, the Bosporan coins of Asander, Dynamis, Polemo I¹. The bulk of pieces of Augustus reign from Gurzufskoe Sedlo typologically correspond with finds of personal military equipment of the of Roman naval camps of Marcus Vipsanius Agrippa, early Roman legionary camps and auxilia castells of Limes Germanicus – Lower Germanic and Upper Germanic-Rhaetian Limes of the right bank of Rhine and the valley of the Lippe River during the time of Drusus (13–9 BC) and Tiberius (8–7 BC, 4–5 AD) military campaigns.



Fig. 2. A bronze silvered handguard of gladius type Mainz, 20^s of 1st c. BC. Sanctuary near the pass Gurzufskoe Sedlo.

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¹ Stored in archaeological funds of Yalta Historical and Literary Museum.

Olkhovskiy, Sergey – Khotylev, Aleksey – Mayorov, Alexander

Phanagorian port construction according to archaeological and geological data

A stone mound of 190-200 meters in length and up to 60 meters wide, which is, most likely, remains of a pier or a jetty, was found during a hydromagnetic survey in the water area of Phanagoria, an Ancient Greek city located in the Taman Bay of the Black Sea. Phanagoria did not possess a natural harbor, but still wanted to become a maritime trade center, so the construction of a big port seems to be reasonable. But was this port built all at once or step by step, in different stages? When was it built and what from? How long did it function?

In order to answer these questions, we made two survey pits, one in the seaward part of the mound and one — in the coastal.

As it turned out, the height of the mound is over 2.5 meters, and the total volume of stone it's composed of is between 65000 and 75000 cubic meters. A stratigraphic research showed that the mound was built in at least four stages, which differ in material and building technology. Based on ceramics found in the two pits, we suggest that the first three stages of construction were carried out in V-III centuries B.C., while the fourth stage is dated to VIII-IX centuries A.D. The bottom layer of the mound is composed of local limestones, the next two stages are built with stone brought from outside of the north coast of the Black Sea. It is not clear why would anybody want to carry out the fourth stage of construction in IX century A.D., as by then the port of Phanagoria was half-sunk and could not accept seafaring ships.

Opait, Andrei; Davis, Dan and Brennan, Michael L.

A Case Study of Rhodian Wine Export: The Knidos K and J Shipwrecks

In 2010-2011, two ancient shipwrecks were discovered and documented by the E/V Nautilus expedition near Knidos at the western tip of the Datça peninsula in southwest Turkey. High-resolution imagery from both wreck sites permits a preliminary analysis of their cargoes. Knidos K (wreck mound: 15 x 8 m) was carrying three variants of Rhodian amphorae (small, medium, and large capacities) dating to the 1st century AD, as well as a Cretan amphora (type AC3) and a jug. Knidos J (13 x 6 m) was carrying medium and large variants of the same amphora type, in addition to a Knidian amphora. Just 7 kilometers separate the wrecks, both of which lie 5 km offshore. Kilns that manufactured these amphorae are known in Rhodes, its Peraia, and in Caria; one of the most important production centers seems to have been Kallipolis near the head of the Gulf of Gökova (ancient Kerameios Sinus). The amphora type is associated with the famous sweet Rhodian dessert wine *passum*, although evidence of other products such as figs, possibly also preserved in *passum*, have also been found. This wine seems to have been less famous than Chian and Lesbian wines, but its widespread and voluminous distribution in the Mediterranean, western Europe, Britain and even India during the first two centuries AD demonstrate mass consumption and high demand. In spite of numerous terrestrial discoveries over the past four decades, however, shipwrecks with early Roman Rhodian amphora type are rather rare. The type has been identified as singletons or in

small groups on a few shipwrecks, and a few badly plundered sites appear to represent cargoes. In the eastern Mediterranean, the best example is the badly looted Akandia A site off Rhodes city, which managed to preserve 270 amphorae. Recent underwater research in the Adriatic as well as in the central and western Mediterranean have increased the numbers of sites and are sharpening the picture of its distribution networks. Knidos J and K add important information regarding the local networks involved during the initial stages of distribution. The modest size of these ships would have allowed them to sail into and out of the many bays, gulfs, harbors and ports that indent the coastlines of the Datça and Bozburun peninsulas. We speculate that they were destined for a large emporium, such as Knidos or Rhodes, to offload their consignment for transshipment elsewhere in the Empire, but foundered in a heavily-trafficked sea-lane known for heavy winds and occasional bad weather.



Reich, Alexander

Terra et aqua.

Untersuchung der Hafenbecken Milets unter nautischen Gesichtspunkten

Die antike Stadt Milet (Türkei) besaß durch ihre Lage am Ausgang des Mäanderdeltas an der südionischen Küste eine strategisch günstige Position. Strabon zufolge verfügte die Stadt über vier Häfen (Geographica 14.1.6). In mehreren Kampagnen wurden die Gebiete mit geophysikalischen Surveys und Bohrkernproben durch H. Stümpel und H. Brückner untersucht, wodurch die geomorphologischen Entwicklungen der milesischen Halbinsel nachvollzogen werden können, die von der Archaik bis in die Kaiserzeit besonders starke Veränderungen aufweisen.

In meinem Vortrag beschäftige ich mich mit der Rekonstruktion der mittlerweile versandeten Hafenbecken mit Fokus auf den Hellenismus und die frühe römische Phase, um mithilfe des nautischen Profils die Leistungsfähigkeit der Häfen in Bezug auf Zugänglichkeit und Umschlagsvolumen zu analysieren und baue dafür auf den geoarchäologischen Arbeiten auf.

Die Bearbeitung der Fragestellung erfordert neben der Neubewertung von Bohrkernen die Analyse der nautischen Bedingungen, die für Milet erstmalig rekonstruiert werden sollen. Dazu werden auch die Winde und Strömungen in dem Gebiet betrachtet, da sie direkten Einfluss auf die Navigation und somit die Zugänglichkeit gehabt haben könnten. Aufgrund der Verlandung des Gebietes handelt es sich dabei um schwer nachzuvollziehende Faktoren, weshalb Lösungen und Untersuchungsansätze vorgeschlagen werden sollen. Zudem werden verschiedene Schiffstypen untersucht, da sie unweigerlich von all diesen Einflüssen betroffen gewesen sein müssen. Um ein vollständigeres Bild zu erhalten, sollen zusätzliche Orte für Bohrkernproben in Aussicht gestellt werden. Die geoarchäologischen Ansätze können, zusammen mit den bisherigen klassisch archäologischen Methoden, ein besseres Bild davon vermitteln, wie und in welchem Umfang die Becken angefahren werden und welches Handelsvolumen die milesischen Häfen bewältigen konnten.

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Reinard, Patrick

Jeden Tag warten wir auf unsere Entlassungsurkunde.

Ägyptische Seefahrer und die stadtrömische Getreideversorgung

Die Lebensmittelversorgung (cura annonae) der Stadt Rom ist ein bemerkenswertes Beispiel für die zum Teil staatlich gelenkte – oder besser gesagt: motivierte – Mobilität von Gütern, Personen und Schiffen auf dem Mittelmeer. Das konstante Bedürfnis der Versorgung der Stadtbevölkerung war politisch hochbrisant, da die Akzeptanz der Kaiserherrschaft u.a. mit der Sicherung des Getreidebedarfs zusammenhing. Deshalb wurden im 1. Jh. n.Chr. eine beachtliche Infrastruktur (horrea, Hafenerweiterung, Leuchttürme etc.), eine strikt hierarchische Administration (praefectus annonae etc.) sowie juristische Anreize gegenüber den collegia der navicularii entwickelt, die eine Sicherung und Kontrolle der Lebensmittelversorgung garantieren sollten. In Ostia, Portus und Rom kann dies anhand epigraphischer, literarischer und archäologischer Quellen untersucht werden.

Selten wird jedoch auf die papyrologische Überlieferung geachtet, die eindringliche Informationen über Schiffer und ihr „Agieren“ innerhalb der vom Staat vorgegebenen administrativen Strukturen liefert. Als ein Beispiel soll in dem Vortrag ein Papyrusbrief (BGU 1/27; 2./3. Jh. n.Chr.) aus Ostia / Portus vorgestellt und analysiert werden. Absender des Briefes ist ein ägyptischer Getreideschiffer. Seine Nachricht eröffnet einen unmittelbaren Einblick in die Situation des Schiffers, bietet konkrete Zeitangaben und lässt sich in den aus epigraphischen, literarischen und archäologischen Quellen bekannten Kontext der cura annonae sehr gut einordnen. Anhand dieser Quelle wird die zeitliche Abfolge der verschiedenen Vorgänge (Löschen der Seeladungen, Umladen auf Flussschiffe der codicarii, Transport nach Rom etc.) ersichtlich.

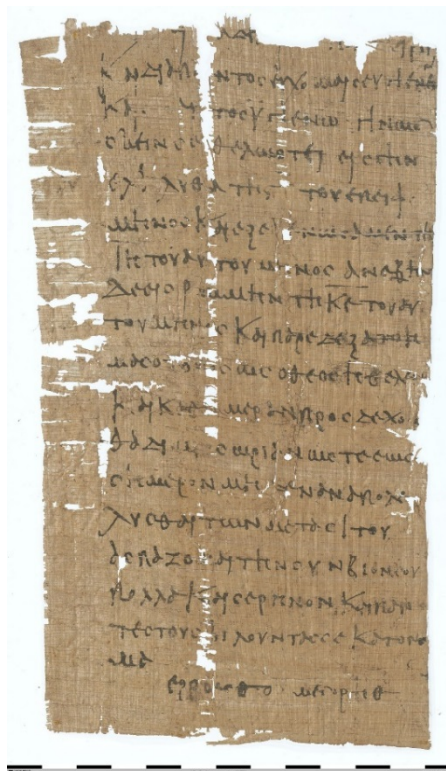


Photo: Christoph Schäfer, Alte Geschichte, Universität Trier

Papyrus:
BerlPap. Berliner Papyrusdatenbank:
<https://berlpap.smb.museum/01700/>

Reinfeld, Michaela

“Don’t marry a skipper, you have no husband in summer, no money in winter”

In the 19th and 20th centuries, transport shipping on the waterways in the Mark Brandenburg was truly no picnic. The rising capital of Berlin and the province of Brandenburg needed huge amounts of building materials for the numerous brick and other buildings. But the skipper who transported these building materials were simple people and shipping was a family business where everyone had to lend a hand.

For more than ten years, the association Kaffenkahn e.V. has been dealing with the witnesses of the Wilhelminian time, the sunken “Kaffenkähne” in the Werbellinsee. Meanwhile, our association knows about 14 boats, from the splendidly built “Butzer”, over the elongated “Spitzkahn”, to the “kleiner Kahn” (“little boat”), an indispensable companion of its big sister. Four of these boats alone could only be located or certainly identified in the last two years. Various excavations have already been carried out on individual wrecks, giving insights into the life of the skippers and the equipment of the historical barges. Nonetheless, the individual fates of the skippers who owned the respective transport boat are largely unknown.

In addition to the scientific investigations, numerous illicit excavations took place, which make a clear identification of the ship owner largely impossible today.

The lecture gives an overview of past and current research on the “Kaffenkähne” in the Werbellinsee. Due to the increasing decay and the threat posed by the invasive nature of the quagga mussel, the documentation of the sunken shipwrecks is becoming more and more urgent. Which successes but also problems arise will also be discussed in the lecture.



Fig. 2: Excavation scene at a “Kaffenkahn”

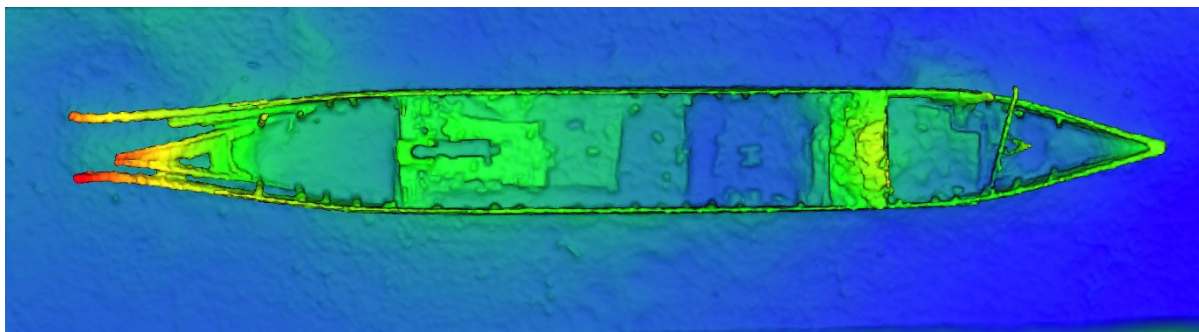


Fig. 1: 3D model of a “Kaffenkahn” as depth map (photo: Kaffenkahn e.V., 3D modelling: B. Fritsch)

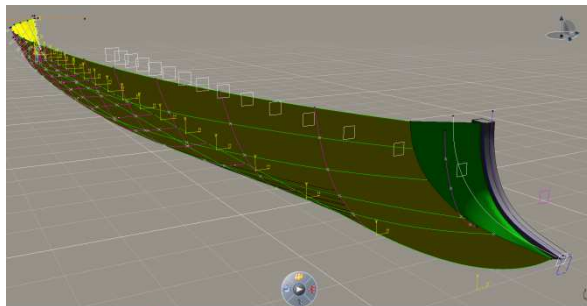
Michaela Reinfeld (Deutsches Archäologisches Institut/Römisch-Germanische Kommission)

Schäfer, Christoph

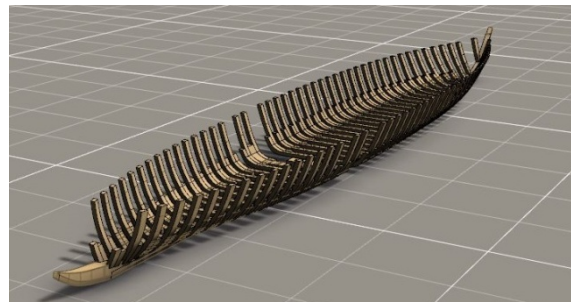
Die römischen Militärschiffe¹ von Oberstimm und Mainz und der Nasse Limes an Rhein und Donau – Rekonstruktion, Tests, Ergebnisse

In Oberstimm und Mainz wurden in den letzten Jahrzehnten die besten archäologischen Befunde römischer Militärschiffe bzw. -boote entdeckt. Fahrzeuge dieser Art bildeten das Rückgrat der flussgestützten Verteidigung des Imperium Romanum. Diese wurde umso wichtiger als im 3. Jh. n.Chr. der Limes aufgegeben werden musste und die Ströme Rhein und Donau zu Verteidigungsgrenzen wurden. Die Befunde stellen eine hervorragende Grundlage dar für Rekonstruktionen, anhand derer wir viele Details über die antike Schiffsbautechnik und das Leistungsvermögen dieser Fahrzeuge wiedergewinnen können.

Dabei lässt sich die Veränderung in der Schiffsbautechnik mit Messwerten untermauern. Im Zuge der Erforschung dieser Nachbauten wurde ein elektronisches nautisches Messinstrumentarium etabliert, das die präzise Analyse der Schiffe erlaubt. Daraus ergeben sich weitreichende Folgerungen hinsichtlich der Maßnahmen zur Sicherung der Wasserwege bzw. des „Nassen Limes“, der Steuerungsmechanismen der Reichszentrale sowie der Kommunikationswege und der Logistik. Nicht zuletzt lässt sich auch die Einstellung der Römer zu technologischem Fortschritt beleuchten.



Lusoria Flächenaufbau



Lusoria Spanten

¹ Streng genommen handelt es sich um offene Mannschaftsboote, denen das Deck fehlt, das Schiffe ausmacht. Da sich der Ausdruck Schiffe für die Wracks eingebürgert hat, wird er hier weiter verwandt.

Selke, Valeria; Franke, Regina

Neue Ergebnisse zu den Grabungen am Hafen der CUT.

Der Flusshafen der CUT und ihrer Vorgängersiedlung lag vor der nordöstlichen Stadtmauer der späteren Koloniestadt. Der Rhein beschrieb zur Römerzeit einen flachen Bogen direkt vor der kaiserzeitlichen Ansiedlung. Durch das ständig durchfeuchtete Bodenmilieu und die fehlende moderne Überbauung zählen die Hafeneinbauten und weitere zugehörige Strukturen zu den am besten überlieferten zivilen Flusshäfen der Nordwestprovinzen des Imperium Romanum.

Am römischen Rheinufer wurden spätestens ab den 40er Jahren des 1. Jahrhunderts eine Uferbefestigung, eine mehrfach umgebaute hölzerne Kaianlage und ein Schiffshaus errichtet. Der Hafen wurde mindestens bis zur Mitte des 3. Jahrhunderts, wahrscheinlich aber bis in die Spätantike weiter genutzt.

Stefanos, Spanos

Schiffsdarstellungen auf Mykenischer Keramik.

Die seltsame Darstellung eines Schiffswracks von Koukounaries auf Paros.

Der Fall der mykenischen Paläste markierte eine radikale Veränderung in der geopolitischen Karte des prähistorischen Griechenland. Die Ausgrabungen zeigten, dass unmittelbar nach der Zerstörung der mykenischen Zentren auf dem griechischen Festland eine Gruppe mykenischer Flüchtlinge nach Paros floh, wo sie einen Hügel besetzten, den sie in eine mykenische Akropolis verwandelten. Es folgte eine Zeit des Wohlstands, wie verschiedene Funde zeigten, wie z. B. Elfenbein, Bergkristall, Bronze, bemalte Keramik aus der späten helladischen III C mitten-Zeit.

Eine tiefe Schale (Skyphos) aus dieser Zeit aus Koukounaries bietet eine seltene Darstellung eines Schiffes. An der Innenseite läuft eine Band um den Rand. Draußen ist ein Schiff kopfüber dargestellt. Es ist eine seltene Darstellung eines mykenischen Schiffswracks.

Das Schiff von Paros kann mit der Darstellung eines Schiffes von Skyros und einer zweiten Darstellung eines Schiffes von Tragana verglichen werden. Der Bug ist wie bei diesen beiden Schiffen gebogen. Das Segel ist durch den Wind aufgeblasen.

Die Darstellung erinnert eher an eine Schiffswrack Szene wie die an der Nordwand des großen Tempels von Medinet Habu.

Die Funde aus Koukounaries auf Paros zeigen, dass nach dem Zusammenbruch der Mykenischen Paläste des Festlandes eine Periode des Wohlstands folgte, die auf der Wiederbelebung der Künste und des Handels beruhte. Luxusfunde aus Paros belegen, dass Koukounaries bedeutende Überseeverbindungen mit den Kykladen Inseln hatte, die sich an der Kreuzung des Seehandels mit Kleinasien, Ägypten, Syrien, Zypern und Kreta befinden.



Warnecke, Heinz

Safety first: the Mahdia wreck as a result of improper loading

Safety first: Das Mahdia-Wrack als Resultat unsachgemäßer Beladung

Safety at sea has often been compromised by improper loading of cargo. The famous Mahdia ship which sank off the Tunisian coast while transporting approx. 300 tons of architectural elements and artworks suffered damage of incorrect vertical weight distribution of the cargo. The lecture reconstructs the arrangement of the freight items on the basis of the find horizon and the remains of the hull.

Since the center of gravity of the loaded ship was too high above the center of buoyancy the seaworthiness was so much reduced that the ancient freighter could by no means have covered the 700 nm long sea route from Athens to Tunisia as is postulated in archeology. An important indication thereof are also the Lead seals which have the stamps of the Roman province of Africa Proconsularis. Because the youngest artefacts among the Mahdia wreck cargo have not been manufactured prior to the middle of the 1 st century BC the freight does not bear witness to the Sullan sacking of Athens in 86 BC.

Because the column shafts were stowed on deck the Mahdia ship had too high a center of gravity which so impaired the stability of the ship to such an extent that the wreckage occurred in only a few miles distance from the port of Thapsus. Probably the freight begets the high tributes Thapsus had to pay to Julius Caesar after the loss of the 46 BC battle.

Die Sicherheit auf See wurde oft durch fehlerhaftes Laden der Fracht beeinträchtigt. So sank das mit ca. 300 t Architekturgliedern und Kunstgütern beladene Mahdia-Schiff vor der tunesischen Küste infolge der vertikal ungünstig gestauten Fracht. Der Vortrag rekonstruiert die Anordnung der Frachtstücke anhand des Fundhorizontes sowie der Reste des Schiffskörpers.

Da der Gewichtsschwerpunkt des beladenen Schiffes zu hoch über dem Auftriebschwerpunkt lag, war die Seetüchtigkeit derart gemindert, dass der antike Frachter keineswegs den über 700 sm langen Seeweg von Athen bis Tunesien zurückgelegt haben kann, wie in der Archäologie postuliert wird. Ein gewichtiges Indiz dafür sind die Bleiplomben der Waren, die die Prägezeichen der römischen Provinz Africa Proconsularis aufweisen. Da die jüngsten Artefakte der Fracht des Mahdia-Wracks nicht vor der Mitte des 1. Jhs. v.Chr. gefertigt wurden, kann es nicht von der sullanischen Plünderung Athens im Jahr 86 v. Chr. zeugen.

Zudem hatte das Mahdia-Schiff aufgrund der auf Deck gelagerten Säulenschäfte einen zu hohen Systemschwerpunkt, der die Sicherheit des Schiffes derart beeinträchtigte, dass die Havarie nur wenige Seemeilen nach dem Auslaufen aus dem Hafen von Thapsus erfolgte. Das mit vielen Spolien beladene Mahdia-Wrack zeugt vermutlich von den hohen Tributen, die die afrikanische Stadt Thapsus nach der verlorenen Schlacht 46 v.Chr. an Julius Cäsar entrichten musste.

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Wintjes, Jorit

Quartered safe out there? Towards a typology of Roman naval bases

For more than five centuries naval forces were stationed at or near the frontiers of the Roman empire. From the classics Britannica operating off the coasts of Gaul and Britain to the elusive classis Nova Libyca and Roman naval forces in the red sea, these units provided an important capability to the Roman army. Despite their importance however the study of these units is hampered by a lack of sources, and consequentially they are in general poorly understood.

The proposed paper focusses on one key aspect of operating naval forces: the base. While Roman forts and harbours are sometimes identified as naval bases - an identification that is usually based on very limited evidence – to this date no proper "typology" of Roman naval bases exists, as opposed to other elements of the Roman army; thus, while newly-found Roman forts can be identified for example as bases of cavalry units with a fair degree of certainty based on criteria derived from the special requirements of mounted units. The paper will therefore propose a set of criteria for a naval base based on the actual operational requirements of a Roman naval unit. These criteria will then be applied to a number of forts and harbours on Rome's "wet frontiers" which are usually identified as naval bases.