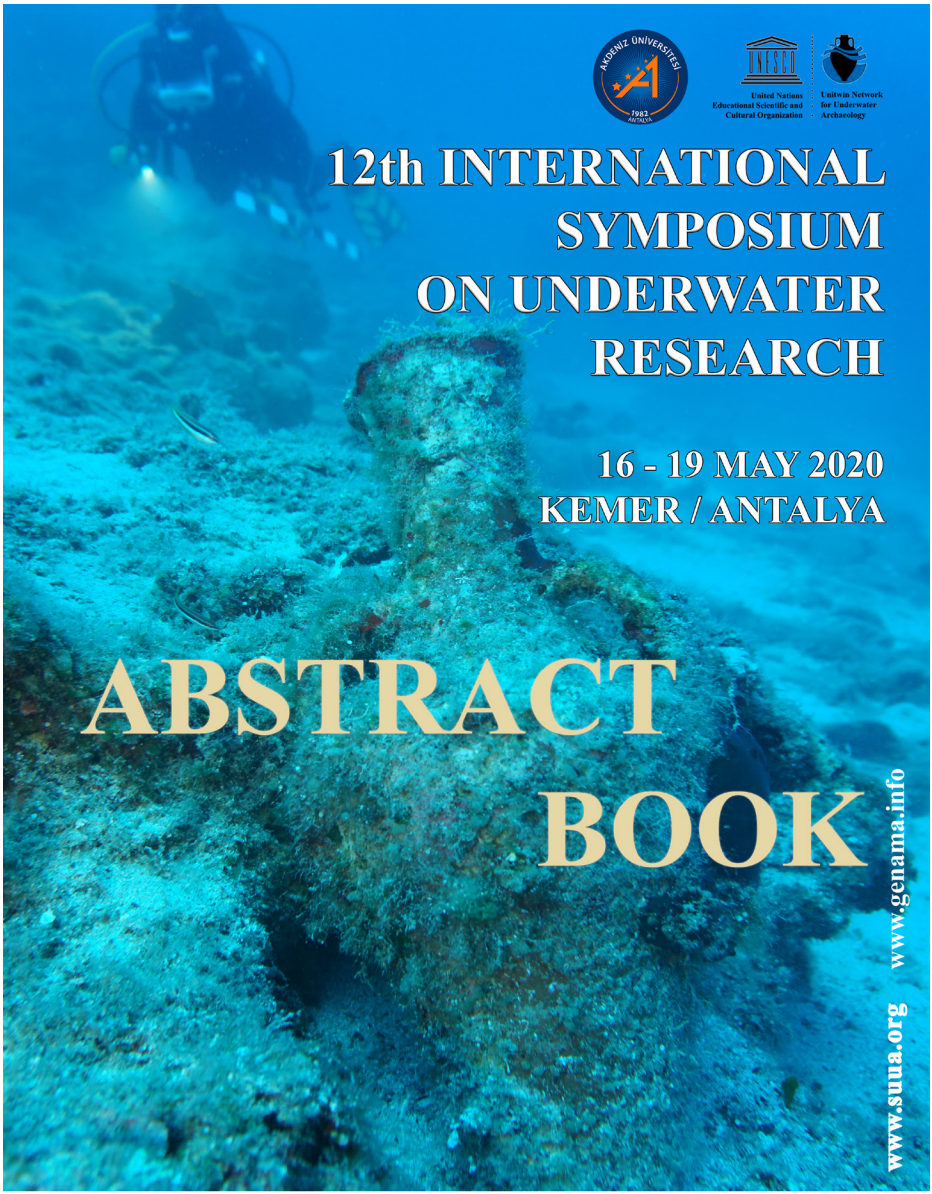

12th INTERNATIONAL SYMPOSIUM ON UNDERWATER RESEARCH

16 - 19 MAY 2020
KEMER / ANTALYA

ABSTRACT BOOK

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12th INTERNATIONAL SYMPOSIUM ON UNDERWATER RESEARCH ON-LINE PROGRAM

May 16, 2020 Saturday
09.30 – 16.00 (UTC + 3)

09.30 Opening of 19th IKUD (International Kemer Underwater Days) and 12th ISUR (International Symposium of Underwater Research) ON-LINE

Opening Speeches

09.30 Welcome Messages of Necati Topaloğlu (Mayor of Kemer), Volkan Yorulmaz (KETAV), Aydın Aytuğ (AAD) and Hakan Öniz (Akdeniz University)

09.40 Prof. Dr. Tuncer Demir (Director of Akdeniz University, Mediterranean Civilizations Research Institute)

09.45 Prof. Dr. Ralph O.Schill (President of CMAS Scientific Committee)

09.50 Prof. Dr. Alessandro Marroni (President of DAN Europe)

Sessions of 12th ISUR (On-Line for the speakers Microsoft TEAMS and SKYPE)

SESSION 1 (10.00 – 10.59)
Moderator: Assoc.Prof.Dr. Hakan Öniz

10.00 Ahmet BİLİR - The Underwater Surveys of Çamlimanı Bay

10.12 Asuman BALDIRAN - Underwater Works on Iasos Harbors

10.24 Barış GÜR - Contributions of Underwater Archaeology in The Evaluation of Mycenaean Commercial Relations

10.36 Bartosz KONTNY - Roman Period and Medieval Sacrificial Site From Lake Lubanowo (Nw Poland)

10.48 Bill JEFFERY - Tidal Stone - Walled Fish Weirs of Yap, Federated States Micronesia and Their Role in Marine Ecological Conservation

SESSION 2 (11.00 – 11.59)
Moderator: Assoc.Prof.Dr. Sengul Aydıngun

11.00 A.A. BUKATOV, V.V. VARLAGIN, Y.G. TKACHENKO, S.A. KHOKHLOV Research of The Flooded Ruins in Port Area of City Tauric Chersonese Using Methods of Aerial and Underwater Photogrammetry

11.12 Burçin GÜRBÜZ, Burcu DOĞRU - Digital Reconstruction of the Archaeological Shipwrecks

11.24 Bülent GÖZCELİOĞLU - Some Marine Creatures Obtained From the Antarctic Sea Environment During the Turkish Antarctic National Science Expedition (TAE-2- 2018)

11.36 Emre ERDAN, Fatih ERSAN, Kubilay GÜÇLÜ - Archaeology, Physics and Chemistry: A Technique Used by Mediterranean Sponge Divers from Ancient Times to The Ottoman Period: Spraying and Pouring Olive Oil

11.48 Enrique ARAGON, Andrea SANZ - The Formentera Island Project Maritime Cultural Heritage Research and Conservation

SESSION 3 (12.00 – 12.59)
Moderator : Prof.Dr. Levent Cavas

12.00 S. FAZLULLIN, S. KHOKHLOV, Y. TKACHENKO, M. BARDASHOV, O. PLATONOVA, I. GORLOV - Underwater Research in Lake Onega, The Kizhi Museum Area.

12.12 Haldun AYDINGÜN, Şengül AYDINGÜN, Hakan ÖNİZ - Discovery of the Antique Harbors West of Istanbul

12.24 Kemal ÇİBUK , Rıdvan GÖLCÜK - The Impact of The Industrial Pollution and Rapid Urbanization on The Number and Diversity of Amphorae in The Museums: The Case of İzmit Gulf

12.36 Krzysztof ULANOWSKI - Earthly, Water and Underwater Meetings of The Phoenicians and The Greeks. Mythological and Religious Ways of Transmission in The East of Mediterranean.

12.48 Laura CARRILLO, Nicolas CIARLO, Andres ZUCCOLOTTO, Josue GUZMAN Ghosts Of The Caribbean. Recent Research On El Angel Shipwreck: A 19th Century Composite-Hull, Sailing Merchantman in Chinchorro Bank, Mexico

SESSION 4 (13.00 – 13.59)
Moderator : Dr. Haldun Aydingun

13.00 Levent ÇAVAŞ, Tugbay İNAN - Antifouling Paints and Water Sports

13.12 Lynn B. HARRIS - Maritime Heritage at Risk: Lighthouses Shipwrecks, and Deserted Towns

13.24 Levent ÇAVAŞ, Yeşim Yılmaz ABEŞKA - Biosynthesis of silver nanoparticles by using invasive Caulerpa cylindracea Sonder

13.36 Lynn B. HARRIS - Sick Bays of the South Atlantic: Strategies For Countering Epidemics in Ports, Anchorages and on Islands during the 19th Century

13.48 Magdalena NOWAKOWSKA, Malgorzata MILESZCZYK - Lake Grid Dwellings Of The West Balt Barrow Culture – The Story Of Research And Researchers. The Case Of Lake Pilakno (Ne Poland)

SESSION 5 (14.00 – 14.59)
Moderator : Drt. Ceyda Oztosun

14.00 Michele STEFANILE - Submerged Harbors In the Gulf Of Naples. A Short Update on The Basis of Recent Underwater Archaeology Researches.

14.12 Musa TOKMAK , Murat DAL - Types Of Degradation Observed in Underwater Stone Artifacts

14.24 Mustafa ŞAHİN - Underwater Excavation At The Bazilikal Church in İznik Lake – 2019

14.36 I.R. NIKOLAEV - The Impact of Natural and Social Factors On The Perception Of An Underwater Parks: A Study Of Russian Recreational Divers.

14.48 Paola PUPPO - Shipwreck Cargoes in The Balearic Islands: The Hellenistic Reliefware as Indicator of Maritime Trades in The Western Mediterranean.

SESSION 6 (15.00 – 16.00)
Moderator : Assoc.Prof. Dr. Hakan Oniz

15.00 A. BYKOVA, M. DENISOVA, S. FAZLULLIN – " The world of infinity. Andre laban" exhibition project about the history of underwater research and the world-famous aquanaut Andre Laban.

15.12 Maria Ayça ATEŞ - Objects of Maritime and Underwater Cultural Heritage of Cyprus Island.

15.24 Ayse GAZİHAN - Blue Growth Initiatives in the European Seas

15.36 Victor V. LEBEDINSKI, Julia A. PRONINA - Deep-sea research of the shipwrecks of the XI-XIIth centuries AD in the waters of the administrative territory of Sevastopol

15.48 Şahin ÖZEN – Training System of Underwater Cultural Heritage in Turkey

16.00 Closing Remarks by Assoc. Prof.Dr. Şahin Özen (President of Turkish Underwater Federation) and Hakan Öniz

YouTube https://www.youtube.com/channel/UCWOyHFerGVb815073BZFK-Q?view_as=subscriber

Kemer Fest

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“THE WORLD OF INFINITY. ANDRE LABAN” EXHIBITION PROJECT ABOUT THE HISTORY OF UNDERWATER RESEARCH AND THE WORLD-FAMOUS AQUANAUT ANDRE LABAN.

A.Bykova , M. Denisova , S. Fazlullin

Russian State University for the Humanities, Department of Museology;
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Human. He is the only restless engine of progress, a constant generator of ideas and inventions. He stands for science, art, philosophy, sports. Studying the world around him, he understands himself better. One of such pioneers was Andre Laban, a researcher, and enthusiast who was at the forefront of the development of scientific and technical thought in the area of underwater activity. He was not only an ideological inspirer but also a creative extraordinary personality. Laban invented and tested models of underwater equipment constructed to study the depths. The main purpose of the exhibition is to show the diversity of the world of underwater research, to trace the impact of technological progress, the appearance and subsequent distribution of prototypes of underwater technology-submarines (submarines, bathyscaphes), diving bells, breathing AIDS and wetsuits by referring to the heritage of the French engineer, experimenter, artist, cameraman, screenwriter, director, actor, and photographer Andre Laban. Among the main tasks of the exhibition, curators include: introducing the visitor to the main stages of human exploration of the hydrosphere in the XVI-XX centuries; presenting materials about engineering developments and experimental results during the work of Andre Laban on “Calypso”; demonstrating the specifics of Laban’s painting style and technical and technological features of his work; revealing the inventiveness and versatility of Andre Laban’s approach to film and photo production.

The historical part of the exhibition “Humanity is the sea”, including information about the activities of William Bourne in the design of the submarine, the creation of the first functioning submarine “Drebbel”, an improved model of the submarine “Imnot” apparatus for immersion of John Lethbridge and Carl Klingert, the first deep space suit, designed by Augustus Siebe, a deep dive by William Boebe and Otis Barton, the bathysphere, bathyscaphe project “FRNS-2” Auguste Picard. In General, “Humanity is the sea” highlights the main periods and events that influenced the formation of science in the XX century.

THE UNDERWATER SURVEYS OF ÇAMLIMANI BAY

Ahmet Bilir

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The subject of this study is the copper mine discovered under 4 - 5 m of water during the underwater survey conducted in Çamlimanı Bay, Heybeliada, İstanbul, in the scope of the North East Marmara Underwater Survey. The most important feature of this mine is that Aristotle was mentioned in his book (De Mirabilibus Auscultationibus 58. 834b). It is reported that the divers extracted copper from two fathoms (3.6576m) depths. He emphasizes that this extracted mine was called “diver copper / χαλκόν κολυμβητήν”. Therefore, we can assume that the first industrial divers in history once worked in this bay.

He also states that this mine was called “yellow copper” and was used in a god sculpture in the Temple of Apollo in Sicyon. Aristotle was Alexander the Great’s mentor. Lysippos of Sicyon, who was the contemporary of Aristotle, is a famous sculptor in the palace of Alexander the Great. In this study, the sculpture school in Sicyon, where Lysippos is also grown, will be focused on the use of copper extracted from the underwater in Heybeliada. Lysippos, who was his contemporary, was a famous sculptor in the palace of Alexander the Great and was from Sicyon. Based on this information, it is highly probable that copper extracted from Çamlimanı was used in the sculpture school in Sicyon where Lysippos was also grown.

ARCHAELOGICAL SHIPWRECKS' DIGITAL RECONSTRUCTION

Ahmet Burçin Gürbüz, Ahmet Denker, Burcu Doğru

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Bronze Age Shipwreck of Western Antalya is known to be the oldest commercial ship found submerged, dated 16.-15. centuries BC. We propose to create digital reconstructions of archaeological wrecks such as this Bronze Age Shipwreck. The archaeological site of the wreck and the commercial ship in its original state utilizing emerging technologies. The process will be held with digital twin method which combines multiple technology verticals and tools, including volumetric scanning, ai (computer vision & image processing) and Virtual Reality.

UNDERWATER WORKS ON IASOS HARBORS

Asuman Baldıran

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Ancient settlement was established on the rocky peninsula in a deep and long cove called as the Gulf of Iasos. The legend has it that the colonists who came from Argos established the settlement. Iasos ancient city has a reputation for the harbors right across the Gulf of Güllük. Two counterforts that were found under the sea in our day closed the west harbor of Iasos. These counterforts correspond to the early emperorship period, namely to the east harbor residuals. A tower was added to the small counterfort in the east of the harbor. According to the comparisons made with similar retaining walls in Cyprus and specific historical arguments, the year of built corresponds to 12th-13th centuries AD when the Byzantine Empire was in a downturn and the defense system was strengthened for the hazards from the sea. Underwater works were performed by four stages. The first stage was analyzing the ancient settlement from the shore to determine the areas to dive. The aerial photographs were taken in the second stage. The third stage included sonar works and finally, the fourth stage was performed as the underwater works. The first stage sonar works were done in the west harbor and on the mole. Amphora neck, handles, and the vesselbottoms belong to different periods were found in investigations actualized at the right end out of the mole. It is thought that these belong to at least two submerged. The second part sonar work was performed in the peninsula, East Harbor and around the Gulf of East Harbor. Block stones were observed under the sea in some of the areas during the works done in East Harbor region.

BLUE GROWTH INITIATIVES IN THE EUROPEAN SEAS

Ayse Gazihan

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As a long-term strategy to support sustainable growth in the all marine and maritime sectors, Blue Growth Strategy aimed to contribute to achieving the goals of the Europe 2020 strategy for smart, sustainable and inclusive growth. Blue Growth initiatives were launched and supported by the European Commission (EC) in the Adriatic and Ionian Sea, Baltic Sea, Black Sea, Mediterranean Sea, North Sea, the Atlantic and the Arctic Ocean. These initiatives were resulted in strategic R&I and maritime agendas to promote a more sustainable blue economy. This speech will highlight the progress achieved in the European Seas.

CONTRIBUTIONS OF UNDERWATER ARCHAEOLOGY IN THE EVALUATION OF MYCENAEAN COMMERCIAL RELATIONS

Barış Gür

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Information on Mycenaean culture is basically obtained from Greece, Aegean Islands and Western Anatolia. However, some information about the economic aspects and commercial relations of Mycenaean are also learned through archaeological excavations in the Eastern Mediterranean. The sea was of vital importance for the Mycenaeans. Because overseas trade was a necessary activity for the Mycenaean palace system to survive. Olive oil, wine and textiles produced under the control of Mycenaean palaces were marketed to the Eastern Mediterranean by ships and in return raw materials, luxury and exotic objects were carried to the Aegean World.

Evidence of the commercial relations of Mycenaean palaces with the Eastern Mediterranean also comes from shipwrecks. The evidence in question is provided by Uluburun, Gelidonya, Point Iria and Modi-Poros Late Bronze Age shipwrecks with their routes and cargoes. The information provided by the Late Bronze Age shipwrecks associated with the Aegean World about the Mycenaeans is diverse. This information is different extent, from comparisons of the Mycenaean pottery repertoire over the forms found in the shipwrecks to the commercial relations and possible routes between the Mycenaean Greece and the Eastern Mediterranean coasts.

While the word ku-pi-ri-jo on Linear B tablets in Knossos is associated with Cyprus, archaeological finds show that Cyprus is a very important market where Mycenaean pottery is preferred. Based on these data, underwater archaeology reveals the role of Cyprus in the raw material needs of the Mycenaean palaces. It is also possible to observe the regional diversity of Greece and Crete through shipwrecks in olive oil production.

ROMAN PERIOD AND MEDIEVAL SACRIFICIAL SITE FROM LAKE LUBANOWO (NW POLAND)

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Since 2014 the team of scholars and students from the Institute of Archaeology, University of Warsaw has been conducting underwater survey in the unnamed lake (former Herrn-See) in Lubanowo village (ex-Liebenow) in Western Pomerania. During underwater research the weapons, potsherds, tools, and horse harness elements (including chain reins) were found. They are dated mainly to the Roman Period but also to the Middle Ages (Early, High and Late); some peculiar modern finds were also recovered, e.g. a copper cauldron from ca. 1600 AD, in which a bunch of painted plates had been deposited. Some of the Roman Period items bear traces of ritual destruction. The parallels to weapons may be pointed out namely in Central European Barbaricum (the Przeworsk culture) and to some extent also in Scandinavia. The site should be attributed to sacrificial military deposits, known generally from northern Europe but almost unknown in the lands to the south of the Baltic Sea. Its extraordinary character is also manifested by the fact that so far it is the only site of that type which is still in its 'lake stage', i.e. not a marsh or bog, into which ancient lakes have evolved due to the process of eutrophication. Most probably the site was used by local inhabitants, i.e. the people of the Lubusz group. Medieval finds also seem to be very important if we take into account both new and old but re-interpreted finds dated to that period. Discoveries from Lake Lubanowo document not only the sacrificial activities but also daily life of common folks, i.e. by the items they had lost, e.g. net weights, pots, tools, etc. Altogether, the last research reveals a fascinating picture.

TIDAL STONE-WALLED FISH WEIRS OF YAP, FEDERATED STATES OF MICRONESIA AND THEIR ROLE IN MARINE ECOLOGICAL CONSERVATION

Bill Jeffery,

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Yap, comprises four volcanic islands, located 840 km south west of Guam and 1,850 km east--□south--□east of Manila in the Philippines. Together with seven small coralline islands and about 130 atolls that form the 'Outer Islands', they comprise Yap state—one of the four States of the Federated States of Micronesia (FSM). On the reef flat adjacent to the volcanic islands, the Yapese developed a harmonious, sustainable system of fishing that incorporated spiritual, social, cultural and environmental connectivity and awareness. This is of particular importance to the inshore fishery, which is a sensitive region for fish breeding, which needs to be well conserved, maintained and not overfished. The Yapese employed a number of cultural practices related to fishing, and created a number of tangible cultural heritage practices, of which some remains still can be found in Yap. This system employed the use of tidal stone-walled fish weirs the most numerous called aech, of which about 800 can still be found.

Yap has now four Marine Protected Areas (MPAs). People in Yap are aware that fishing is currently notimplemented in a sustainable manner and are declaring 'no catch zones' in certain marine areas. Fish were one of the few sources of protein for Yapese, and although there are now many other introduced sources of protein, fish are still highly valued as a major staple. Biological studies on fish weirs around the world have shown the biodiversity inside a fish weir is significantly higher than outside. Many of the studies associated with the need for and development of these MPAs are largely science based, with little relevance and benefit given to traditional fishing (cultural practices and the material cultural). Traditional fishing practices were carried out sustainably for hundreds of years, so their incorporation into MPAs could be an invaluable source of knowledge to supplement the science.

The presentation will highlight the value of the Yapese fish weirs and how they, and the associated cultural practices can be used to modern--□day approaches to marine ecological conservation, in addition to keeping traditional sustainable fishing practices alive. The presentation also highlights how maritime archaeology can assist countries in their Sustainable Development Goals, particularly SDG 14:Life below Water

RESEARCH OF THE FLOODED RUINS IN PORT AREA OF CITY TAURIC CHERSONESE USING METHODS OF AERIAL AND UNDERWATER PHOTOGRAMMETRY

Bukatov A.A. , Varlagin V. V., Tkachenko Y.G., Khokhlov S. A.

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The main topics of this report are: 1. The use of aerial photography to search for flooded archaeological sites 2. Photogrammetry under water in conditions of poor visibility. The report presents the research of the Department of Underwater Archeology of The State Museum-Preserve «Tauric Chersonese». The main site of the expedition is located in the Quarantine Bay, within the city of Sevastopol, the Crimean Peninsula. Here was the port of the ancient city of Chersonese. There are underwater ruins of ancient buildings at the bottom of the Quarantine Bay. Underwater archaeologists have explored them since the mid-20th century. In the 1960s, an object called the “rhomb-shaped tower” was discovered at the bottom of the Quarantine Bay. The technical capabilities of the 1960s did not allow research of this object, especially in conditions of poor visibility in the water in this section of the bay.

The expedition members decided to find and research the “rhomb-shaped tower” using old reports and modern technology. In rare day of the calm sea, aerial photography of the Quarantine Bay from a quadcopter was made. The “rhomb-shaped tower” was perfectly distinguishable from above. Its aerial and underwater photogrammetric survey was carried out. In conditions of limited visibility, it was necessary to use markers and roulettes stretched in parallel at a distance of 1 meter. As a result, it was possible to obtain an image of a rhomb-shaped high-definition tower. In ancient Chersonese, there is another “rhomb-shaped” tower, on land. Using aerial photography, photogrammetry was also made. The results obtained made it possible to more accurately compare underwater and land objects. Near the “rhomb-shaped tower” a similar dark spot was found under water. Here were the remains of another flooded building, previously unknown. From it remains a cluster of stones and a small fragment of masonry from large blocks. Previous studies have not identified this object, possibly due to the training vessel of the school of divers, constantly standing at this place for many years. We learned about the location of this vessel by superimposing archaeological plans of the 1970s on a modern orthophotoplan of Quarantine Bay.

SOME MARINE CREATURES OBTAINED FROM THE ANTARCTIC SEA ENVIRONMENT DURING THE TURKISH ANTARCTIC NATIONAL SCIENCE EXPEDITION (TAE-2- 2018)

Bülent Gözcelioğlu

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Antarctica is known as the coldest and driest place in the world. Low temperatures on the continent with extreme conditions, often realized freeze-thaw cycles is an important limiting factor for life. For this reason, Antarctica has living things that can withstand high extreme conditions. Sponges live in the benthic communities in Antarctica, together with Bryozoa and Echinodermata the community is very important benthic biota. Up to now, 426 types of sponge recordings have been made, but only 290 are valid. Five of these species have also been recorded in Turkish seas: Halichondria (Halichondria) panicea (Pallas, 1766), Halisarca dujardinii Jonston, 1842, Ircinia variabilis (Schmidt, 1862), Oscarella lobularis (Schmidt, 1862), Plakina monolopha Schulze, 1880.

The number of Antarctic marine sponge species can be considered high for some places, even as temperate regions. We participated in the Turkish Antarctic National Science Expedition, TAE-2, in Antarctica with the purpose of sampling from living creatures living in extreme conditions in the sea and on land. National Expedition was held together between 7 March and 25 April 2018. For sampling, scuba and free dives were made around Robert Island, Nansen Island and King George Island. Echinodermata (Odontaster validus, Psilaster charcoti), Mollusca (Nacella (Patinigera) concinna), Porifera (Clathria (Thalysias) sp. Polymastia sp) species were collected. In addition, some Brown, green and red macroalgae samples (brown algae (Ascoseira mirabilis, Cystosphaera jacquinotii, Himantothallus grandifolius), red algae (Gigartina skottsbergii, Iridaea cordata, Palmaria decipiens) green algae (Monostroma hariotii)) were also collected from Robert Island. All samples that were brought to the laboratory in Ankara University (Turkey) were stored as museum material.

ARCHAEOLOGY, PHYSICS AND CHEMISTRY; A TECHNIQUE USED BY MEDITERRANEAN SPONGE DIVERS FROM ANCIENT TIMES TO THE OTTOMAN PERIOD: SPRAYING AND POURING OLIVE OIL

Emre ERDAN, Fatih ERSAN, Kubilay GÜÇLÜ

Aydın Adnan Menderes University, Faculty of Art & Science,

One of the most difficult professions in history, sponge diving/fishing was widely practiced in the Mediterranean World in 19th and 20th century by Turkish, Greek, Italian and North African divers. Natural sea sponges are the main materials of the profession which extends from here to the North America in mid-20th century. Our earliest data indicate that the sponge, which is well known by many ancient texts used in ancient times, especially in cleaning, medicine, carpentry, mining, chemical industry and military equipment, was provided by mankind to 4500 BC. The ancient texts are rich in terms of information about the use of sponges as well as information about sponge divers. There is a consistent similarity between the centers of the Modern Age and the centers in these ancient texts which convey information about how and where the profession is practiced. The main reason for this situation should be related to the distribution map of the valuable sponge species that human beings can use in their daily life in the Mediterranean World. The information conveyed by the modern age spongers and their families shows that these people wandered the Mediterranean along the sponge beds. It shows that these spongers are not only interested in sponges but also supply valuable textile products especially from the Eastern Mediterranean ports and market them in their countries. In this respect, the contribution of the spongers -who can be defined not only as a professional group but also as a merchant- to the acculturation process of the Mediterranean has not been realized except for a few studies. The absolute, compulsory and continuous supply of sponges needed by the common toilets and bathrooms that serve millions of people, especially in the Greek-Roman Periods, is the most important proof that sponge diving/fishing was an important profession. In this study, oil spraying technique used by Mediterranean sponge divers from ancient times to the Ottoman period will be examined considering archaeological, chemical and physical data.

THE FORMENTERA ISLAND PROJECT MARITIME CULTURAL HERITAGE RESEARCH AND CONSERVATION

Enrique Aragonand, Andrea Sanz

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Despite the long traditon in the field of underwater cultural heritage in the Balearic Islands (Spain) with early experiences during the ’70s, is remarkable how this archipelago is still missing a management and research plan to understand, protect and disseminate its Underwater Cultural Heritage. Over the last five years, we have seen a cultural heritage under the sea unprotected, being exposed to deterioraGon and having substantial damage in consequence. From 2015 the Instituto Balear de Estudios en Arqueología Marítima (IBEAM) is developing a proposed research program based on UNESCO 2001 convention precepts. This paper introduces the Formentera Island Project as a case of study to be]er understand the proposed approach in the management of the Underwater Cultural Heritage in the Balearic context. Formentera Island Project has revealed an essential number of results that have changed the perception of the Underwater Archaeology along the island. Furthermore, this project has proposed an active management plan around the MCH, involving training and cultural dissemination at different levels (from local schools to professionals) in a combination of conjoined initiatives integrating the local authorities and external academic institutions. As a result, a continuous investigative activity has been generated, awakening the active interest by the MCH of the local population of the island.

UNDERWATER RESEARCH IN LAKE ONEGA, THE KIZHI MUSEUM AREA

Fazlullin Sergey, Khokhlov Sergey 2, Tkachenko Yuri3, Bardashov Mikhail, Platonova Oksana 1 , Gorlov Ivan 4,

1Russian State University for The Humanities, 2LLC “Laboratory of Network Technologies” www.nt-lab.ru sk@nt-lab.ru, 3Studio “Parusimore” www.parusimore.ru, 4 Marine Research Center at Moscow State University

The report is devoted to the study of the Kizhi reserve area in Lake Onega in order to search for underwater cultural heritage. The Kizhi Museum is one of the largest open-air museums in Russia. This unique historical, cultural and natural complex is a particularly valuable object of cultural heritage of the peoples of Russia. The basis of the museum collection – the Kizhi Ensemble – is the UNESCO World cultural and natural heritage site. The purpose of our expedition was a complex research of underwater and land cultural landscapes near island Kizhi where, (according to local residents, there was previously a shipyard), as well as the history and current state of the traditions of folk shipbuilding in lake Onega. At the site of the research in Lake Onega, visibility under water was 1-1.5 meters, so the research method was applied using a side-scan sonar, installed on a small motorized vessel. A bottom cartography was carried out and a wooden, partially collapsed boat was found, similar in outline to the traditional boat “kizhanka”, which was widely used on large lakes of Karelia until the end of the 20th century.

To restore the cultural heritage and traditions of shipbuilding, the Kizhi Museum annually since 1999 holds the Kizhi Regatta Festival, at which masters can compete, restoring the traditions of shipbuilding of such boats and rowing teams. If the boat was identified as a “kizhanka”, it could reveal some of the details of traditional shipbuilding. The boat lies at a depth of 3 meters underwater on the sand. On top of the sand lies a layer of silt 5-10 cm., partially covering the boat. An underwater photo-video shooting of the boat was carried out and a 3D model was constructed by photogrammetry-method. Based on which, you can try to restore the former size and shape of the boat. In the future, it is planned to continue the study of the sunken boat - to carry out work on the erosion of the soil, taking samples to determine the age of the boat. In case of confirmation of the type of boat, a decision will be made - on raising, conservation and museumification of the boat, or on creating an underwater “in situ” exhibition.

DISCOVERY OF THE ANTIQUE HARBORS WEST OF ISTANBUL

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Starting from 2007, Istanbul Prehistoric Research Project (ITA) under the leadership of Dr. Sengul Aydingun discovered in the western part of Istanbul a number of harbors and harbor settlements mentioned by ancient writers. Bathonea antic harbors and its settlement inside the Küçükçekmece Lagoon lake, the harbor of Athyra and the ruins of Episkopeia Castle inside the Büyükçekmece Lagoon, Angurina harbor and its shipyard on the coast of Beylikdüzü district, Bronze Age harbor of Silivri Selimpaşa mound, The ruins of the Mauro Molos / Hieron Byzantion on the western coast of Bosphorus north of Sarıyer, Antic Philea harbor on the Karaburun, Black Sea coast. In this presentation /article, we will give further information of these important archaeological findings localized by our land and underwater research teams.

THE IMPACT OF THE INDUSTRIAL POLLUTION AND RAPID URBANIZATION ON THE NUMBER AND DIVERSITY OF AMPHORAE IN THE MUSEUMS: THE CASE OF IZMIT GULF

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This presentation examines assemblage of amphorae kept at the Kocaeli Archaeology Museum, in the light of their findspots in order the establish the external relations of the Gulf of Izmit. The statistical analysis of amphorae from the Kocaeli Museum shows that 17% of the amphorae were found in Izmit, %29 from South of the Gulf of Izmıt and the shores of Helenopolis, 54 % from the western Black Sea Sections (Kefken- Kerpe). No amphorae were retrieved from the shoves in this area fort he construction of D100 higway. This means that harbors of the city Nicomedia were also lost during this filling activities. Old photographs related to Pertev Paşa Mosque confirms this. This may explain the lack of shipwrecks and amphorae on the shores of Nicomedia. Rich assemblage of amphorae retriewed from the shoresof Helenopolis clearly shows that such may have also been the casefor NicomediaThe high ratio of amphorae at Kocaeli Archaeology Museum originating at Black Sea region resulted from modern fishing. In this context, this prensentatıon evaluates the impact of pollution and urbannization on the number and diversity of amphorae found at the museums, such asthe Kocaeli Archaeology Museum.

EARTHLY, WATER AND UNDERWATER MEETINGS OF THE PHOENICIANS AND THE GREEKS. MYTHOLOGICAL AND RELIGIOUS WAYS OF TRANSMISSION IN THE EAST OF MEDITERRANEAN.

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The meeting of people and cultures in the Mediterranean is as old as the art of shipping. Especially the Minoans (let me call them pre-Greeks, and their successors the Greeks themselves) and the Phoenicians but also the Egyptians and the Assyrians travel, trade and fight frequently and without breaks for centuries. Especially the Cypro-Minoan and the Cypro-Mycenaean relations are well documented and area around the Greek Islands and Cyprus is full of traces of old glory that now is represented in the shape of shipwrecks and their lost cargo.

In my presentation, I focus on the artistic representation of ships and navigation in the Near Eastern and Greek material sources. However, of great interest is not only strictly artistic representation but their hidden meanings like apotropaic function of these ships, divine favor or imagination of space related to their fate. The second part of my talk is about transmission of mythological and religious motives. Because shortage of time I present only the motives of fight and conquest which were very popular in the art and mythologies of the Geometric and Archaic Periods. The good example is fragment of a Greek pot found on the site of the Pointe Lequin 1A wreck which (probably) represents the fight between Theseus and the Minotaur. I try to find its eastern counterparts or rather forerunners and explain the meaning of this motives and symbols. And I focus also on the presentation of mythological depiction of Gorgon and lion which surprisingly catch the attention of the Greek audience.

GHOSTS OF THE CARIBBEAN. RECENT RESEARCH ON EL ANGEL SHIPWRECK: A 19TH CENTURY COMPOSITE-HULL, SAILING MERCHANTMAN IN CHINCHORRO BANK, MEXICO

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El Angel wreck site is located in the shallow waters of southern Chinchorro Bank, in the Caribbean Sea, about 42 km off the eastern coast of Yucatan Peninsula, Mexico. It is the grave of a sailing vessel, which most likely sank after striking her bottom against the nearby coral reef barriers. At present, no upper works of the ship are preserved, then indicating that it was a wooden vessel (Teredo navalis affectation in these waters is a major problem for conservation of organic materials).

Archaeological investigation has been carried on this shipwreck since 2014 by the Vice-Directorate of Underwater Archaeology, of the National Institute for Anthropology and History (Mexico), in collaboration with international researchers; studies have mainly focused on explore the shipwreck dating, geocultural origin, purpose, and particular issues, such as hull-construction, service-history and fate. Systematic excavations in the bow and mid-ship section have led to know that the ship was built according 18th-century wooden ship construction, but featuring improvements developed by the industrial revolution in shipbuilding, such as iron structural reinforcements and metal fasteners, as well as Copper-alloy hull sheathing. Besides, it was discovered that this vessel was loaded with a logwood cargo when it went to Davy Jones' locker.

At present, information obtained suggests that the wrecked ship was a long-service merchantman, probably built at early 19th century and later subjected to major repairs. Because its load, it is possible to assert that the ship was immersed in the British logwood traffic, a maritime sphere that linked Belize with the US and Europe.

DEEP-SEA RESEARCH OF THE SHIPWRECKS OF THE XI-XIIth CENTURIES AD IN THE WATERS OF THE ADMINISTRATIVE TERRITORY OF SEBASTOPOL

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In 2015 in the water area of administrative territory of Sebastopol at the entrance to the Balaklava Bay at a depth of 85.6 m a shipwreck was discovered designated as “Balaklava-1” At the shipwreck fragments of the ship’s structures and the accumulation of amphorae were preserved. Samples of ceramics and wood were raised to the surface for analyzing and dating the object, which allowed dating the ship of the XIth century AD. Wood fragments raised for dating.2018 underwater archaeological studies of this monument, due to the large depth of its occurrence, were carried out using a remotely operated underwater vehicle (ROV). With the help of this “underwater robot”, the object was inspected under water, measurements were taken, a photo and video fixation was made, a general photogrammetric plan of the shipwreck and its 3D model were drawn up. In the course of underwater archaeological research in the water area of Balaklava, 1200 meters from the shipwreck “Balaclava-1”, at a depth of 86 m, another ship was discovered that received the code name “Balaclava-2”. Wooden elements of the ship’s hull and fragments of its rigging (mast 50 cm in diameter) are preserved in the silt ground.An iron anchor was found among fragments of the ship’s structure. Unfortunately, besides the anchor another dating material has not been found. For dating by the radiocarbon method, wood samples were raised to the surface. Radiocarbon analysis of raised wood showed that the ship dates back to the XI-XIIth centuries AD. Discovered ancient ships contain important evidence of the time of their existence and are unique shipbuilding monuments of the Middle Ages. Further work will continue with the use of ROV by the joint expedition of the Institute of Oriental Studies of RAS and the Sebastopol State University.

BIOSYNTHESIS OF SILVER NANOPARTICLES BY USING INVASIVE CAULERPA CYLINDRACEA SONDER

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Nanomaterials have been subject of many researches in scientific literature as they have very different and useful properties compared to bulk materials. These distinct physical, biological and chemical properties are utilized in many areas of industry such as water treatment, catalysis and medicine. Green synthesis of silver nanoparticles has many superiorities compared to physical and chemical methods such as nontoxicity, low cost, and eco-sensitive. Silver nanoparticles (AgNPs) were synthesized by using invasive seaweed Caulerpa cylindracea Sonder that its invasion has not been prevented since 1991. In this study, experimental conditions related to the green synthesis of AgNPs by C.cylindracea extract were optimized. The optimization parameters were selected as agitation time, agitation rate, pH, temperature, the concentration of C.cylindracea extract and silver nitrate concentration. UV-Visible Spectroscopy, Fourier Transform Infrared Spectroscopy and X-Ray Diffraction were used for characterization of the synthesized silver nanoparticles. In addition, the experimental conditions related to the green synthesis of AgNPs by C. cylindracea were modelled using artificial neural network. In conclusion, invasive seaweeds can be used to synthesize AgNPs for industrial purposes, this will open a new gate for the utilisation of the biomass of invasive seaweeds.

ANTIFOULING PAINTS AND WATER SPORTS

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Biofouling is defined as the settlement of fouling organisms on artificial surfaces. Although this process is a natural event in aquatic ecosystems, it shows negative impacts on marine transportation. Settlement of fouling organisms onto ships' hulls decreases speed of ship and increases fuel consumption and also CO2 emission. Spread of invasive species is also another problematic part of biofouling. In order to prevent this event, antifouling paints are used all around the world. The most common antifouling paint is self-polishing antifouling paints in the market. Activity of this paint is based on the release of toxic compounds from paint surfaces. In this study, the compounds released from paint surfaces are reviewed and also its possible effects on the marine ecosystem were discussed. Water sports and activities such as surfing, canoeing, windsurfing, snorkeling, spear fishing, scuba diving, apnea are organised in aquatic ecosystems. It is suggested that organisers should check the concentrations of toxic compounds released from marine vehicles to protect athlete health [1]. Moreover, eco-friendly alternatives of self-polishing antifouling paints must be used in marine vehicles to protect both athlete health and also marine ecosystems.

SICK BAYS OF THE SOUTH ATLANTIC: STRATEGIES FOR COUNTERING EPIDEMICS IN PORTS, ANCHORAGES AND ON ISLANDS DURING THE 19TH CENTURY

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During the suppression of slave trade in the 19th century, British Naval Liberators grappled with the problems of resettling prize Africans safely and dealing with contagious outbreaks of cholera, smallpox, and later leprosy. This included establishing quarantine stations and makeshift hospitals, administering primitive vaccines, and trying to enforce regulations regarding social contact. Three diverse case studies in the South Atlantic – St. Helena Island, Simons Town Naval Base and Robben Island off the coast of South Africa - represent examples of different strategies and challenges to address the epidemics in remote locations. The study includes historical documentary and imagery research in addition to addressing the status of these locations as national and world heritage maritime sites.

MARITIME HERITAGE AT RISK: LIGHTHOUSES SHIPWRECKS, AND DESERTED TOWNS

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From 2017-2020 an interdisciplinary team of students and faculty from East Carolina University investigated a set of diverse maritime cultural sites on the south eastern seaboard of the United States that represent either a preservation risk or a potential resource to be showcased for heritage tourism. The project represents a partnership with private, state and federal stakeholders. Case studies include a historic lighthouse, boathouse, a deserted island town, plantation, Civil War and other shipwrecks. Several of the sites are structurally unstable or located along eroding riverbanks or dynamic shores lines. Other sites might add a venue to existing tourism operations in the area and serve as centerpieces for revised or neglected historical narratives about port cities and surrounding areas.

LAKE GRID DWELLINGS OF THE WEST BALT BARROW CULTURE – THE STORY OF RESEARCH AND RESEARCHERS. THE CASE OF LAKE PIŁAKNO (NE POLAND)

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The topic of lake settlements has been an important research matter since the structures of this kind were discovered for the first time in the 19th century. Only a decade after Ferdinand Keller's stirring publication the "Pfahlbauten" were recognized in the region of East-Baltic Lakelands, former East Prussia. Sometime later it became clear that what had been discovered there is not the direct analogy to the Alpine palafittes (although indeed incorporating some pales), but more of a crannog-like artificial islands, nowadays called lakegrid dwellings.

Site Rybno I, Lake Piłakno (Mrągowskie Lakeland) cannot beaccounted into the group of the earliest discoveries. It wasobservedin the 1920s by the local forester, who collected some artefacts and contacted the Königsbergscholars right away. Thanks to him the intriguing site was included into the 1933 publication and the artefacts ended on the shelves of the famous Prussia Museum. What is more, thepre-war knowledge about the finds from "Pillaker See" and the whole issue of local lake dwellings was not limited to the academic world – it was familiar to the local intellectuals and even taught in schools.

After the Second World War Rybno was re-visited, becoming in fact one of the first "systematically"excavated underwater sites in the post-war Poland. The results of the two-season 1960s campaign may be disputable, but its importance for the history of underwater researchin Poland is beyond doubt. Unfortunately, the 1960s publications focus on activities rather than the archaeological finds and interpretations, and are far from comprehensive.

As far as archaeology is concerned, this site was a subject to research one more time, in 1990s, when it was surveyed, its location was verified,and it was assessed for the signs of damage or deterioration. Finally, since 2010s the whole collection of the previously recovered archaeological materials have been re-evaluated, re-documented, and re-interpreted, and the site became a subject to an extensive project founded by the National Science Centre, Poland (2018/29/N/HS3/02949), covering the issues of chronology, paleo-environment's reconstruction, the fieldwork based on the 20th-century technologies, and – last but not least – archive studies of the previous research episodes, which have already yielded some fantastic results.

OBJECTS OF MARITIME AND UNDERWATER CULTURAL HERITAGE OF CYPRUS ISLAND

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Using the maritime and underwater cultural heritage of Cyprus island for the touristic promotion of the island as well as actualization of the Cyprus maritime and underwater heritage is an important input to the island's touristic activities. Today, cultural heritage tourism is an important aspect for touristic activity for a number of reasons; it adds to the economy and also has a positive social impact, with the help of cultural heritage tourism it is easier to establish and reinforce identity, it helps the sustainability and preservation of the cultural heritage, with culture as an instrument it facilitates harmony and understanding among people, it supports culture and helps renew tourism. Evidence of the first traces of human presence on Cyprus Island goes back to epipalaeolithic age, on the southern coastal area of Cyprus at Aspros; these are thought to be the first hunter-gatherer visitors that came to the island through the sea. Ever since, Cyprus has become a home for many different people and civilizations. Being a bonanza of copper in the Bronze Age, geographically positioned close to all Levant coasts made Cyprus and easy access as well as into a precious land. It became a crossroads of the trade routes in the Late Bronze Age, the eastern frontier of Christendom during the 3rd Crusade, as it was easily accessed and provided easy access to the surrounding lands. It has the witnessing architecture and archaeological sites of Hellenistic, Roman and Byzantine periods. Furthermore, Franks, Venetians, Ottomans and English all have been hosted on the island as rulers all coming to the island through seafaring; all having their impacts and inputs to the lifestyle and culture of the island residents as well as to the monuments and architecture of the island. This study reveals the objects of the maritime and underwater cultural heritage of Cyprus island, such as the costal settlements, submerged cities and submerged harbours, shipwrecks, anchorages, costal fortifications and castles, harbours and lighthouses, all which are of great value for promotion of cultural heritage tourism, revealing the Cyprus' maritime history as well as the mosaic of cultures on the island throughout the history.

SUBMERGED HARBORS IN THE GULF OF NAPLES. A SHORT UPDATE ON THE BASIS OF RECENT UNDERWATER ARCHAEOLOGY RESEARCHES

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New underwater archaeological researches in the Gulf of Naples, together with geoarchaeological works made in collaboration with marine geologists and aerial surveys by drone, are now offering the possibility to reconsider the submerged harbors of the Neapolitan region, studying the relationship existing among the huge public commercial and military ports and the big number of private piers, breakwaters and port facilities, built on the model of the Puteolan port, easily recognizable along the entire Neapolitan coast, with a particular concentration in the Phlaegrean area.

TYPES OF DEGRADATION OBSERVED IN UNDERWATER STONE ARTIFACTS

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Many stone monuments or artifacts remain underwater due to earthquakes, subbases, collapses, or ships sink. They are exposed to physical, chemical, and biological deterioration in underwater. It contains many factors that accelerate the deterioration due to the nature of the seawater. Salt content in seawater, the density of dissolved gases, presence of sediments, tides, bacteria, sea creatures are the most important factors affecting the deterioration. The physical and chemical structure of the stone determines its resistance to deterioration. The porosity structure of the stones and the chemical structure of the water in which the stone is located are the most important factors that determine the durability of the stonework. The time that the underwater stones remain underwater directly affects the deterioration in factors such as depth and biological diversity. Besides, human-caused deterioration is also another factor. It is necessary to remove the stonework from underwater consciously. The sudden removal of the pieces that have been submerged for years to a different environment leaves the stones weak and causes breaks, ruptures, and crumbling of the stones. For this reason, the extracted finds must be stored in an area suitable for the first extracted environment. The subsequent conservation works should be planned and carried out properly. The subject of the extraction of stone works from the surface of the earth is an area that requires a separate discipline and it is necessary to be very conscious about this. Underwater archaeology and the protection and restoration of underwater stone works are becoming more and more important since the three sides of our country are covered with seas and have many civilizations in the past.

UNDERWATER EXCAVATION AT THE BAZILIKAL CHURCH IN IZNIK LAKE – 2019

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The remains of the bazilikal church lie approximately in 2 or 3 meters of depth, and 50 m from the shore of the lake, outside the city walls that surround the ancient city of Nicaea. The underwater archaeological excavations at the basilica remains is being launched under the auspices of the Iznik Archaeology Museum with the permission of the Ministry of Culture and Tourism in 2015.

In 2019, excavation was carried out in the atrium where we thought a water well was situated. This is because the British pilgrim, Willibald, pointed out that the site of the 1st Council had a rectangular open roofed courtyard with a sacred source of oil in the middle. Although we went down 60 cm deeper than the foundation walls, we could not find the bottom of the well. However, a large number of ceramics, glas bracelet or Scyphate coins (cup-shaped coins) were found indicating the 13th century. It was also found that the well was filled with stone. Therefore, we think that the structure was definitely abandoned in the approximately 12th century and then sank into the lake waters.

SHIPWRECK CARGOES IN THE BALEARIC ISLANDS: THE HELLENISTIC RELIEFWARE AS INDICATOR OF MARITIME TRADES IN THE WESTERN MEDITERRANEAN

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Two fundamental models have been proposed for maritime trade: cabotage and directed trade through emporia. This is not a question of whether ships sailed along the coast or out of sight of land, but rather a question of the scale of trade, the level of forethought and planning which went into the composition of the cargo, and the degree of information available with regard to markets. Shipwrecks are primarily a record of heavy, durable cargoes — first and foremost amphora-borne goods, but also stone, metal ingots and, to a lesser extent, other ceramics. Cargoes of textiles, grain and other organic materials, which certainly existed, are rarely visible. The principal surviving cargo of most wrecks is amphorae, which are extremely durable. Stone is another long-lasting cargo, though such wrecks are still far fewer in number than ships carrying chiefly amphorae. As the food commodities (chiefly wine, oil and salted-fish products) that travelled in amphorae were one of the major categories of traded goods in the Roman world, they are precisely the types of products whose transport is crucial to an understanding of maritime trade.

The wreck of St. Jordi (near the island of Majorca in the Balearic Islands) documents in the hold, between the load of rhodian amphorae and other goods from the East, the presence of a bowl signed by the potter Lapius, active in central Italy in the II century BC. The wreck of St Jordi, left from a port of the Ionian (Pergamo, Rhodes?), can have stopped in the port of Ostia, depositing rhodian wine amphorae and loading black gloss ware, pans “a vernice rossa interna”, and other materials, in addition to Italo - Megarian ware, directed to the Iberian Peninsula. In his cabotage, after a stop probably in the port of Karales (Cagliari in Sardinia), the ship should have coasted the Balearic Islands, and then from Ebusus (Ibiza) to the port of Cartagena in which to download the content of the cargo hold and possibly load perhaps lead ingots from the mining region of Cartagena, painted kalathoi of Iberian production (so-called sombreros de copa) with salted anchovies, amphoras, and then return to the Italic coasts, perhaps in the port of Ostia near Rome. But the journey of the ship has been arrested in front of Majorca after a terrible storm that has wrecked the ship with its cargo before being able to arrive in the harbor. Another maritime itinerary could have been from the emporion of Delos with a stop in a port of Apulian, through the strait of Messana, and then to reach the port of Ostia, from where to leave again crossing the channel north Sardinian near the Spargi island and then to head towards the Balearic Islands, transporting, among other goods, Hellenistic relief ware of Ephesian production (from the Monogram workshop), dated to the second century BC., as proved the megarian ware found in the Cales Coves in Menorca and the four bowls in the graves of the necropolis of Puig des Molins in Ibiza

THE IMPACT OF NATURAL AND SOCIAL FACTORS ON THE PERCEPTION OF AN UNDERWATER PARKS: A STUDY OF RUSSIAN RECREATIONAL DIVERS

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Researchers increasingly note the effectiveness and popularity of underwater parks to preserve and actualize the underwater cultural heritage. By development of the local economy, tourism, and environmental support for the aquatic environment, underwater parks are becoming one of the vectors of sustainable development. Most of the research is focused on the development of conservation methods, the features of demonstration of objects, the development of the terminological apparatus. Significantly less attention is paid to a potential visitor to the underwater park, the study of his interests, preferences. Sociological studies regarding divers preferences were carried out in many countries: in Texas, USA in 2002, Australia in 2005, Israel in 2011, Barbados in 2012, etc. In Russia, such studies have not been previously conducted.The current study was conducted based on anonymous questioning of people who were immersed in Russian waters from July to October 2019. The questionnaire was formed on the Google Forms platform and consists of 5 sections, including a total of 9 open and 36 closed questions. The selection is made up of 110 completed questionnaires. The selection included 63 men (57.27%) and 47 women (42.73%). The average age of the respondents was 34 (±7) years in the range from 16 to 58 years. Most respondents plunged between the ages of 25 and 34 (45 answers). 35 respondents plunged between the ages of 35 and 44. Most of the respondents did not have qualifications and plunged 1-2 times (41 answers), 11 people had entry-level qualifications (CMAS 1* / PADI OWD / etc.), 28 people - advanced (CMAS 2* / PADI Adv. / etc.)

In choosing the most preferred place for diving, the majority chose natural structures (60%) instead of artificial ones (40%), a large proportion of which were shipwrecks (31.8%). The preferred diving depth for most respondents is up to 18 meters (57.2%). Respondents identified beautiful natural structures (85%), sunken ships and vessels (84.1%) as places of interest for diving. Less interesting was the underwater sculpture parks (36.4%), artificial reefs (24.3%).

Preferences were measured by the Likert scale in the range from 1 to 5. The highest average value was received by diving safety (4.72 ± 1.09), water transparency (4.25 ± 1.17), dive guide personality (4.19 ± 1, 10). Contrary to expectations, the lowest value was given to Water temperature (3.27 ± 1.15), dive site size (3.25 ± 1.37), historical value of the dive site (3.04 ± 0.90). Nevertheless, 84.5% of respondents confirmed their desire to visit the underwater park if it was created. The data obtained allow us to trace the change in preferences depending on age and experience of diving. Further research involves comparing the results with the materials of the studies already carried out, conducting a second survey in full-time and part-time format in order to cover a larger sample. Based on the data obtained, it is possible to form a portrait of a potential visitor to the underwater park and to develop a methodology for their design.

TRAINING SYSTEM OF UNDERWATER CULTURAL HERITAGE IN TURKEY

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The New Book «The Protection of Underwater Cultural Heritage» is published by Turkish Underwater Federation in April 2018 for new training program. This program for all CMAS two stars /advanced divers in Turkey as a free of charge obligatory course. Book and the program are officially supported by UNESCO and Ministry of Culture of Turkey. By the book and the program, divers will be aware about what underwater cultural heritage is and why they have to protect. Lessons are given by the scientists from UNESCO, ICOMOS, Turkish Ministry of Culture and academicians from the Universities.

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