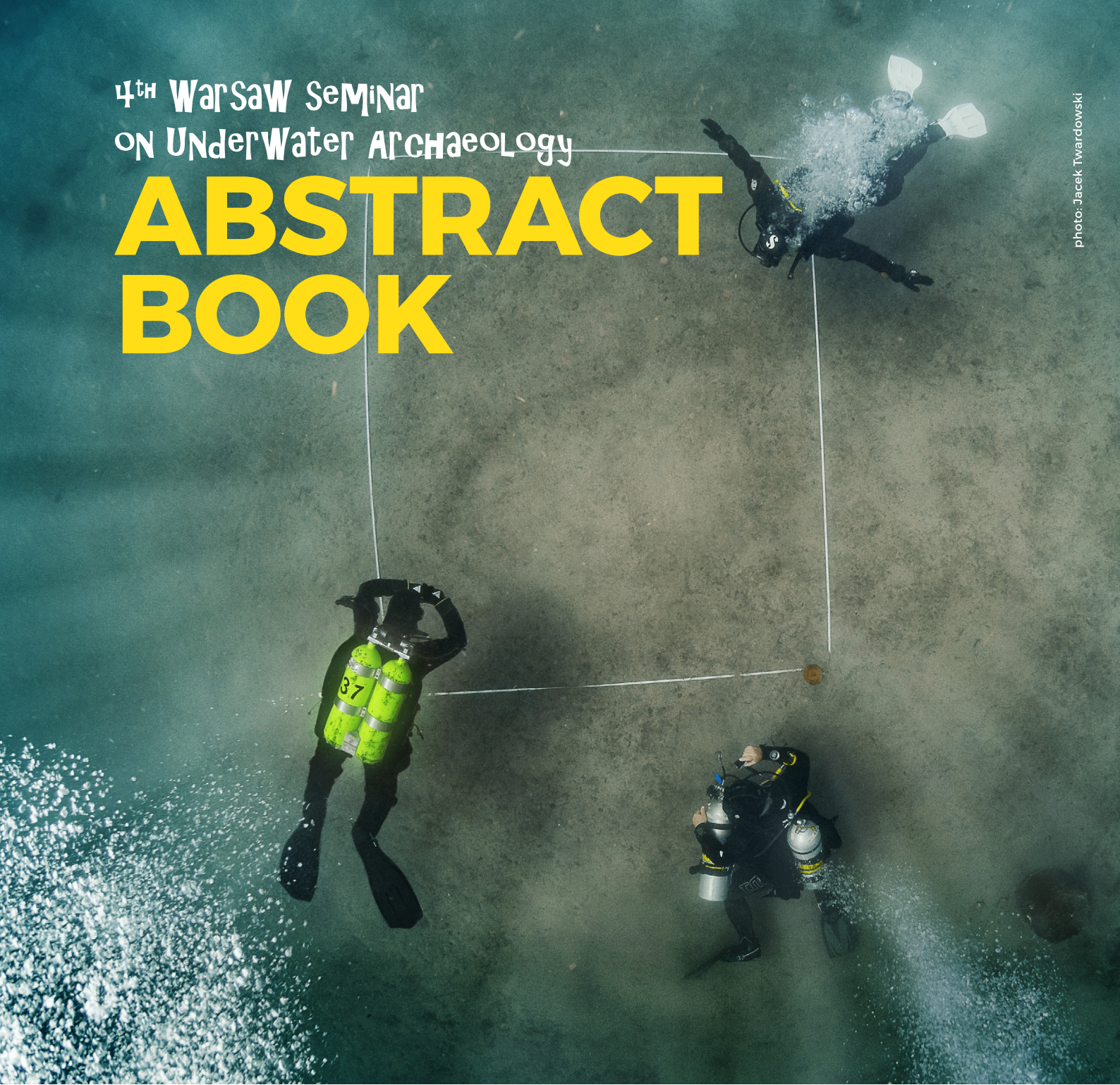


4th WARSAW SEMINAR
ON UNDERWATER ARCHAEOLOGY

ABSTRACT BOOK

photo: Jacek Twardowski



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ODDZIAŁ POLSKI

4th Warsaw Seminar
ON UNDERWATER ARCHAEOLOGY

ABSTRACT BOOK



4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY, 18-20 NOV. 2021

Head of Scientific Committee:

Ph.D. hab. Bartosz Kontny, prof. UW

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4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY

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Abstract Book of the 4th Warsaw Seminar on Underwater Archaeology 2021

by Faculty of Archaeology, University of Warsaw and the Authors

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4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY

ABSTRACT BOOK

Warsaw, 18 – 20 November 2021

4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY

FINANCING:



UNIVERSITY
OF WARSAW



Ministry
of Education
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NATIONAL SCIENCE CENTRE
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PATRONAGE:

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Professor Alojzy Z. Nowak



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Informacje ze świata archeologii



ORGANIZERS:



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COOPERATION:

The conference is possible due to the funding from the Ministry of Education and Science (DNK/SN/464684/2021) and the National Science Centre, Poland (2018/29/N/HS3/02948)

4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY, 18-20 NOV. 2021

Ladies and Gentlemen, dear Colleagues,

it is a great pleasure and honour for me to welcome you on behalf of the Faculty of Archaeology, University of Warsaw at the 4th Warsaw Seminar on Underwater Archaeology. As previously, we host a lot of guests – also from abroad – which truly makes me proud of this initiative. It seems that the effort put in the organization since the beginnings in 2013, together with publication of the series “Archaeology: Just Add Water” (which includes proceedings of the Seminar), resulted in establishing a significant status of the conference in the field.

I do hope that you will experience a thrilling scientific adventure here the more so that fortunately I may welcome you not solely within the ‘virtual walls’ of the University of Warsaw, but at least partly in reality.

I wish you a friendly atmosphere, informative speeches, and fruitful discussions.

Have a good conference!

Ph.D. hab. Bartosz Kontny, prof. UW
Dean of the Faculty of Archaeology, University of Warsaw
Head of the Scientific Committee
of the 4th Warsaw Seminar on Underwater Archaeology

4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY, 18-20 NOV. 2021

University of Warsaw
Krakowskie Przedmieście 26/28
00-927 Warszawa

streaming: YouTube channel [Wydział Archeologii Uniwersytetu Warszawskiego](#)

PROGRAMME

18.11.2021 (Thursday)

16:30–17:00 registration (Faculty of Archaeology, University of Warsaw)

17:00 *University of Warsaw: Architecture, Monuments, and Sights*
(short walk on the Campus for the Registered Participants; meeting place: Faculty of Archaeology)

18:00–18:30 registration (Tyszkiewicz-Potocki Palace)

18:30 first welcome and **keynote speech**
(venue: Ball Room, Tyszkiewicz-Potocki Palace)

The Shipbuilding Knowledge That Came from the Levant.

Mazarrón 2 Shipwreck and the Iberian Tradition with Phoenician Influence

by Ph.D. hab. Carlos De Juan

Universitat de València, Institute of Nautical Archaeology, Spain

19.11.2021 (Friday)

venue: Ball Room (Tyszkiewicz-Potocki Palace)

8:30–9:00 registration

9:00 Opening ceremony

Ph.D. hab. Bartosz Kontny, prof. UW

Dean of the Faculty of Archaeology, University of Warsaw

Head of the Scientific Committee of the 4th Warsaw Seminar on Underwater Archaeology

Marcin Jamkowski, M.A.

Vice-President of the Polish Chapter of the Explorers Club

SESSION I

Sacrificial Sites in Waterbodies and Wetlands

Chair: Ph.D. hab. Bartosz Kontny, prof. UW

09:25 session opening

09:30 keynote speech

Wetlands and Waterbodies: A Gateway to Another World?

by Ph.D. Xenia Pauli Jensen, Senior researcher

Moesgaard Museum, Department of Archaeology

10:00 *Lubanowo in NW Poland. Small Lake and Plethora of Scientific Problems*

Ph.D. hab. Bartosz Kontny, prof. UW (Faculty of Archaeology, University of Warsaw)

10:20 *Water Sacrum in the Middle Ages: Echoes of an Ancient Tradition and a New Chivalric Custom (?)*

Ph.D. hab. Tomasz Nowakiewicz (Faculty of Archaeology, University of Warsaw)

10:40 *Ritual Activity of the Maya on the Basis of Underwater Research in Lake Petén Itzá, Guatemala*

Magdalena Krzemień, M.A. (Institute of Archaeology, Jagiellonian University in Kraków)

Bernard Hermes, M.A. (Petén Itzá Project)

Małgorzata Mileszczyk, M.A. (Faculty of Archaeology, University of Warsaw)

Andrzej Górnicki, M.A. (Independent researcher)

Elżbieta Łuba, B.A. (Independent researcher)

11:00 discussion & coffee

SESSION II

Ships and Boats. Excavation, Preservation, Experiment, Reconstruction

Chair: Marcin Jamkowski, M.A. (The Explorers Club)

11:45 session opening

11:50 *Copperplate Wreck. The Discovery of the Sixteenth-Century Wreck in the Dutch Part of the North Sea*

Seger van den Brenk, M.A. (Skilltrade / Periplus Archeomare)

Johan Opdebeeck, M.A. (Dutch Cultural Heritage Agency)

12:10 *Punta Prima Project – Second-Century B.C. Shipwreck Excavation and In Situ Preservation*

Enrique Aragon, Ph.D. (Flinders University/Balearic Institute of Maritime Archaeology)

Javier Rodríguez Pandozi, M.A. (Balearic Institute of Maritime Archaeology)

Małgorzata Mileszczyk, M.A. (Faculty of Archaeology, University of Warsaw)

Joanna Staniszevska, M.A. (Faculty of Archaeology, University of Warsaw)

12:30 *Adaptation. How Did Local Geography and Climate Determine the Standard for Ancient Boatbuilding in the Philippines?*

Marta Lazurek, M.A. (Faculty of Archaeology, University of Warsaw)

12:50 *The Hunt of Vistula Wrecks*

Artur Brzóska, M.A. (Faculty of Archaeology, University of Warsaw)

Piotr Prejs, M.A. (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

Andrzej Szerszeń, M.A. (Sonars.pl)

13:10 discussion & coffee

POSTER SESSION (13:30–14:00)

venue: Ball Room (Tyszkiewicz-Potocki Palace)

Acoustics Helps in Underwater Real Time Imaging. Adaptive Resolution Imaging Sonar (ARIS) in SZD1 Shipwreck Investigation

Piotr Maliński, Ph.D. (Institute of History, University of Szczecin)

Paweł Mikołajewski, M.A B.Sc. (ESCORT Ltd.)

Wrecks of the Lower Oder on the Magnetic Anomaly Maps. Hydrographic and Geophysical Research of Selected Objects of Underwater Cultural Heritage in 2020

Piotr Maliński, Ph.D. (Institute of History, University of Szczecin)

Izabela Bodus-Olkowska, M.Sc. (Maritime University of Szczecin)

Grzegorz Zaniewicz, M.Sc. (Maritime University of Szczecin)

100+ Wrecks: Results of Preliminary Research on Submerged Cultural Resources of the Lower Oder

Piotr Maliński, Ph.D. (Institute of History, University of Szczecin)

Review of the Scientific Activities of the Student Association for Underwater Archaeology, University of Warsaw

Patrycja Ciesielska, B.A., Franciszek Komorowski, B.A., Iwo Pawłowski, B.A., Bartosz Czyżewski, Adrian Zwierzyński (Student Association for Underwater Archaeology, Faculty of Archaeology, University of Warsaw)

14:15 lunch for the registered participants

SESSION III

On the Borderline: Waterfront Archaeology Worldwide

Chair: Magdalena Nowakowska, M.A.

15:30 session opening

15:35 *Fishing Rituality in Sicily: from Prehistory to Modern Age*

Concetta Caruso, Ph.D. (Independent researcher)

Giulia Raimondi, Ph.D. (University of Catania)

Fabio Fancello, M.A. (Independent researcher)

15:55 *Fishing Activities in the Arabian Gulf – Case of Failaka Island. Community, Tools, Practice*

Magdalena Nowakowska, M.A. (Faculty of Archaeology, University of Warsaw)

Shehab A.H. Shehab (Independent researcher, Kuwait)

16:15 *Between Land and Ocean. The Management of Rapa Nui Marine Resources and Its Hinterland in Archaeological, Ethnohistorical and Ethnographic Sources*

Maciej Sobczyk, Ph.D. (Faculty of Archaeology, University of Warsaw)

Hetereki Huke Ainsa, M.A. (Tepuku, Centre for Applied Studies in Rapa Nui and Other Islands)

Lya Edmunds Hernández, M.A. (Tepuku, Centre for Applied Studies in Rapa Nui and Other Islands)

Tahira Edmunds Gorman, M.A. (Tepuku, Centre for Applied Studies in Rapa Nui and Other Islands)

16:35 *The Ancient Harbour of Lechaion: Wooden Structures in Harbour Building During the Late Antiquity*

Panagiotis Athanasopoulos, M.A. (Danish Institute at Athens/University of Ljubljana)

16:55 discussion & end of day

18:00 visit to the Museum of Diving in Warsaw (for registered participants only)

Karina Kowalska, M.A., Curator of the Museum of Diving

20.11.2021 (Saturday)

venue: Ball Room (Tyszkiewicz-Potocki Palace)

SESSION IV

Approach, Method, Law – Best Practice for Underwater Research

Chair: Cyril Dworsky, M.A.

10:00 session opening

10:05 *From Introduction Hydrography to Certified Courses*

Johan Stam, B.Sc. (Skilltrade)

10:25 *Satellite Derived Bathymetry and Feature Detection. The Achziv Ridge and the Harbour of Caesarea as Case Studies*

Gerardo Diaz, M.A. (University of Haifa)

10:45 *Application of Advanced Photogrammetric Techniques in the Prospective Archaeological Study of Submerged Karst Cavities. The Extraordinary Site of Ses Aiguades Cave*

Manel J. Fumás Soldevilla, M.A. (University of Cádiz, EIDEMAR)

11:05 discussion & coffee

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

Chair: Małgorzata Mileszczyk, M.A.

11:30 session opening

11:35 keynote speech

*Living on Water: Scientific Dating and Early Iron Age Dwelling
on a Scottish Highland Loch*

by Ph.D. Derek Hamilton

Scottish Universities Environmental Research Centre, University of Glasgow

12:05 *Investigations of Submerged Neolithic Sites in NW Russia*

Ekaterina Dolbunova, Ph.D. (The State Hermitage Museum)

Andrey Mazurkevich, scientific researcher/general curator (The State Hermitage Museum)

12:25 *Human-Environment Relationships in Serteya Region Based on the Results
of Environmental Archaeology Study*

Ph.D. hab. Piotr Kittel, prof. UŁ (University of Łódź, Faculty of Geographical Sciences,
Department of Geology and Geomorphology)

Mateusz Płóciennik, Ph.D. (University of Łódź, Department of Invertebrate Zoology and Hydrobiology)

Agnieszka Mroczkowska, M.A. (Polish Academy of Sciences, Institute of Geography and Spatial Organization)

Ph.D. hab. Dominik Pawłowski (Adam Mickiewicz University, Institute of Geology)

Daniel Okupny, Ph.D. (University of Szczecin, Institute of Marine and Environmental Sciences)

Magda Wieckowska-Lüth, Ph.D. (University of Kiel, Institute of Prehistoric and Protohistoric
Archaeology, Archaeobotanical and Palynological Laboratory)

Andrey Mazurkevich, scientific researcher/general curator (The State Hermitage Museum)

Ekaterina Dolbunova, Ph.D. (The State Hermitage Museum)

Maxime Danger, M.Sc. (UMR 8215 Trajectoires, CNRS-Université Paris 1 Panthéon—Sorbonne)

Emilie Gauthier, prof. (UMR CNRS 6249, Chrono-Environnement, Université Bourgogne-Franche-Comté)

Ph.D. hab. Marek Krąpiec, prof. (AGH – University of Science and Technology, Faculty of Geology,
Geophysics and Environmental Protection, Kraków)

4th WARSAW SEMINAR ON UNDERWATER ARCHAEOLOGY, 18-20 NOV. 2021

12:45 *Plugging Holes in the Mondsee Group – the Recent Excavations in Austrian Pile Dwellings*

Cyril Dworsky, M.A. (Kuratorium Pfahlbauten)

Helena Seidl da Fonseca, M.A. (Kuratorium Pfahlbauten)

Henrik Pohl, M.A. (Kuratorium Pfahlbauten)

Thorsten Jakobitsch, Eng. (Austrian Archaeological Institute, Austrian Academy of Science)

Andreas G. Heiss, Ph.D. (Austrian Archaeological Institute, Austrian Academy of Science)

Jutta Leskovar, Ph.D. (Federal State Museum of Upper Austria)

13:05 *First Results of the Paleo-landscape Research in Lake Pilakno Micro-region*

Małgorzata Mileszczyk, M.A. (Faculty of Archaeology, University of Warsaw)

Magdalena Nowakowska, M.A. (Faculty of Archaeology, University of Warsaw)

Ph.D. hab. Mirosława Kupryjanowicz, prof. UwB (University of Białystok, Faculty of Biology)

Magdalena Filoc, Ph.D. (University of Białystok, Faculty of Biology)

Dominika Kofel, M.A. (Institute of Archaeology and Ethnology, Polish Academy of Sciences)

13:25 *Participation through Communication – Experiences with Public Relations Work around the Austrian Underwater Cultural Heritage*

Fiona Poppenwimmer, B.A. (Kuratorium Pfahlbauten)

Cyril Dworsky, M.A. (Kuratorium Pfahlbauten)

Carmen Loew, M.A. (American International School Vienna)

13:45 discussion & lunch break

14:15 lunch for the registered participants

SESSION V

New Discoveries and Interpretations

Chair: Ph.D. hab. Andrzej Pydyn, prof. UMK

15:30 session opening

15:35 *Old Discovery and New Research in Lake Śniardwy in the Masurian Lake District, Poland*

Agata Grzędzińska, B.A. (Faculty of Archaeology, University of Warsaw)

Ph.D. hab. Bartosz Kontny, prof. UW (Faculty of Archaeology, University of Warsaw)

15:55 *The Results of Archaeological Research of Underwater Timber Constructions in the Area of the Oldest Entrance to the Gdańsk Harbour*

Paweł Litwinienko, M.A. (National Maritime Museum in Gdańsk)

Krzysztof Kurzyk, Ph.D. (National Maritime Museum in Gdańsk)

Janusz Różycki, M.A. (National Maritime Museum in Gdańsk)

16:15 *Indicators of Trade Routes between Byzantium and Cities on the Eastern Adriatic Coast in the Middle Ages*

Jelena Čelebić, M.A. (Koç University)

16:35 discussion, conclusions & farewells

17:30 formal reception for the registered participants

(venue: Faculty of Archaeology, University of Warsaw)

Abstracts

(in order of appearance)

KEYNOTE SPEECH

The Shipbuilding Knowledge That Came from the Levant.

Mazarrón 2 Shipwreck and the Iberian Tradition with Phoenician Influence

Ph.D. hab. Carlos De Juan

(Universitat de València, Institute of Nautical Archaeology)

Levantine shipbuilding techniques (as documented in the Uluburun wreck) must have been spreading through the Mediterranean in association with the Phoenicians. Through the studies of the Mazarrón wrecks (Spain), one can establish a relationship between the Phoenician culture and customary traditions, which arrived to the West from the Levant, and the cultural substrate of the people native in the Iberian Peninsula.

Mazarrón 2 wreck is a boat of 8 m length (dated to the first quarter of the 6th century B.C.). Due to their dimensions and fluvial-maritime characteristics, the two ships of Mazarrón could have had their shipyards and navigation space in the area close to their sinking.

In the wrecks one finds the features characteristic for the Levant, especially in the arrangement of strakes, joining technique, position of the mast, and the shape of the ship; possibly they were executed by the native shipwrights, which generated a cultural duality with some carpentry techniques that must have been completely local.

The Phoenician co-existence with the natives of the south-east Iberian Peninsula surely generated a new substrate over time, where the cultural borders between the natives and the heirs of those who originated from the Levant would gradually diffuse.

KEYNOTE SPEECH

Wetlands and Waterbodies: A Gateway to Another World?

Ph.D. Xenia Pauli Jensen, Senior researcher

(Moesgaard Museum, Department of Archaeology)

From the Stone Age to the Middle Ages bogs, marshes, rivers, and lakes have been the centre of rituals of widely different expressions: humans, animals, foodstuffs, textiles, pots, jewellery, coins, tools, and weaponry have been sacrificed in wetland areas. Sometimes unharmed and in one piece, sometimes fragmented or destroyed before depositing. The sheer number of objects are immense and varies from only one object to thousands of artefacts thrown or sunken into the waters at one single event.

This wide assemblage of artefacts and countless ways of depositing have, consequently, led to an even wider array of interpretations and explanations as to how and why these offerings were made. This presentation aims to provide an overview of material and interpretations and will, furthermore, explore the wetland sacrifices in context with other types of sacrifices.

SESSION I

Sacrificial Sites in Waterbodies and Wetlands

Lubanowo in NW Poland. Small Lake and Plethora of Scientific Problems

Ph.D. hab. Bartosz Kontny, prof. UW

(Faculty of Archaeology, University of Warsaw)

Since 2014 the team from the University of Warsaw has been conducting an underwater survey in Lake Lubanowo in Western Pomerania. During underwater research the weapons, tools, and horse harness elements were found dated mainly to the Roman Period; some of them bear traces of ritual destruction. The parallels to weapons may be pointed out namely in Central Europe and, to some extent, in Scandinavia. The site should be attributed to sacrificial military deposits, known generally from northern Europe, but until recently unknown to the south of the Baltic Sea. Its extraordinary character is manifested by the fact that the site is still in its 'lake stage', not a 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, but at least some of deposited weapons may be linked to the neighbouring cultural groups.

There are also finds from the Middle Ages. Probably some of them were not simply lost, but deposited intentionally. Some peculiar modern finds were also recovered, e.g. a copper cauldron from ca. 1600 A.D., in which a bunch of painted plates had been deposited. Discoveries 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, a paddle, unique logboat from ca. 400 B.C., etc. Altogether, the research paints a fascinating picture.

SESSION I

Sacrificial Sites in Waterbodies and Wetlands

Water Sacrum in the Middle Ages:

Echoes of an Ancient Tradition and a New Chivalric Custom (?)

Ph.D. hab. Tomasz Nowakiewicz

(Faculty of Archaeology, University of Warsaw)

Within the group of water finds, registered more and more frequently, it is relatively easy to indicate the traces of economic activity related with everyday life of the past societies. Sometimes particular context of discoveries and specificity of the items allows identifying with high probability also sacrificial mass deposits connected with cult and (in special cases) also the traces of battles or skirmishes.

Much more difficult is interpretation of individual water finds with the features suggesting they were not ordinary losses, but intentionally deposited single objects. The presentation will show examples of such peculiar finds from area of northern Poland, which are dated to the Middle Ages, i.e. the epoch when the Christian vision of the world replaced the former pagan sacrum. However, it does not mean that its echoes ceased to be visible in the customs of that time. It is interesting that they are discernible not only far from the centres of new mediaeval civilisation but – as one may suspect – they became also an element of the chivalric tradition.

SESSION I

Sacrificial Sites in Waterbodies and Wetlands

*Ritual Activity of the Maya on the Basis of Underwater Research
in Lake Petén Itzá, Guatemala*

Magdalena Krzemiń, M.A.

(Institute of Archaeology, Jagiellonian University in Kraków)

Bernard Hermes, M.A.

(Petén Itzá Project)

Małgorzata Mileszczyk, M.A.

(Faculty of Archaeology, University of Warsaw)

Andrzej Górnicki, M.A.

(Independent researcher)

Elżbieta Łuba, B.A.

(Independent researcher)

The aim of the proposed presentation is to demonstrate the results of research in the southern basin of Lake Petén Itzá (northern Guatemala), where a Polish-Guatemalan team has been carrying archaeological research since 2018. Two sectors of the lake associated with ceremonial practices of the Maya will be presented and initially interpreted. The first area is located to the north from today's Flores Island (Nojpeten), and the second one includes surroundings of Hospital Island. Artefacts of a ritual character and sacrificial deposits were found in these sectors of the lake during the reconnaissance, inducing the team members to carry excavation works, which took place in 2021.

SESSION I

Sacrificial Sites in Waterbodies and Wetlands

*Copperplate Wreck. The Discovery of the Sixteenth-Century Wreck
in the Dutch Part of the North Sea*

Seger van den Brenk, M.A.

(Skilltrade / Periplus Archeomare)

Johan Opdebeeck, M.A.

(Dutch Cultural Heritage Agency)

During the salvage of lost containers in the North Sea above the Wadden Islands, the remains of a shipwreck unexpectedly surfaced on the 26th of February 2019. It consists of oak ship parts and copper plates (cargo). On the basis of the first investigation into the ship's timber, it can be concluded that it is a seafaring vessel with a length of more than 25 meters. Dendrochronological analyses showed that the timber was felled in the autumn/winter of 1536/1537. The copper plates are dated to the period 1508–1540 and contain markings including a trident symbol that can be related to the banking family Fugger, who had a monopoly on the metal trade in eastern Europe in the 15th and 16th century. The ship may have been wrecked in the period 1538–1550, making it formally the oldest known ship find in the Dutch part of the North Sea to date.

SESSION II

Ships and Boats. Excavation, Preservation, Experiment, Reconstruction

Punta Prima Project –

Second-Century B.C. Shipwreck Excavation and In Situ Preservation

Enrique Aragon, Ph.D.

(Flinders University/Balearic Institute of Maritime Archaeology)

Javier Rodríguez Pandozi, M.A.

(Balearic Institute of Maritime Archaeology)

Małgorzata Mileszczyk, M.A.

(Faculty of Archaeology, University of Warsaw)

Joanna Staniszevska, M.A.

(Faculty of Archaeology, University of Warsaw)

The proposal presented in the 4th Warsaw Seminar on Underwater Archaeology, Punta Prima Project, aims to contribute to the study of shipwrecks threatened by commercial and tourism practices in the Balearic Islands (Spain). The project uses the so-called Punta Prima shipwreck dated to the 2nd century B.C. as a case study to develop a plan for an appropriate archaeological documentation and in situ protection, as well as the best programme for the public outreach and co-operation with the local communities. This will allow evaluating transformations the archaeological record suffered over the years by comparing previous data on the selected case study, but also helping the local administration to manage a valuable site at risk of being lost. Finally, the expected results will be relevant to evaluate how new technologies and methods contribute to a better understanding of in situ preservation of the underwater cultural heritage, sometimes neglected due to its ‘low visibility’, and its potential usability for the local communities. The Punta Prima Project will bring together a group of academics from Balearic Institute of Studies in Maritime Archaeology (IBEAM) and the University of Warsaw, covering not only the factual knowledge about the site and the methods for its research and preservation, but also identifying best practice for science communication for this kind of underwater archaeological heritage, beneficial for the local community, by participation of experts from different institutions and backgrounds.

SESSION II

Ships and Boats. Excavation, Preservation, Experiment, Reconstruction

Adaptation. How Did Local Geography and Climate Determine the Standard for Ancient Boatbuilding in the Philippines?

Marta Lazurek, M.A.

(Independent researcher)

The ancient technology of boatbuilding in the Philippines is a perfect example of how islanders have adapted to environment (including geography and climate) over the centuries. The aim of the presentation is to show local techniques of boatbuilding in Southeast Asia on the basis of the Filipino traditions. The ancient techniques are mentioned in historical sources and confirmed by archaeological and ethnographical studies. The study presents different types of boats from several regions of archipelago. And even though the boats are diverse, the quality and features are very similar. These similarities are the result of adaptation to local landscape, which determined the standard for boatbuilding in the whole region.

SESSION II

Ships and Boats. Excavation, Preservation, Experiment, Reconstruction

The Hunt of Vistula Wrecks

Artur Brzóska, M.A.

(Faculty of Archaeology, University of Warsaw)

Piotr Prejs, M.A.

(Institute of Archaeology and Ethnology, Polish Academy of Sciences)

Andrzej Szerszeń, M.A.

(Sonars.pl)

Underwater archaeological research conducted for two years in the Vistula River in Warsaw and the surrounding area has focused on the search for the wreckages which would confirm the rich history of the river as a trade route. The sunken vessels discovered in the course of the project prove that over several centuries the Vistula had not only local, but also trans-regional importance. They also give rise to the statement about the need to conduct regular surveys of the river, which, living with the rhythm of the seasons, still reveals its secrets, piece by piece.

SESSION II

Ships and Boats. Excavation, Preservation, Experiment, Reconstruction

Acoustics Helps in Underwater Real Time Imaging.

Adaptive Resolution Imaging Sonar (ARIS) in SZD1 Shipwreck Investigation

Piotr Maliński, Ph.D.

(Institute of History, University of Szczecin)

Paweł Mikołajewski, M.A. B.Sc.

(ESCORT Ltd.)

SZD1 shipwreck is the largest of 11 wrecks resting in the Regalica River (West Pomerania, Poland) registered during the project *Underwater Ethnoarchaeology of the Lower Oder. Preliminary Research on Wrecks in Selected Sections of the River* (grant no. 2018/02/X/HS3/00475, National Science Centre, Poland). It has been an object of interest for explorers and scholars over the years, because previous investigations by the means of sonars (stationary and side-scan) and interferometric echosounder had not allowed identifying its type accurately and recognizing details visible on the recorded images. Authors of the poster have reached a conclusion that it has been necessary to investigate the wreck one more time by the means of another kind of sonar – ARIS acoustic camera, that allows to record underwater space in analogous way to optical video camera. Investigation has been carried in September 2019 on board of research vessel “Echo 2” owned by ESCORT Ltd. During the investigation, high quality video records have been made, allowing not only identifying the type of sunken vessel, but also recognizing her construction details. Moreover, ship’s hull damages were observed, so that it has become possible to enunciate the hypothesis about the reason of her sinking.

*Wrecks of the Lower Oder on the Magnetic Anomaly Maps. Hydrographic
and Geophysical Research of Selected Objects of Underwater Cultural
Heritage in 2020*

Piotr Maliński, Ph.D.

(Institute of History, University of Szczecin)

Izabela Bodus-Olkowska, M.Sc.

(Maritime University of Szczecin)

Grzegorz Zaniewicz, M.Sc.

(Maritime University of Szczecin)

In August 2020 the authors realized an interdisciplinary survey of 12 wrecks located and registered earlier, as a part of a project *Underwater Ethnoarchaeology of the Lower Oder. Preliminary Research on Wrecks in Selected Sections of the River* (grant no. 2018/02/X/HS3/00475, National Science Centre, Poland). The hydrographers from the Maritime University of Szczecin and the ethnologist from the University of Szczecin established co-operation in this regard. The survey was a part of the research on the geoclassification method of the anthropogenic ferrous underwater objects, on the basis of magnetic anomaly maps. Data acquisition involved recording data with an interferometric echosounder, side-scan sonar, and marine magnetometer. The survey was done by the research vessel “Hydrograf XXI”. The results provided new datasets of examined wrecks. It also contributed to a better understanding of the underwater cultural heritage resources of the Oder River. Moreover, collected data was used to create a catalogue of underwater ferromagnetic objects, which is the basis for the geoclassification method. The collected hydrographic data will also be used in the project *MORGAV: Development of Technology Acquisition and Exploration of Gravimetric Data of Foreshore and Seashore of Polish Maritime Areas* (National Centre for Research and Development, Smart Growth Operational Programme 2014–2020, competition: 1/4.1.4/2018).

*100+ Wrecks: Results of Preliminary Research
on Submerged Cultural Resources of the Lower Oder*

Piotr Maliński, Ph.D.

(Institute of History, University of Szczecin)

The interdisciplinary project *Underwater Ethnoarchaeology of the Lower Oder. Preliminary Research on Wrecks in Selected Sections of the River* (grant no. 2018/02/X/HS3/00475 funded by the National Science Centre, Poland) was concluded in September 2019. It consisted of gathering information about the wrecks during ethnological fieldwork and then verifying them, using techniques typical for underwater archaeology. The main goal of the project was to recognize the potential of the resources of underwater cultural heritage in the lower course of the Oder. During the ethnological research, 102 wrecks were located and registered. On this basis, three sites with the highest number of wrecks were distinguished. Then, non-invasive underwater archaeological research was undertaken at these three sites. A team, consisting of commercial divers and an archaeologist, took measurements and made basic documentation of 14 selected wrecks. The results of the project demonstrated the efficiency of the applied research method (called ‘underwater ethnoarchaeology’), as well as remarkable abundance and diversity of anthropogenic objects sunk in the Lower Oder. Moreover, the collected data allowed to conduct further, hydrographic and geophysical research on other 13 wrecks, which took place in September 2019 and August 2020 – their results will be presented in two other posters at this seminar.

*Review of the Scientific Activities of the Student Association for Underwater
Archaeology, University of Warsaw*

Patrycja Ciesielska, B.A.

Bartosz Czyżewski,

Franciszek Komorowski, B.A.

Iwo Pawłowski, B.A.

Adrian Zwierzyński

(Student Association for Underwater Archaeology, Faculty of Archaeology, University of Warsaw)

Poster shows last few years of the scientific activities of the Student Association for Underwater Archaeology, University of Warsaw. The students took part in both land and underwater expeditions in Augustów and Lubanowo archaeological sites. From the beginning they are also members of the expedition taking place on Bornholm, and this year they started the investigations in Nowe Bagiennice. The activities are supported by experienced divers and archaeologists lead by prof. Bartosz Kontny, association's research supervisor.

Fishing Rituality in Sicily: from Prehistory to Modern Age

Concetta Caruso, Ph.D.

(Independent researcher)

Giulia Raimondi, Ph.D.

(University of Catania)

Fabio Fancello, M.A.

(Independent researcher)

Fishing is one of the oldest activities practiced by man for the living. Evidence of this practice is common throughout the Mediterranean, including Sicily. Here, in the largest island of the Mediterranean Sea, there are the oldest traces of this activity – one of these is at the Grotta dei Genovesi in Levanzo (TP). Also, in the Classical Age there are more iconographic finds representing scenes of workmanship and fishing in the structures used for it. In particular, in this study the researchers want to highlight the evidence represented by the tuna fishing in Sicily from the prehistoric times to contemporary days.

Very interesting is the audio-visual documentation, of which Vittorio De Seta and Francesco Alliata di Villafranca are among the greatest exponents. With this documentation it is possible to understand how fishermen caught large fish without the aid of special mechanical equipment, until the middle of 20th century, maybe as in the past. Also today, despite technological advancement, the link with the past and with the most ancient traditions is very strong.

SESSION III

On the Borderline: Waterfront Archaeology Worldwide

Fishing Activities in the Arabian Gulf – Case of Failaka Island.

Community, Tools, Practice

Magdalena Nowakowska, M.A.

(Faculty of Archaeology, University of Warsaw)

Shehab A.H. Shehab

(Independent researcher, Kuwait)

During the six research seasons of the *Waterfront and Underwater Archaeology of Kuwait. Archaeorisk on the Coastal Zone around Failaka Island, Kuwait* (2013–2019) 35 stone structures were documented, most of which are fish traps. Two kinds of stone structures were interpreted as stone tidal weirs: (1) circular stone structures and (2) linear structures of different shapes: arched, trapezoidal, rectangular, and linear with varying sizes, sometimes up to ca. 200 m long; they were used to catch fish and seafood in the flood zone. The tradition of using this type of structure on Failaka Island probably disappeared at the beginning of the 20th century.

At present, the use of the Failakan traps is interpreted on the basis of numerous analogies from Asian and Pacific regions and the oral accounts and interviews with the oldest fishermen living on the island. Recording intangible cultural heritage is crucial for understanding and interpreting the tangible heritage which is recorded in the form of archaeological sites. With knowledge of Failaka's maritime cultural landscape, archaeological resources, and human activities related to the sea, researchers are able to save most of the ancient remains and protect Failaka's maritime cultural heritage. The Kuwaiti-Polish Archaeological Mission operates on the basis of an agreement between the Polish Centre of Mediterranean Archaeology University of Warsaw and the National Council for Culture, Arts and Letters, State of Kuwait.

SESSION III

On the Borderline: Waterfront Archaeology Worldwide

Between Land and Ocean. The Management of Rapa Nui Marine Resources and Its Hinterland in Archaeological, Ethnohistorical and Ethnographic Sources

Maciej Sobczyk, Ph.D.

(Faculty of Archaeology, University of Warsaw)

Hetereki Huke Ainsa, M.A.

Lya Edmunds Hernández, M.A.

Tahira Edmunds Gorman, M.A.

(Tepuku, Centre for Applied Studies in Rapa Nui and Other Islands)

Rapa Nui is one of the most isolated places on earth. Located in the middle of the Pacific, a lonely volcanic island was probably inhabited between the 8th and 12th centuries A.D. by the Polynesian population. Of course, this is a place known primarily for its monumental *moai* statues. The builders of these statues carried intensive and varied exploitation of the sea resources in order to obtain food. This presentation will show the issues related to inshore fishing. In addition to the used techniques and tools, the extensive facilities located on land will also be presented – from ramps for bringing boats into the water, to observation towers and caves. The researchers are trying to discover the relationship between individual fisheries, rock art, and *tapu*.

SESSION III

On the Borderline: Waterfront Archaeology Worldwide

*The Ancient Harbour of Lechaion: Wooden Structures in Harbour Building
During the Late Antiquity*

Panagiotis Athanasopoulos, M.A.

(Danish Institute at Athens/University of Ljubljana)

The city of Corinth in Greece lies on the north-eastern part of the Peloponnese peninsula and that exceptional geographical position partially explains the crucial impact the city had in the ancient Greek world. Having access both to the Corinthian and the Saronic Gulf, it was inevitable to turn to the sea and gradually create the suitable maritime infrastructures to support that. This necessity was fulfilled with the construction of the Lechaion harbour. The first phase of harbour construction in Lechaion is placed at around 625–585 B.C. and recent archaeological evidence suggests that the harbour remained in use until the 15th century A.D.

Underwater excavations at Lechaion from 2013 to 2018 by the Lechaion Harbour Project brought to light, among many other harbour related structures, submerged remains of exceptionally well-preserved wooden constructions. The remains consist of several wooden caissons and wooden posts, all forming supplementary piers or jetties to the existing massive harbour mole structures and constitute a unique archaeological find in the Eastern Mediterranean Sea. This lecture aims at presenting the results of the excavations undertaken at those wooden remains and addresses the issues raised regarding the chronology and the advanced building techniques employed in their construction.

SESSION III

On the Borderline: Waterfront Archaeology Worldwide

From Introduction to Hydrography to Certified Courses

Johan Stam, B.Sc.

(Skilltrade)

Scientific activities, including underwater archaeological research, requires data which is reliable and stored according to recognized standards. This applies to both the equipment used to gather the data as well as the software used to analyze it. Calibration, collection, and storage of data including underwater archaeological heritage data is a subject to ever increasing international standards requiring a greater understanding and practical application of current and emerging technologies. This presentation provides a summary of some of the methods currently used for data collection and their uses.

SESSION IV

Approach, Method, Law – Best Practice for Underwater Research

*Satellite Derived Bathymetry and Feature Detection. The Achziv Ridge
and the Harbour of Caesarea as Case Studies*

Gerardo Diaz, M.A.

(University of Haifa)

Bathymetric maps are a useful tool for marine archaeologists from planning underwater excavations and site preservation to having a thorough understanding of natural risks for ships. The Herodian harbour of Sebastos has been widely studied from an archaeological, geological, and geophysical perspective, but, so far, it has not been studied from space. This thesis proposal aims at utilizing a straightforward algorithm capable of retrieving the water depth levels by using satellites and drones. The chosen studied areas chosen for studies are the northern region of Israel and the Herodian harbour of Sebastos. At present, there are no bathymetric maps with high-resolution data in this area. Our expected result will include not only detailed bathymetric data but also a reconstruction of hazardous areas for ancient sailing (during the Early Roman Imperial period) and anchoring within the Herodian harbour of Sebastos and its surroundings. In order to do so, this study will incorporate multispectral image processing, statistical analyses, mathematical models, information taken from literature, and GIS resources to generate a comprehensible map which will shed light on how sailing and anchoring could have looked like, as well as on the potential draught risks for small and large ships (sizes are subject to ship tonnages which are intimately related to draughts) in the vicinity of one of the most magnificent harbours of ancient Israel.

SESSION IV

Approach, Method, Law – Best Practice for Underwater Research

*Application of Advanced Photogrammetric Techniques in the Prospective
Archaeological Study of Submerged Karst Cavities.*

The Extraordinary Site of Ses Aiguades Cave

Manel J. Fumás Soldevilla, M.A.

(University of Cádiz, EIDEMAR)

Since relatively recent times, photogrammetry has served to document and record archaeological remains in submerged caves; this technique has been used frequently for cataloguing and studying of specific pieces or utensils, leaving the record of the entire site as something residual or secondary. In the present work, it has been possible to combine photogrammetry with classical topography and geographic information systems (GIS) as indivisible tools for global knowledge of one of the most important sites in Europe, the Ses Aiguades cave in Alcúdia (Mallorca, Spain). The practical nature of the study, as non-intrusive archaeological research, not only has the ultimate objective of improving the historical and archaeological knowledge of the cave from an innovative perspective, but also aims to historically and geographically contextualize the archaeological site; in the same time its objective is to advance the use of an easy, complete, and safe topographic and prospective methodology that can be extrapolated to any submerged karst cavity around the world. Although unfortunately the research of submerged caves is a minority activity, of great specialization and of great risk, the presented work corroborates the reliability of the techniques used as a firm and advanced methodology in the study of this type of submerged archaeological sites.

SESSION IV

Approach, Method, Law – Best Practice for Underwater Research

KEYNOTE SPEECH

*Living on Water: Scientific Dating and Early Iron Age Dwelling
on a Scottish Highland Loch*

Ph.D. Derek Hamilton

(Scottish Universities Environmental Research Centre, University of Glasgow)

Crannogs were a feature of the Scottish landscape since sometime in the earlier Iron Age. However, despite over a century of study, these sites are only beginning to be integrated into narratives of Scottish history and later prehistory. The *Living on Water* project conducted underwater excavation to develop a social history of life on Loch Tay, Perthshire. A primary component was developing a refined high-precision chronology for the earliest lake dwellings on the loch, developed through the combination of radiocarbon dating, dendrochronology, and Bayesian analysis on structural timber material excavated from crannogs. Within the wider region, the high-resolution chronology provides a firm foundation from which some unresolved questions are being addressed, such as:

1. Were any of the crannogs within the same loch occupied at the same time?
2. What relationships did crannogs have to the wider terrestrial landscape?
3. What specific practices can be identified at these sites and how do these practices relate to the site surroundings?

This talk will review the methodologies and present results of the *Living on Water* project, as well as similar projects carried out to date, and offer initial interpretations of the deposits from artificial island dwellings of Early Iron Age Loch Tay.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

Investigations of Submerged Neolithic Sites in NW Russia

Ekaterina Dolbunova, Ph.D.

(The State Hermitage Museum)

Andrey Mazurkevich, scientific researcher/general curator

(The State Hermitage Museum)

Numerous submerged Neolithic sites were uncovered on the bottom of lakes and rivers in the Western Dvina basin (NW Russia). There were fishing places, pile-dwellings, stone constructions, and dwelling areas excavated. Recent investigations on the Serteya II site allowed uncovering architecture remains of the ancient pile-dwelling dated to the end of the 4th–3rd millennium B.C. with an excellent preservation of different architecture remains, artefacts, and ecofacts, gaining new interpretations for dwelling horizons and particularities of this settlement. Long history of underwater research in this area allowed elaborating and further adaptation of excavation and surveying methods. Application of different geophysical methods showed limitations and potential for their use for survey of different types of sites. Their combination allowed reconstruction of a submerged paleo-relief on the Sennitsa lake where a number of Neolithic settlements and ritual constructions were uncovered.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

*Human-Environment Relationships in Serteya Region Based on the Results
of Environmental Archaeology Study*

Ph.D. hab. Piotr Kittel, prof. UŁ

(University of Łódź, Faculty of Geographical Sciences, Department of Geology and Geomorphology)

Mateusz Płóciennik, Ph.D.

(University of Łódź, Department of Invertebrate Zoology and Hydrobiology)

Agnieszka Mroczkowska, M.A.

(Polish Academy of Sciences, Institute of Geography and Spatial Organization)

Ph.D. hab. Dominik Pawłowski

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prof. Emilie Gauthier

(UMR CNRS 6249, Chrono-Environnement, Université Bourgogne-Franche-Comté)

Prof. Ph.D. hab. Eng. Marek Krapiec

(AGH – University of Science and Technology, Faculty of Geology, Geophysics and Environmental
Protection, Kraków)

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

One of the oldest Neolithic sites in Europe are situated on the East European (Russian) Plain. The beginning of the Neolithic in this region is linked to migrations during the climate cooling that occurred ca. 8200 years before present. The next such cooling, ca. 4200 years before present, led to significant changes in hydrological conditions and the disappearance of pile-dwellings functioning on the shores of former lakes, like Serteya II site. At archaeological sites of that period, found within lacustrine deposits, rich relics were discovered. Although the pile-dwelling settlement at Serteya II site is one of the best recognized in Europe in archaeological terms, the information on the living environment of human communities in that period is still quite scarce.

Thus, the aim of the project was to reconstruct environmental conditions (climatic, hydrological, plant cover and ecological conditions of the former lakes) influencing the existence of human communities in the Neolithic. Undertaken multidisciplinary palaeoecological study of the cores of lacustrine deposits allowed to reconstruct the environmental conditions and also human-environment relationships from 9 to 1.5 kyr BP. The basis of these reconstructions were specialized analyses of the remains of organisms preserved in lake sediments, their chemical and mechanical composition, and their age. The primary aim of this project was to reconstruct a network of interactions between regional (climate), local abiotic (hydrology), biotic and cultural components of the ecosystem.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

Plugging Holes in the Mondsee Group
– *the Recent Excavations in Austrian Pile Dwellings*

Cyril Dworsky, M.A.

(Kuratorium Pfahlbauten)

Helena Seidl da Fonseca, M.A.

(Kuratorium Pfahlbauten)

Henrik Pohl, M.A.

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Thorsten Jakobitsch, Eng.

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Jutta Leskovar, Ph.D.

(Federal State Museum of Upper Austria)

The inscription of 111 sites as UNESCO World Heritage in 2011 had a huge impact on investigations related to the cultural heritage in Austria. As a matter of course, the research of the Neolithic sites in the Salzkammergut lakes was boosted. Although still ‘under construction’, a new approach to a more detailed understanding of the Early Copper Age between the Danube and the Alps and the related Mondsee Group has been made. First results deriving from keyhole excavations and core drilling show new aspects for detailed interpretations of the Mondsee Group and the potential of large-scale research programmes. Currently, a better understanding of the paleo-landscape in the lake region of the 4th millennium B.C. in Austria, characteristics of woodland management and animal husbandry, and new chronological aspects have been achieved. The limited experiences in underwater excavations require a well-considered plan and the establishment of a research network. Extensive excavations are difficult to fund and non-invasive technologies are on the rise also in underwater archaeology. The development of methodologies for responsible examination strategies to safeguard these outstanding archives of human history is therefore of utter importance in the new beginning of Austrian underwater archaeology.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

First Results of the Paleo-landscape Research in Lake Piłakno Micro-region

Małgorzata Mileszczyk, M.A.

(Faculty of Archaeology, University of Warsaw)

Magdalena Nowakowska, M.A.

(Faculty of Archaeology, University of Warsaw)

Ph.D. hab. Mirosława Kupryjanowicz, prof. UwB

(University of Białystok, Faculty of Biology)

Magdalena Fiłoc, Ph.D.

(University of Białystok, Faculty of Biology)

Dominika Kofel, M.A.

(Institute of Archaeology and Ethnology, Polish Academy of Sciences)

In 2018 a project financed by the National Science Centre, Poland (2018/29/N/HS3/02949) was launched, the aim of which is the thorough study of the West Balt Barrow Culture lake grid dwelling Rybno I from Lake Piłakno (Masurian Lakeland, NE Poland). Since then the issue has been approached from different angles – apart from the field and archive survey the team also collected the cores from the lakebed near the site to conduct palynological and macro-fossil studies. The results of the analyses show interesting results, pieces of the puzzle which is the reconstruction of the Early Iron Age paleo-landscape for said micro-region.

Researchers from the University of Warsaw have been developing a research programme for the studies of West Balt Barrow Culture's lake settlements with the application of methods 'borrowed' from natural and social sciences. Rybno I project is a kind of a 'test run' for both the team and methods, which for sure will be complemented in the future, if only further funding allows that. Relics of artificial islands, nowadays mostly submerged, are a great opportunity to gain knowledge about the lifestyle of the Early Iron Age lakeland communities and their natural surroundings. Unfortunately, this field is still neglected in Polish archaeology, also due to costly and time-consuming methods of research.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

Participation through Communication – Experiences with Public Relations

Work around the Austrian Underwater Cultural Heritage

Fiona Poppenwimmer, B.A.

(Kuratorium Pfahlbauten)

Cyril Dworsky, M.A.

(Kuratorium Pfahlbauten)

Carmen Loew, M.A.

(American International School Vienna)

An essential component of the World Heritage Convention, decided in 1972, is public participation in the sites designated as World Heritage Sites, the common heritage of humankind. This obligation to inform a broad public, as well as the methods used to do so, can also be applied to any archaeological site and its investigation. Not least because the protection of sites, the understanding of archaeological research and the support within the population can only work through a good relationship at eye level, a constant flow of information and respectful interaction from both sides. In the case of sites such as the serial World Heritage Site ‘Prehistoric Pile Dwellings around the Alps’, there is an additional difficulty in communication: most of the sites of former settlements are invisible, hidden in water, in bogs or other wetland. For this reason, World Heritage management relies in various ways on the participation of the population, scientific communication and the provision of information to as broad a public as possible. World Heritage should be made as accessible as possible to everyone, which often requires innovative and unusual communication formats. In this presentation, some best practice examples from Austrian World Heritage management will be presented. From working with citizen scientists, artists and local museum associations to information campaigns for conflict groups and local residents to communicating to the general public via social media, print products and live streaming, an overview of the possibilities of science communication to different target groups will be given.

SESSION VI

Water for Living – Great Architectural Enterprises and Simple Facilities

*Old Discovery and New Research in Lake Śniardwy
in the Masurian Lake District, Poland*

Agata Grzędzielska, B.A.

(Faculty of Archaeology, University of Warsaw)

Ph.D. hab. Bartosz Kontny, prof. UW

(Faculty of Archaeology, University of Warsaw)

Lake Śniardwy is the largest lake in Poland. There are many interesting archaeological sites located in the vicinity of this body of water, including e.g. the cemetery in Zdory in Pisz District (formerly Sdorren, Kreis Johannisburg), dating back to Roman and Migration Period. Nevertheless, until now there was no ‘professional’ underwater research conducted in this area. A group of students and scholars from the University of Warsaw approached the shores of Lake Śniardwy in the summer 2021 in order to search for underwater archaeological sites which may exist in this area. A contribution to such prospection was given by the accidental find of an iron spearhead, which was discovered in 1938 on the beach near Zdory village, on the south-eastern shore of the lake. This find allowed supposing that in the direct vicinity there can be an archaeological site, presumably a sacrificial deposit. The existence of such deposits in the Masurian Lake District still lacks thorough examination. Such a project will allow to launch a wide range of new underwater expeditions in this area and start a new chapter in the history of lake sacrificial deposits’ research.

SESSION V

New Discoveries and Interpretations

*The Results of Archaeological Research of Underwater Timber
Constructions in the Area of the Oldest Entrance to the Gdańsk Harbour*

Paweł Litwinienko, M.A.

Krzysztof Kurzyk, Ph.D.

Janusz Różycki, M.A.

(National Maritime Museum in Gdańsk)

In 2020 the team of underwater archaeologists from the National Maritime Museum in Gdańsk performed an underwater survey of timber constructions lying on the bottom of the Dead Vistula River in the vicinity of the Wisłoujście Fortress. The timbers were dendro-dated to the 1590s–1600s.

The research area is located on the historical estuary of the Vistula River, where the oldest entrance to the Gdańsk harbour was located until the late 1690s. Early in the 18th century a western entrance canal had formed, marking the beginnings of the New Port district, in the result of the Vistula's sediments forming sandbanks which are today known as the Westerplatte peninsula.

The discovered objects are remains of timber breakwaters constructed in the vicinity of the Wisłoujście Fortress, marking the entrance to the seventeenth-century Gdańsk harbour. The piers were running far into the sea and were built of timber cribwork filled with stones. The location of the finds corresponds with the objects visible on the georeferenced historical maps of the harbour entrance.

SESSION V

New Discoveries and Interpretations

*Indicators of Trade Routes between Byzantium and Cities
on the Eastern Adriatic Coast in the Middle Ages*

Jelena Čelebić, M.A.

(Koç University)

The Adriatic is considered to be the communication channel between East and West, but there are still many gaps that disable reconstruction of those relations. Not all areas of the Eastern Adriatic coast are equally examined, the results of archaeological excavations are not always published and maritime archaeology is not equally developed in all Adriatic countries. In this presentation, the collected data from different sites regarding archaeological material from coastal Adriatic areas and from few shipwrecks (Cape Stoba shipwreck is the best preserved one) dated from the 4th to the 11th century, will be presented, in order to reconstruct trade routes and possible harbours on the Adriatic. Excavation of Butrint by Richard Hodges and Comacchio by Sauro Gelichi yielded new data. Additionally, archaeological material from different coastal sites in Montenegro and Dalmatia (Topolica, Old Bar, Bigovica, Ulcinj and Budva) has been re-evaluated.

This paper seeks to reconstruct medieval maritime routes on the Adriatic, considering material and textual data (in particular *De Administrando Imperio*) and to question if maritime routes and locations of harbours change in comparison to those from the Roman Imperial Period.

SESSION V

New Discoveries and Interpretations

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