

Prehistoric Wetlands and Lakes

**NEENAWA**  
*Scientific Meeting*

**Prehistoric Wetlands and Lakes:  
bringing forward dendrochronology  
in archaeology**



Center for Prehistoric Research

11-17.05.2016,  
Skopje and Ohrid,  
Republic of Macedonia

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UNIVERSITÄT  
BERN

ГОСУДАРСТВЕННЫЙ  
**ЭРМИТАЖ**  
*The State Hermitage Museum*



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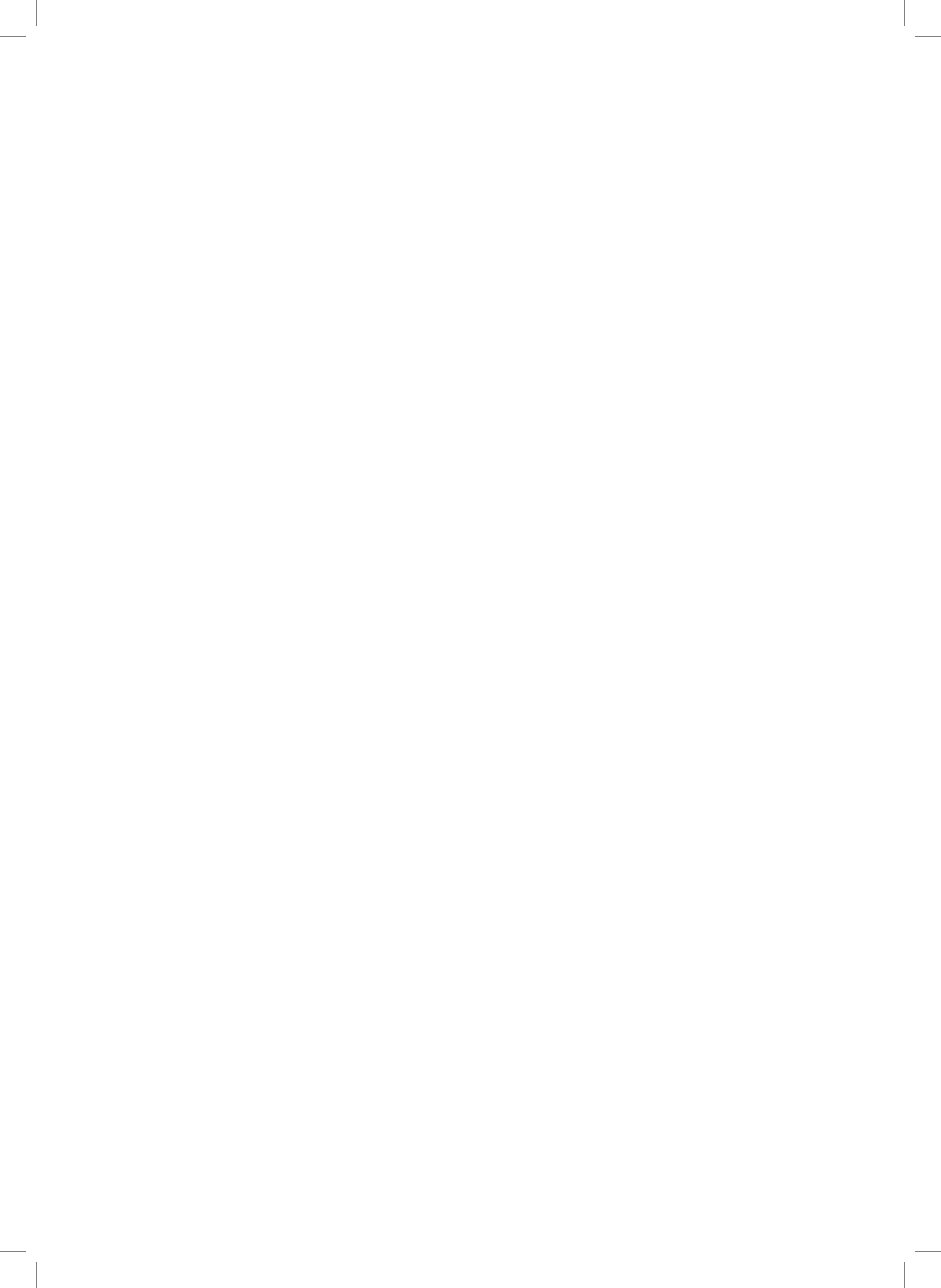
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(Network in East European Neolithic and Wetland  
Archaeology for the Improvement of Field Techniques  
and Dating Methods)

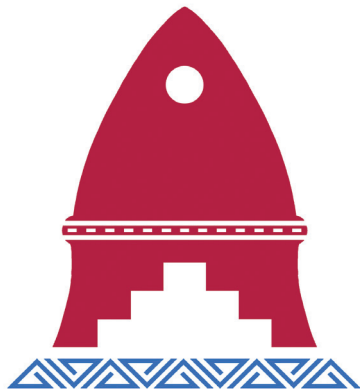
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# Program

## 11.05.2016

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11:00 – Museum of Macedonia

NATALYA VASILIEVA (The State Hermitage Museum)

*Conservation of Wet Wooden Archaeological Finds from The State Hermitage Museum*

14:00 – Skopje City Museum

ANDREY MAZURKEVICH (The State Hermitage Museum)

*Archaeological Collection in The State Hermitage Museum*

19:30 – Archaeological Museum of Macedonia

ALBERT HAFNER (University of Bern)

*Archaeology in Switzerland Between Mountains and Lakes*

## 12.05.2016

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08:30 – Meeting in front of City Museum and trip to Bitola and Ohrid by bus

12:00 – Visit of the Museum of Bitola

13:00 – Visit of a Neolithic tell at Porodin

14:30 – Lunch at the Neolithic tell in Mogila

15:30 – Trip to Ohrid through Prespa Lake

19:30 – Official opening with speeches and project presentation

20:30 – Guest Lecture at the Millennium Palace Hotel

PASKO KUZMAN (Institute for Preservation of Cultural Monuments and Museum of Ohrid)

*Review of the Prehistoric Pile Dwellings in Macedonia: prehistoric settlement at the Bay of Bones on Lake Ohrid as case study*

## 13.05.2016

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09:00-10:00 – MATTHIAS BOLLIGER (Archaeological Service Canton of Bern)

*The History of Dendrochronology: from the early years to its impact in wetland archaeology* (Dendrochronology Workshop)

*Current Documentation Technique of Woods in the Canton of Bern*

10:00-11:00 – JOHN FRANCUZ (University of Bern, Institute of Archaeological Sciences)

*Lacustrine Dendrochronology in Context of Underwater Pile Dwelling Archaeology at Lake Biemme, Switzerland* (Dendrochronology Workshop)

11:00-11:30 – Coffee break

11:30-12:30 – NILS BLEICHER (City of Zurich, Underwater Archaeology and Dendrochronology)

*Dendroecology-Dendrotypology-Dendroclimatology*  
(Dendrochronology Workshop)

12:30-14:00 – Lunch break

14:00-15:30 – Visit of medieval churches in Ohrid

16:00-17:00 – FELIX WALDER (City of Zurich, Underwater Archaeology and Dendrochronology)

*Procedure in Dendrochronological Work: tools (hardware and software packages) used in dendrochronology* (Dendrochronology Workshop)

17:00-18:00 – ANDREAS MÄDER (City of Zurich, Underwater Archaeology and Dendrochronology)

*Underwater Archaeology in the Lake of Zurich, Switzerland*

18:00-18:30 – Discussion and summary

18:30-19:30 – Dinner

# Program

**14.05.2016**

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09:00-09:30 – PANICOS CHRYSOSTOMOU (Florina Ephorate of Antiquities)

*The Culture of Four Lakes in Amindeon Florina's Basin (Northern Greece): the lakeside dwellings and their distinct characteristics*

09:30-10:00 – TRYFON GIAGKOULIS (University of Bern)

*At the Edge: preliminary remarks on some wooden structures from the periphery of the habitation space at the prehistoric lakeside settlement Anarghiri IXb (Amindeon, Western Macedonia, Greece)*

10:00-10:30 – ZORAN RUJAK (Institute for Protection of Cultural Monuments and Museum of Strumica)

*Mrdaya: pile dwelling settlement from the Late Bronze Age in Dojran Lake, Republic of Macedonia*

10:30-11:00 – Coffee break

11:00-11:30 – VALENTINA TODOROSKA ('Nikola Nezlobinski' Museum of Struga)

*Pile Dwelling Settlements in Northern Part of Lake Ohrid, Republic of Macedonia*

11:30-12:00 – GOCE NAUMOV (Museum of Macedonia)

*Network of Neolithic Communities in the Wetlands of Pelagonia and Lake Ohrid Basin, Republic of Macedonia*

12:00-12:30 – NIKOS CHAUSIDIS (St. Cyril and Methodius University)

*Were the Prehistoric House Models on Trestles Representation of Actual Pile Dwellings?*

12:30-13:30 – Lunch break

13:30-18:30 – Visit of pile dwellings at the Bay of Bones and diving

18:30-19:30 – Dinner

19:30-21:00 – NEENAWA coordinators meeting

## 15.05.2016

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09:00-09:30 – CHRISTOPHER ARABATZIS (University of Bern)

*Preliminary Data About the Bone, Teeth and Antler Artifacts from the Prehistoric Wetland Settlements of Amindeon, Western Macedonia, Greece*

09:30-10:00 – YOLAINE MAIGROT (CNRS, UMR 8215 – Trajectories)

*Bone, Teeth and Antler Tools Production Systems at Chalain et Clairvaux (4<sup>th</sup> and 3<sup>rd</sup> millennium, Jura, France)*

10:00-10:30 – DAŠA PAVLOVIĆ (National Museum of Slovenia)

*Wooden Traps from Ljubljana Moor*

10:30-11:00 – ANDREY MAZURKEVICH and EKATERINA DOLBUNOVA (The State Hermitage Museum)

*Chronology of Archaeological Cultures of the 7-3<sup>rd</sup> Millennia BC in Northwestern Russia in the Neolithic Context of Eastern Europe*

11:00-11:30 - *Coffee break*

11:30-12:00 – PAVEL SHYDLOVSKYI and IVAN RADOMSKYI (Taras Shevchenko University; Mohyla Academy)

*Early Agricultural Communities of Southwest Ukraine*

12:00-12:30 – YANA MOROZOVA and SERGII ZALENKO (Taras Shevchenko University)

*Development and Challenges of Ukrainian Underwater Archaeology*

12:30-13:00 – ELENA PRANCKÉNAITÉ (Klaipeda University)

*Archaeological Survey of Wetlands and Inland Waters: challenges and possible strategies in Lithuania*

13:00-13:30 – JADRANKA VERDONKSCHOT (University of Tübingen)

*The First Lake Settlers: a case study from Egolzwil 3 (Kanton Luzern, Switzerland)*

13:30-14:30 – Lunch

14:30-17:30 – Visit of Classical archaeological sites in Ohrid

18:00-19:00 – SYNERGIA project application meeting

20:00-24:00 – Dinner and closing party

# Program

## **16.05.2015**

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09:00 – Meeting in front of Millennium Palace Hotel and trip to Skopje

19:00 – Skopje City Museum

PAVEL SHYDLOVSKYI (Taras Shevchenko University)

*Mezhyrich Upper Palaeolithic Settlement: a model of human/environment interaction in Middle Dnieper area*

## **17.05.2015**

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12:00 – Archaeological Museum of Macedonia

ANDREY MAZURKEVICH and EKATERINA DOLBUNOVA (The State Hermitage Museum)

*Lacustrine Settlements in Northwest Russia (7-3<sup>rd</sup> millennium BC)*



**Introduction**



Dear colleagues,

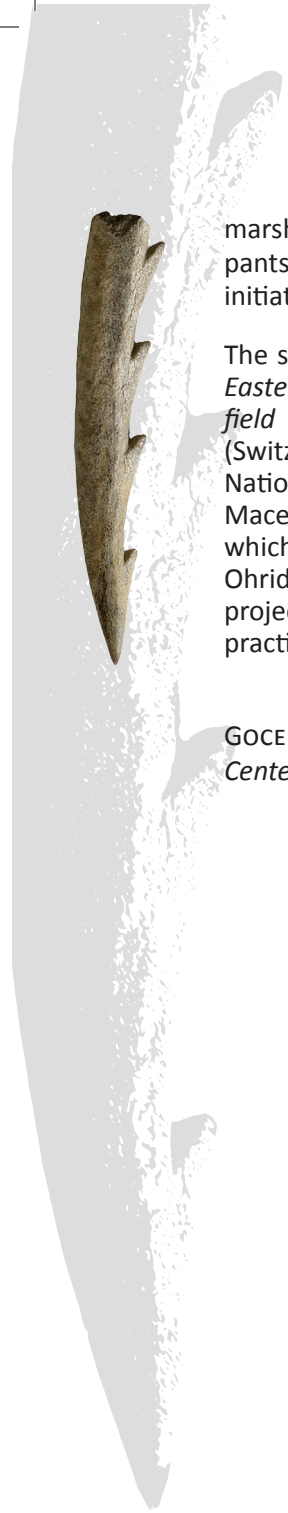
Welcome to Ohrid and to the scientific meeting '*Prehistoric Wetlands and Lakes: bringing forward dendrochronology in archaeology*'. It is an honor of the Center for Prehistoric Research to host this significant event with participants from various European countries. This event will be a meeting of numerous archaeologists who will share their knowledge and practices with settlements, objects and environment in wetlands. In the last few decades wetland archaeology had momentous step forward in the understanding of societies, material culture and landscapes in marshes, water meadows, bogs, fens, marine coasts, lakesides, channels, drainages and salt pools. The implementation of novel archaeological methods and paleoenvironmental sciences provided entirely new perspective of areas which were previously considered as marginal and inhabited by unsophisticated communities essentially focused on subsistence. Current research and results in wetland archaeology indicate far more advanced societies which modified the landscape and built complex settlements where social identities were constructed and performed through the relationships between people, objects, animals, places and time.

The latest advances and challenges in wetland archaeology will be presented in NEENAWA Scientific Meeting with the contribution of more than 20 participants from Switzerland, Russia, Ukraine, France, Holland, Greece, Lithuania, Slovenia and Macedonia. Numerous prehistoric sites from East, Central and Southeast Europe will be elaborated with particular focus on the pile dwellings, chronology, networks, agricultural societies, underwater archaeology, wetlands, inland waters, wooden structures, house models, bone tools and conservation. Special session with workshops on dendrochronology will be performed in order to introduce thoroughly the benefits of this scientific method and its incorporation within wetland archaeology. As an area with large number of wooden pile dwellings Lake Ohrid is a perfect setting for such workshop and discussions on experiences and challenges with dendrochronology.

The venue of scientific meeting on wetland archaeology and dendrochronology is located right above the prehistoric settlement with pile dwellings which was gradually covered by the modern city of Ohrid. Recent survey and excavations confirmed Late Neolithic and Chalcolithic lakeside settlement at the area of Ohridati on the very coast of Lake Ohrid. Before any further archaeological exploration of this site, Millennium Palace Hotel will be perfect spot for sharing archaeological knowledge and discussing various issues concerning sites, material culture, chronology, protection etc. In sake of modern interaction with prehistoric wetland settlements also an excursion will be performed, particularly on the Neolithic tell site in Pelagonia. As introduction to scientific meeting the participants will have lunch at the restaurant in the very center of Mogila village which is established onto the Neolithic tell surrounded by the large area of







marshes in the past. This lunch will be exceptional opportunity for the participants to introduce one another and to present the partners of the project that initiated scientific meeting on wetland archaeology and dendrochronology.

The scientific meeting in Ohrid is part of the international project '*Network in Eastern European Neolithic and wetland archaeology for the improvement of field techniques and dating methods*' in partnership with University of Bern (Switzerland), State Hermitage Museum (Russian Federation), Taras Shevchenko National University (Ukraine) and Center for Prehistoric Research (Republic of Macedonia). This project is supported by the Swiss National Science Foundation which also funds the participation of delegates within the scientific meeting in Ohrid. Therefore, this event will be excellent occasion for the implementation of project aims and a significant contribution in promotion of latest knowledge and practices in wetland archaeology and dating methods.

GOCE NAUMOV  
*Center for Prehistoric Research*

## Pile dwellings and wetland sites in the Republic of Macedonia

There was not a peculiar interest in wetland sites in the Republic of Macedonia until two decades ago. The tell settlements and palafittes were regarded as regular archaeological sites without consideration of their specific features related to wetlands and landscape. Some of them were comprehensively excavated, while majority were only documented by reconnaissance and small trenches which provided modest knowledge of their establishment, architecture, economy, rituals and social life. Still, the basic data indicated employment of marshes, riverbeds and lakesides as thorough ground for launching prehistoric settlements and for provision of steady subsistence. The diverse geography of Macedonia enabled such variety of environments and potentials for consistent building of settlements through prehistory. Therefore, three basic categories of wetland sites could be determined, particularly one belonging to those built next to rivers, another on lakeshore and third within marshes made by river floods, changes of lake occupation and snow melting.

In regard to marshes in prehistory, one of the most distinct regions is Pelagonia. In this elongated valley more than 120 Neolithic sites are documented with majority disposed on wetlands made by Crna river and by the melting snow from surrounding mountains. Most of the sites are tells, established in the Early Neolithic, some of them occupied until Bronze Age. The latest research indicate high density of tells close to riverbed of Crna and especially around marshy lakes present since the Neolithic. This is the most fertile valley in the Republic of Macedonia that provides the largest amount of cereals in the state and which had the same agricultural potentials in prehistory. Consequently, it was attractive for numerous communities to establish their settlements in spite of the marshy ground and frequent river floods. This was confirmed by the latest excavation on tells where geological layers were covering the periphery of sites and thus engaged inhabitants in constructing wooden piled structures. The recent discovery of such construction, as well as numerous house models in Pelagonia indicate frequent use of piled structures in regard to wetland environment.

Of particular interest are the pile dwellings on lakes and their vicinity. There are three significant lake basins in Macedonia named Dojran, Prespa and Ohrid Lakes. The pile dwellings are recorded in all of them with largest number in Lake Ohrid. Lake Ohrid is the biggest lake in Republic of Macedonia with occupation area of 358 km<sup>2</sup> and 289 m depth. It is considered as the oldest lake in Europe (more than 1 million years) that contains various endemic species belonging to Pliocene age. In 1979 this lake and its surrounding were included in UNESCO World Heritage list as an important part of the world cultural and natural heritage, due to the geographic isolation, geological age, unique ecosystem, rich endemic flora and fauna, as well as the exceptional historical and cultural values.





The earliest settlements in Lake Ohrid basin are dated in the Neolithic, but Palaeolithic and Mesolithic ones should be expected due to a number of caves, rock shelters and valleys surrounding the lake. The Neolithic in Lake Ohrid basin is far better understood, as there are four lakeside settlements (of which one in a cave), few on the alluvial valley surrounding rivers and number of them on hills north-east of the lake. Those belonging to Early Neolithic are consisted of pit houses or wattle and daub dwellings. The settlements bears apparent indications of social identity and dynamic relationship with the tell sites in Pelagonia as evidenced by the white painted pottery, tablets and anthropomorphic house models unearthed in these two regions. The other excavated sites are pile dwellings dated in Late Neolithic which preserved elements of synchronous sites in Pelagonia. They were occupied in the Chalcolithic, Bronze and Iron Age as well and consisted of individual buildings on piles or wattle and daub houses built on wide wooden platforms.

The number of wetland sites and pile dwellings in other lakes of Macedonia is much smaller. The first description of one such pile dwelling settlement in Lake Dojran is mentioned by Herodotus as Lake Prasiad. In 2013, the first excavation on wetland site started at the location named Mrdaja where Late Bronze Age pile dwelling was detected. Unfortunately, there are no excavations of pile dwellings at Lake Prespa, although the piles close to Nakolec indicate probable prehistoric settlement. Though still modest, the survey and excavation of wetland sites in the Republic of Macedonia indicated variety of settlements and dynamic social life from Neolithic to Iron Age, some of which were used in Medieval times and even nowadays as fishing huts.

GOCE NAUMOV and VALENTINA TODOROSKA  
*Center for Prehistoric Research*

## History of Ohrid

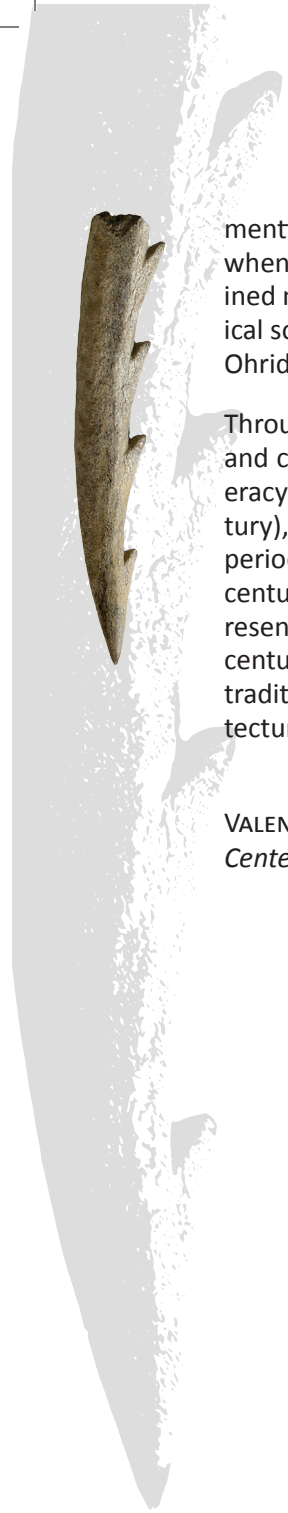
Lake Ohrid is situated in the southwestern part of Republic of Macedonia. Since 1979 it is under the protection of UNESCO as a natural world heritage site, and since 1980 as a cultural world heritage site. It is located at 695m above sea level and covers an area of 358 km<sup>2</sup>. The transparency of the water reaches up to 20 meters. The lake is surrounded by the following mountains: Galichica (2255 m), Mokra (1514m) and Jablanica (1945 m), which shape a certain geographically closed space around it. Its geological origin was estimated at more than 1 million years, which makes it one of the oldest lakes in Europe. Lake Ohrid is known for its unique eco-system comprised of endemic floral and faunal species. Cultural and historical values that enabled development and settlement of this space since prehistory till nowadays are another great accomplishment.

The city of Ohrid lays in the northeastern part of Lake Ohrid. In ancient times it was known as Lychnidos, i.e. city of light. Ohrid is place where different cultures and influences collided, a place unique for its cultural history, often conquered and visited, always attractive for scientists, travelers and tourists. It was first mentioned in 3<sup>rd</sup> century BC by Livius under the name of Lychnidos. In 9<sup>th</sup> century its name changed into Ohrid and was kept ever since. Legend has it that it was established by the Phoenician Cadmus, while Herodotus and Apollodorus noted that this area was inhabited by the Enchelei and Bryges, replenished by Polybius, the chronicler. In lack of historical sources regarding the oldest life forms at this place witness the pile dwelling settlements discovered at the shore: Bay of Bones, Penelope, Ustie na Drim, Vrbnik, to name just a few. In historical sources, Lychnidos was first mentioned by Livius in 3<sup>rd</sup> century BC when the city was already fortified and under Macedonian rule. After the Macedonian-Roman wars in 2<sup>nd</sup> century BC, the city fell under Roman rule and became the capital of the region Dessaretia. In 148 BC, when Macedonia became a Roman province, Lychnidos kept its free status and remained part of the Macedonian kingdom, which is confirmed by the coins with presentations of Macedonian shield on the obverse, as well as a quarter of a ship with an inscription shown on the reverse.

Ptolemaeus, the geographer and Strabo, the historian, in their description of Via Egnatia refer to Lychnidos as a Dessaretian town, while at the beginning of the 4<sup>th</sup> century it is mentioned in two itineraries as well as in Tabula Peutingeriana, as a station along Via Egnatia, a Roman road that connected this town and the Western, as well as the Eastern part of the Roman Empire and provided communication with the whole known world at the time.

From 4<sup>th</sup> till 6<sup>th</sup> century Lychnidos is mentioned as a bishopric seat, witnessed by the unearthed Early-Christian buildings with rich architecture and decoration that refer to the rise and the glory of the city. The city and its demolition were





mentioned for the last time by Procopius at the middle of the 6<sup>th</sup> century, a time when the Roman Empire has undergone in disasters and earthquakes which ruined many cities. The city continued to live and to resurrect. It is found in historical sources from the 9<sup>th</sup> century by the name of Ahrida, while later the name of Ohrid is being used till nowadays.

Through the Middle Ages Ohrid rose to an ecclesiastic, cultural, administrative and craft center in the wider region. It was time when foundations of Slavic literacy were made, when the university of St. Clement was established (9<sup>th</sup> century), today part of the Plaošnik cultural complex. For the monumentality in the period between 11<sup>th</sup> and 19<sup>th</sup> century witness the churches of St. Sophia (11<sup>th</sup> century), Holy Mother of God Peribleptos (13<sup>th</sup> century) where the most representative collection of icons can be found, as well as St. John of Kaneo (17<sup>th</sup> century), which speak of the artistic accomplishments in this period. All these traditions, material and cultural values reflected onto the later Ottoman architecture, whose remains can be seen in Ohrid.

VALENTINA TODOROSKA  
*Center for Prehistoric Research*

## NEENAWA

### Network in Eastern European Neolithic and wetland archaeology for the improvement of field techniques and dating methods

Neolithic and Bronze Age wetland sites around the Alps (so called pile-dwellings, Pfahlbauten or palafittes in German/French) are of outstanding universal value (UNESCO-world heritage since 2011). Typical sites are in lakes, rivers and bogs, dating between 5300 and 800 BC. Of common character is the perfect conservation of wood, textiles from plant fabrics and many other organic materials. Larger quantities of sub-fossilized as in the peri-Alpine sites offer the possibility of high-precision dating by dendrochronology. Research in these wetland sites started in the mid-19th century. Large scale rescue excavations since the 1970s and the evolution of underwater archaeology in the same period accumulated a thorough Swiss experience with these specific sites. Research in wetland sites is shared between cantonal institutions and universities and led to a worldwide unique accumulation of knowledge. Comparable sites exist outside of the Alpine area, but in much smaller quantities. Regions like Russia (small lakes in NW-Russia) and Macedonia (medium size lakes in the broader zone of Republic of Macedonia, Albania and Greece) have a high scientific potential; rivers in Ukraine are supposed to have the same type of sites.

This SCOPES Institutional partnership (IP), funded by Swiss National Science Foundation (SNF), was established in order to build up a scientific network in Neolithic and wetland archaeology and to transfer knowledge from Switzerland, as one of the worldwide leading countries in this field, to the participating Eastern European countries. The further aims of IP are to concentrate on an improvement of archaeological field techniques (mainly underwater archaeology/documentation under water/diving security) and dating methods, including dendrochronology. All Eastern European sites have the potential to give new insights on the process of the Neolithisation of Europe. A major outcome would be to establish close ties between a gender and age mix consortium that is willing to develop further research projects.

This international collaboration will help to develop methods of investigation for sites located under water and in peat bog, bring together different specialists and help to develop different research themes and teams in Eastern European countries.

ALBERT HAFNER  
*University of Bern*





## Center for Prehistoric Research

The Center for Prehistoric Research (CPR) is dedicated to study and presentation of prehistory in the Republic of Macedonia and abroad. Considering the rich cultural heritage from this period, CPR's primary goal is to enable a thorough understanding of the life of the prehistoric communities while applying numerous scientific methods. CPR's members are archaeologists who study Paleolithic, Neolithic, Chalcolithic, Bronze Age and Iron Age from different aspects. Within their activities, archaeological sites are being studied and presented, as are the material culture, chronology and the geographical features of prehistory, so they could be interpreted applying the current theoretical models. Apart from the research activities, CPR organizes scientific round tables, workshops and conferences that actualize the problems of prehistoric archaeology. Moreover, CPR publishes editions that present the latest acknowledgments regarding the cultural heritage in the Republic of Macedonia.

CPR cooperates with several domestic and international institutions and creates a platform for a future networking in projects that will thoroughly examine and present this period. Within these cooperations students and young professionals are being trained through inclusion in field research, lab analyses, expert publications and public scientific events. As a result of these activities, CPR significantly impacts the application of new scientific approaches and ethical norms in the Macedonian archaeology. Thus, by presenting the cultural heritage through research, scientific debates and publications, CPR has a direct influence over the popularization of prehistory and the protection of sites and material culture originating from this period. CPR's aim is to enhance the cooperation among experts and institutions that will strengthen the scientific ethics and the research methods applied in prehistoric archaeology.



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## Abstracts





# Lectures

NATALYA A. VASILIEVA

*The State Hermitage Museum*

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## **The Conservation of Waterlogged Organic Archaeological Artefacts from Pile-dwellings Sites in the State Hermitage Museum (historical overview)**


Hidden at the bottom of lakes and rivers, pile-dwellings sites are one of the most unique sources of studying the past. The aquatic environment, along with the limited access of oxygen, the absence of sunlight, low temperatures and neutral pH preserved objects made of organic materials. In the Neolithic natural resources were actively involved in the daily life. Objects made of wood, bark, bast, roots of plants, bone, horn, amber were preserved till nowadays in the wet layers of the pile-dwelling settlements. They include the remains of buildings, tools, weapons, fishing tools, utensils, ceremonial objects, items of clothing and jewelry.

In the waterlogged archaeological finds, water provides basic structural support to the wood cells and cannot be removed without being replaced by some other chemical substance. The research and the search for ways of conservation of waterlogged archaeological wood artefacts in the State Hermitage Museum begun in the early 1950s headed by E. A. Rumyantsev. In the early 1960s, the restorers of the State Hermitage Museum tested several methods of conservation of waterlogged archaeological wood.

The leading method of conservation accepted is the method of stabilizing waterlogged archaeological wood by using synthetic water-soluble polyethylene glycol. This method was introduced into the Hermitage practice by N. G. Gerasimova and K. F. Nikitina in 1963. It was the first time that waterlogged archaeological finds were treated in such way: these were the objects uncovered by the North-Western Expedition of the State Hermitage Museum headed by A. M. Miklyaev from the pile-dwelling Usvyaty IV.

Further on, under direction of A. N. Mazurkevich many interesting artifacts made of perishable organic materials were discovered at the sites Dubokray V, Serteya I, and Serteya II in Dnepr-Dvina area. Among them were the fragments of textile and fishing nets made of vegetable fibers.





Conservation of waterlogged organic artefacts found on pile-dwelling settlements is a careful and long-term process. Meanwhile, the complexity of the implementation of new problems inspires the restorers to search for new answers.

ANDREY MAZURKEVICH

*The State Hermitage Museum*

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### **Archaeology in The State Hermitage Museum**

Nowadays The State Hermitage Museum supports more than 22 archaeological expeditions. The history of museum's archaeology goes back to the XIXth c. and is tightly related with Imperial archaeological commission. Archaeological discoveries of the Hermitage museum include rich Skythian kurgans, fresco of Panjakent and Nymphaion, Urartu antiquities, researches of Old Russian and Saint-Petersburg architecture, medieval Russian towns, Russian tzars' quarters, burial mounds and settlements in Northern Caucasus, Xiongnu burials in Buriatia, and Iron Age settlements. The Hermitage was one of the pioneers of underwater archaeology, revived this direction in the 1980s in the Soviet Union, and continued to conduct underwater excavations of unique Neolithic pile dwellings sites in North-Western Russia. The net of the Hermitage expeditions became one of the major factors of maintenance of a common cultural space Eurasia. Exhibitions, made on the basis of unique archaeological finds, allow preserving limitlessness of cultural milieu.

ALBERT HAFNER

*University of Bern*

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### **Archaeology in Switzerland Between Lakes and Mountains**

Switzerland has an extraordinarily rich archaeological heritage from the Neolithic and the Bronze Age, dating back nearly 7000 years. Since the mid-19th century, the first pile dwellings were discovered in the lakes of the Central Plateau. Since 2011 these sites are part of the UNESCO world heritage „Prehistoric pile-dwellings around the Alps“. Not only lakes, but also Swiss mountains pre-

serve extraordinary archaeological remains: from an alpine pass in the Bernese Alps prehistoric objects are melting out from the ice. Perfect preservation conditions and modern archaeological methods allow exploring the development of early agrarian societies in this part of the world. We can reconstruct their settlements and follow their exchange with other communities. Archaeology under water and in alpine environments allows fascinating insights into the beginnings of our history.

PASKO KUZMAN

*Institute and Museum Ohrid*

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### **Review of the Prehistoric Pile-Dwellings in Macedonia: underwater archaeological research of Ploča Mičov Grad in the Bay of Bones, Lake Ohrid**

This article reviews, in words and pictures, the wetlands in Macedonia as part of the Central Balkan area. The lake landscapes in the geography of wider Macedonia are mainly located in the lowlands of Macedonia, the region in Greece, apart from the biggest two lakes, the Ohrid and the Prespa Lakes, which are surrounded by higher mountain massifs and which were part of the ancient Upper Macedonia, while today, their greatest parts belong to the Republic of Macedonia. The small Lake Maliq, nowadays in Albania, is also part of this group. Thus, the text considers eighteen natural lake landscapes, three of which are in the Republic of Macedonia (Ohrid, Prespa and Dojran), two in Albania (Maliq and Small Prespa Lake) and thirteen in Greece (Lake Kastoria, Petres Lake, Lake Vegoritida, Lake Pikrolimni, Ahinu Lake, Lake Kerkini etc.), but also the recorded and the researched prehistoric pile-dwelling (palafitte) settlements on some of those lake, near-lake, river or swamp regions. So far, twelve such palafitte settlements (Maliq excluded) have been recorded and researched and have been chronologically determined from Neolithic to Iron Age. In the very focus are the first underwater archaeological excavations on Ploča Mičov Grad Site in the Bay of Bones, Lake Ohrid, where the excavations took part from 1997 till 2009. Chronologically, the site originates from the end of Bronze Age, throughout the Iron Age, until 6<sup>th</sup> century BC. This vast research in 2008-2009 enabled an imagined settlement reconstruction – 24 prehistoric houses built on a platform over wooden piles stuck in the lake bottom to a depth of 3 to 5 meters.





PAVEL SHYDLOVSKYI

*Taras Shevchenko University*

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### **Mezhyrich Upper Palaeolithic Settlement: a model of human/environment interaction in Middle Dnieper area**

Among Late Pleistocene archaeological sites of Middle Dnieper region one's attention attract settlements with monumental dwellings made with usage of mammoth bones. There are four such sites found in Ukraine: Mezine on Desna river, Dobranychivka on Supii river, Ginty on Udai river and Mezhyrich on Ros river. The first two were excavated during 20<sup>th</sup> century. At Ginty and Mezhyrich there are still regular excavations. By the name of Mezhyrich site a specific type of Epigravettian lithic industry was called, which is similar to Dobranychivka, Semenivka I-III, Ginty and Buzhanka II.

The site is located on a cape above floodplain terrace in the valley of confluence of the Ros and Rosava rivers. Cultural layer of monument is well-preserved, with debris, remains of organic objects, such as bone, horn and tusk. They are lying at a depth of 2.5-3 m of modern surface. During the 50 years of studying the site, four dwellings were found with the use of mammoth bones. The reconstruction of the mammoth bone dwelling №1 is exhibited in the National Museum of Natural History of Ukraine. The fourth dwelling, discovered in 1976, was partially excavated and left in place for the purpose of future museumification.

Radiocarbon dates showed that the site existed in narrow chronological border – 14.5 thousand years BC. Since 2009, a Ukrainian-French expedition with members from the Department of Archaeology and Museum Studies, Taras Shevchenko National University of Kyiv and National Museum of Natural History (Paris), excavates the site. These last years the research is focused on household objects, that surround dwellings 1 and 2, household pits, production areas, parts of cultural layers that haven't been excavated yet.

Dobranychivka, Ginty, Mizyn and Mezhyrich settlement, are interpreted as base camps, which functioned during cold year seasons. Such sites are characterized by monumental dwellings, made of mammoth bones and household pit around them. In contrast to this type of sites, such stations as Semenivka I-III, Fastivska, Sholomky and other, are interpreted as summer camps that give us evidence about the seasonal structure of economic activity of specialized mammoth hunters.

The historical significance of the sites is that dwellings with adjoin areas of cultural layer are an invaluable source of information about the interaction of nature and society in the last glaciation era: methods of cultural adaptation of pre-

historic population, the economy and domestic culture, demography and social structure of their inhabitants. In addition, this construction is an evidence of the earliest forms of architecture used by Homo sapiens in inclement glacial conditions with utilitarian, ergonomic, aesthetic and ideological functions that characterized it as dwelling.

ANDREY MAZURKEVICH AND EKATERINA DOLBUNOVA  
*The State Hermitage Museum*

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### **Lacustrine Sites in North-Western Russia in 7-3 millennium BC**

This region is located to the west from interfluvial area of three major rivers of Eastern Europe – Volga, Western Dvina and Dnepr. “The intersection of different routes” led to the formation of syncretic archaeological cultures. Sites with one of the most ancient pottery of Eastern Europe, dated back to the 7th mill BC, were found here. During several millenniums ancient inhabitants interchanged, bearers of various cultural traditions came here from the southern steppes, forest zone of Eastern Europe, from Central Europe, the Balkans, and Baltics. Not only pottery and ancient tool-kits changed, also prestigious artefacts were brought here – Baltic amber, clay Balkan pintaderas, flint daggers. Ancient inhabitants created a fascinating art world, centred round zoomorphic images and a man – a creator of this ancient world.

**Notes**

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# Workshops

MATTHIAS BOLLIGER

*Archaeological Service Canton of Bern*

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## **The History of Dendrochronology: from the early years to its impact in wetland archaeology**

A short insight into the history of research shows how the method of dendrochronology has evolved, from the early years in the U.S. to its impact in wetland archaeology in the circumalpine lakes.

### **Current documentation technique of woods in the Canton of Berne**

In addition, the current documentation technique of woods in the archaeology of Canton Berne will be presented.

JOHN FRANCUZ

*University of Bern*

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## **Lacustrine Dendrochronology in Context of Underwater Pile Dwelling Archaeology at Lake Bienne, Switzerland**

Focus: measuring, chronology-building, dating, overview of the dendrochronological method, in context of the many thousands of sub fossil woods that have been collected from extensive underwater excavations in progress since 1984 at Lake Bienne, in western Switzerland.

- how ring width measurements are taken;
- how wood, especially those with only few growth rings are cross-correlated and synchronized into mean-curve groups;
- how site-chronologies are built and eventually cross-dated.







NILS BLEICHER

*City of Zurich, Underwater Archaeology and Dendrochronology*

### **Dendroecology-Dendrotypology-Dendroclimatology**

Tree rings contain much more information than just their tree-ring series as a tool for dating. Since trees are organisms they react to their environment and changes within it, such as climate, insect outbreaks, fires and logging. The probably most widely known application is the reconstruction of climate from tree-ring chronologies. Other reconstructions are frequently referred to as dendroecology. Dendroecology using archaeological material is difficult since the actual tree stands cannot be studied. It is therefore a special application which uses dendrotypology as its most important approach. The lecture outlines general concepts and possibilities.

FELIX WALDER

*City of Zurich, Underwater Archaeology and Dendrochronology*

### **Procedure in Dendrochronological Work: tools (hardware and software packages) used in dendrochronology (Dendrochronology Workshop)**

The presentation will show the complete dendrochronological procedure that is necessary to build up a measuring curve. The procedure starts from a specific wooden sample and ends with a semi logarithmic graphic curve as used in dendrochronology. The presentation will give an overview of the basic equipment that is needed to run a dendrochronological laboratory. Common tools are drilling devices and a measuring unit, which connects the measurements taken under the microscope, and the computer unit. For further processing several software packages are on the market. PAST, TSAP-Win, dd+ and others will be presented.

ANDREAS MÄDER

*City of Zurich, Underwater Archaeology and Dendrochronology*

### **Underwater Archaeology in the Lake of Zurich, Switzerland**

The section Underwater archaeology and dendrochronology Zurich has been established in the 60ies of the last century. Since then our focus is on the one hand on the research of the numerous pile dwellings of northeastern Switzerland and on the other hand on the methodological and technical enhancements in order to protect the cultural underwater heritage. The speech highlights the latter: The ongoing site management project at the UNESCO world heritage site "Freienbach-Hurden, Seefeld", comprising archaeological survey measures, paleoecology, radar and sonar measurements. The aim is to reconstruct the archaeological layers in a 3D-model. On this basis then hydrodynamic data is added in order to develop a predictive model for erosion.

# Presentations

PANICOS CHRYSOSTOMOU

*Florina Ephorate of Antiquities*

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## **The Culture of Four Lakes in Amindeon Florina's Basin (Northern Greece): the lakeside dwellings and their distinct characteristics**

The surveys and excavations of the last years in Amindeon Florina's region, especially the large scale rescue excavations at the Coal Mining Zone of Public Power Corporation S.A. - Hellas, resulted in the discovery of a great number of Prehistoric dry land and lakeside settlements dated from the late 7<sup>th</sup> to the late 2<sup>nd</sup> mil. BC. From the preliminary overall approach of the excavational data so far yielded, the development of a unique culture in the region is documented, with an active contribution – especially during the earlier phases – to the neolithisation of Balkans, as part of the basic axis of populations and ideas mobility from the Thessalian south towards northern inland.

The location of the settlements also confirms the special relationship that local Neolithic communities developed with wetland environment, an interaction sustained with an impressive adaptive ability throughout Prehistory. The most recent partial or total excavation of several Prehistoric lakeside settlements in Amindeon Basin and the investigation of extended burnt destruction layers, numerous structural elements and artifacts of various organic materials yielded new data to the Prehistoric research of the region. These significant evidence refer to the diachronic intra-settlement spatial organization, the form, structure and internal arrangement of the houses, the productive, gathering and domestic activities, as well as to the variety of ideological means of expression and orientations of the local Prehistoric communities.



TRYFON GIAGKOULIS  
*University of Bern*

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**At the Edge: preliminary remarks on some wooden structures from the periphery of the habitation space at the prehistoric lakeside settlement Anarghiri IXb (Amindeon, Western Macedonia, Greece)**

The Rescue Excavations Project of Florina's Ephorate of Antiquities at the coal mining zone of Amindeon (Western Macedonia, Greece) has so far revealed substantial new evidence for the cultural development – from Early Neolithic to Late Bronze Age – of this region which is characterized by the presence of four lakes. Among the numerous finds there are a considerable great number of wooden construction elements belonging to structures preserved in the lower waterlogged deposits of several Prehistoric settlements built either by the shores or on the lakes.

Anarghiri Ixb, a settlement inhabited since the early 5<sup>th</sup> millennium BC, was oval in shape and approximately 2.8 hectares in size, in the central part of which the archaeological layers are almost 4m thick. According to the so far unearthed excavational evidence, the earliest occupation's structures were built in immediate spatial relation to water with matching building choices adopted by the Neolithic settlers, while during the subsequent Neolithic periods (c. 4700-3300/3200 BC) the settlement became a dry land site characterized by successive burnt destruction layers. The large scale project of the last three years has resulted the completion of the excavational research of the cultural layers at the periphery of the settlement, covering an area of approximately 7.000 m<sup>2</sup>.

The study of the various construction techniques implemented by the Neolithic builders, especially concerning the exploitation of wood as raw material in several related tasks, is based mainly on extensive sampling of the wooden construction elements preserved in the settlement's waterlogged layers, as well as on the data set derived from the detailed documentation of finds and findings and their spatial integration in the excavational grid with the use of GIS tools. Although the study is still in an early stage, the initial processing of data from the categorization of the wooden elements in different types according to their preservation, in-layer arrangement, physical and technical features etc. provide useful information concerning the construction and organization of space at the periphery of the prehistoric occupation. The preliminary remarks presented in this paper refer to specific clusters of wooden elements (vertical and horizontal piles, planks, boards etc.), which due to their similar characteristics, spatial and stratigraphical distribution can be correlated to structures built at the edges of the main habitational settlement's area. The specific building processes followed the original form, as well as the possible function of these structures as boundaries or connections between the settlement and the nearby lakeshore, are some of the future research topics that are shortly discussed.

The resumption of the rescue excavation at the central part of Anarghiri IXb and the expected outcome in terms of quantity and quality of the archaeological material will provide our research with more evidence for the formulation of an overall view of the settlement's building history. Furthermore, the microscopic examination of the wooden elements sampled so far, as well as the expansion and intensification of the sampling processes at the forthcoming excavational campaigns, not only will add crucial and qualitative information regarding the use of wood as construction material, but will possibly open new perspectives for palaeoenvironmental research and – most importantly – dendrochronology. The crucial objective of integrating Anarghiri IXb into a wider research framework concerning the study of building technology developed by Prehistoric communities of Greek Macedonia and the adjacent areas will be facilitated through the establishment of interdisciplinary collaboration between Greek Ministry of Culture and Sports, Swiss and other European Institutions.

ZORAN RUJAK

*Institute and Museum of Strumica*


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**Mrdaya: pile dwelling settlement from the Late Bronze Age in Dojran Lake, Republic of Macedonia**

Archaeological excavations on the southernmost point on the shore of Dojran Lake have brought the remains of the palafitte settlement. The Prehistoric Lake Pile Settlement is from the Late Bronze Age, i.e. the transitional period between the Bronze and Iron Age. Few hundred years later, Herodotus wrote about similar settlement under Mount Orbelus (Belasica) when he mentioned the Paiones, who lived in huts elevated above the lake.

During the research campaign more than 200 m<sup>2</sup> were excavated. The excavated area yielded numerous findings: pottery, metal objects, bone and stone tools and, also, remains of piles stuck at the lake bottom. Communication between the dwellings was probably organized through platforms or by using bridges. Wattle and daub found in the dwellings indicate that they were probably made of piles which were entangled with branches and reeds, and finally coated with mud. Dwellings were probably covered with a roof of branches, reeds and straw and stabilized with a stone from gusts of wind. Dwellings were heated using fireplaces and special portable stoves (pyraunoi).





According to the overall characteristics, Lake Pile Settlement from Dojran Lake belongs to Middle and Lower Vardarian (Axios river) cultural circle which independently develops during the Late Bronze Age. There are close analogies with the sites in the lower streams of the Vardar river as Kastanas, Vardino, Vardarofca, Asiros etc.

VALENTINA TODOROSKA

*'Nikola Nezlobinski' Museum of Struga*

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### **Pile Dwelling Settlements in Northern Part of Lake Ohrid, Republic of Macedonia**

The aim of this presentation is to present the pile dwelling settlements situated in the northern part of Ohrid Lake i.e. the Struga area. Tangible archaeological finds in the settlements located in this part of the lake (Ustie na Drim, Crkveni Livadi and Vrbnik) point to the fact that pile dwelling settlements were established in several stages of prehistory i.e. since the Late Neolithic until the end of Iron Age. A huge concentration of pottery and tools for everyday life and survival will contribute in completing the picture of this region in Prehistory.

GOCE NAUMOV

*Museum of Macedonia*

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### **Network of Neolithic Communities in the Wetlands of Pelagonia and Lake Ohrid, Republic of Macedonia**

For many decades the valley of Pelagonia and Lake Ohrid basin in Macedonia were regarded as culturally different regions due to their diverse geographical settings. It was determined that these communities had uncommon identities manifested onto their settlements and items they produced and therefore the regions were regarded as isolated cultural groups in the Neolithic, with Veluši-

na-Porodin (Pelagonia) and Zlastrana (Lake Ohrid basin) belonging to Early Neolithic, and Trn (Pelagonia) and Ustie na Drim (Lake Ohrid basin) specific for the Late Neolithic. Nevertheless, the current research indicates that the communities inhabiting these regions established solid networks and shared common identity in regard to wetland environment and farming economy which was introduced in this area around 6000 BC. Such relationship was initiated in the Early Neolithic and numerous white painted vessels and anthropomorphic house models are in favor to dynamic contacts of the first farmers in Pelagonia and Lake Ohrid basin. The networks were firmly maintained in the Late Neolithic when the communities in these regions synchronically started to produce incrustrated black polished pottery and stamps with identical patterns. The communication between these agricultural societies was intertwined on various economic, social and symbolic levels and further archeological research with implementation of paleoecological analysis, radiocarbon dating and dendrochronology will determine the wetland setting and exact age when they initiated and changed their shared identities.

NIKOS CHAUSIDIS

*St. Cyril and Methodius University*

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### **Were the Prehistoric House Models on Trestles Representations of Actual Pile Dwellings?**

This presentation will consider ceramic house models on trestles and the issues regarding their construction which questions whether they were produced as representations of actual buildings established over water. These artifacts are unearthed in Neolithic and Chalcolithic settlements in the Balkans and Eastern Europe with Macedonia (i.e. cultures 'Velushina-Porodin' and 'Amzabogovo-Vrshnik') and Ukraine, Romania and Moldavia (i.e. culture 'Cucuteni-Tripolye') as regions with highest quantity and most detailed production of such models. Besides the description and presentation of house models context an analysis of their construction and functionality will be elaborated as well. Due to the obtained results and comparisons with similar buildings preserved within Balkan folklore, the probability of the following motives for their construction will be regarded:

- Location of terrain which is constantly under water
- Location of terrain which is temporary under water





- Location of terrain with permanent or temporary high level of humidity
- Obstruction or aggravation of the negative impact on fungus, insects, reptiles and mammals
- Obstruction or aggravation of unwanted access and plunder from people
- Isolation of the people placed in the buildings from the terrain or other community members
- Sacred space detached from the earth and oriented towards sky

CHRISTOPHER ARABATZIS  
*University of Bern*

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### **Preliminary Data about the Bone, Teeth and Antler Artifacts from the Prehistoric Wetland Settlements of Amindeon, Western Macedonia, Greece**

In the last decade the intensive rescue excavations of the Archaeological Service of Florina unearthed a great number of Prehistoric settlements close to the four lakes of the Amindeon basin that date back from Greek Early Neolithic (c. 6800-5800 BC) to Greek Middle Bronze Age (c. 2200/2100-1600/1500). The excavation of these sites yielded an impressive and diverse assemblage (more than 4000) of bone and antler artifacts, which shows that, as in the Prehistoric lakeside settlements of Central Europe, the osseous artifacts played an important role in the everyday activities of the inhabitants of the wetland sites of the region. In this paper, there will be an attempt to present the preliminary results of the ongoing study of the artifacts that is related to their typology, manufacture and use.

YOLAINE MAIGROT  
*CNRS, UMR 8215 – Trajectories*

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### **Bone, Teeth and Antler Tools Production Systems at Chalain et Clairvaux (4<sup>th</sup> and 3<sup>rd</sup> millennium, Jura, France)**

The small lakes Chalain and Clairvaux are situated in the eastern part of France (Jura department). More precisely, they are located on the left bank of Ain river, exactly at the border of the high glacial-lacustrine terraces characterized by light soils and a limestone plateau of higher elevation (between 620 and 800 meters). More than thirty years of lakeshore excavations and multidisciplinary archaeological researches, directed by Pierre Pétrequin, have shown that small communities of farmers occupied, not with a real permanence, flattest shores of the two lakes, mostly between the fourth and the third millennia BC (related to cultural groups from the middle and the late Neolithic).

Because of anaerobic contexts, dwelling lake settlements from Chalain and Clairvaux provide us an exceptional archaeological documentation, and more particularly, organic artefacts. More over, thanks to dendrochronology analysis, we can date and follow with a great accuracy (10 years period) material culture evolution, demographic trends and connections between Neolithic communities and their environment.

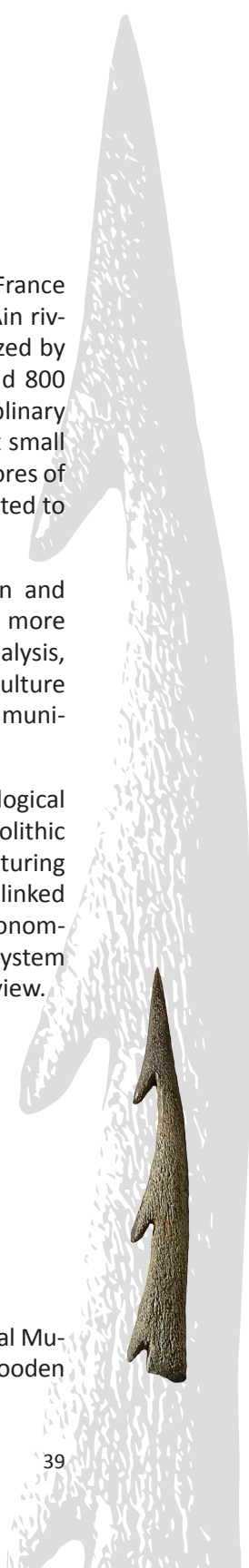
This paper will include two parts. First, we will display the overall archaeological context of Chalain and Clairvaux. The second part will be dedicated to Neolithic bone, teeth and tools production. Technical aspects, including manufacturing processes, use and maintenance of these toolkits will be discussed and linked to the archaeological and environmental contexts, then interpreted in economic and social terms. Finally, Middle and Late Neolithic bone production system from Chalain and Clairvaux will be compared from the historical point of view.

DAŠA PAVLOVIĆ  
*National Museum of Slovenia*

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### **Wooden Traps from Ljubljana Moor**

At the end of 19<sup>th</sup> century Landesmuseum – Rudofinum (Carniolan Provincial Museum) in Ljubljana (today National Museum of Slovenia) acquired three wooden







artefacts found by peat cutters on Ljubljana Moor. These objects were known to local people for a long time and were given name »čolnički« (German *Schiffchen*), meaning small boats, because of their specific shape. According to their testifying, there were several more known wooden objects of this kind, but, beside the three in the museum, only two more were preserved and kept in private possession. It turned out that these are the traps for animals, most likely for deer that survived in the marshy environment under the peat and above the greyish clay soil.

Since Ljubljana Moor was famous for its prehistoric sites, mainly for pile-dwellings from Copper and Early Bronze age, the traps were ascribed to that period and treated as one possible aspect of economy of the prehistoric inhabitants. In the year 2015 two traps were radiocarbon dated. Surprisingly, it was attested they both belonged to Early Middle Ages, i.e. to the 8<sup>th</sup> or 9<sup>th</sup> century. Traps made of a single solid piece of wood perforated in the middle with two movable valves were discovered also elsewhere in Europe, predominately in northern parts of Central Europe, Ireland, Great Britain and Scandinavia. Closest to Ljubljana traps are traps discovered near Vicenza in northern Italy. This type of wooden traps can be dated from Bronze Age to Modern time, however among newly discovered and <sup>14</sup>C dated examples, Early Medieval ones prevail. The hunting device was well known and used in the economy of Early Medieval man. The importance of game, hunt and also the symbolic meaning are reflected in a scene on the shaft of a high cross known as the Banagher pillar (county Offaly, Ireland), on which a deer in a trap is depicted.

The settlement of Ljubljana Moor and also of whole Ljubljana plain in the time from 7<sup>th</sup> to 9<sup>th</sup> century is very poorly understood. Only in the last decade modern excavations brought to light sites with scattered, frugal remains from that time. Therefore the aim of this presentation will be an attempt to determine who was setting this traps and from where this technical innovation spread into Ljubljana Plain.

ANDREY MAZURKEVICH AND EKATERINA DOLBUNOVA

*The State Hermitage Museum*

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### **Chronology of Archaeological Cultures of the 7-3<sup>rd</sup> Millennium BC in Northwestern Russia in the Neolithic Context of Eastern Europe**

The development of absolute chronological scale for Dnepr-Dvina region was begun in the 1960s. This region can be supposed to be a very interesting area

for different historical reconstructions as it has been broadly investigated during more than 50 years of excavations, and traces of various archaeological cultures were noticed here. Transition from Mesolithic to Neolithic is marked on this territory by the appearance of pottery, by changes in settlement system, and increase of sites' quantity. The most ancient pottery in the communities of hunter-gatherers on this territory is dated to the beginning of the 7<sup>th</sup> millennium BC. Later, at the end of 6<sup>th</sup> millennium BC Rudnyanskaya culture was formed here, which is connected with Narvskaya Early Neolithic Baltic cultural tradition. Few, but very impressive finds of LBK culture are represented by pottery fragments, as well as an axe fragment, and can be dated to the first quarter of the 5<sup>th</sup> millennium BC. The next change of cultural traditions traced in pottery can be dated to the last quarter of 5<sup>th</sup> millennium BC. This pottery of the "type of the layer B on the sites Serteya VIII and X" can be correlated with materials of the late stage of Uppervolga culture. It might be supposed that pottery of this type could have existed synchronously with pottery of early stage of Usviatskaya culture that appeared in the beginning of the 4<sup>th</sup> millennium BC. This was the time of the first pile-dwellings appearance, which existed here during the whole 4<sup>th</sup> millennium BC till the turn to the 3<sup>rd</sup> millennium BC. A new cultural tradition was formed at the turn of the 3<sup>rd</sup> millennium BC, which was named Zhizhitskaya culture of pile-dwellings. It was also at the turn of the 3<sup>rd</sup> millennium BC when bearers of Balkan agricultural traditions appeared here. Thus, material culture of this region shows how bearers of different cultural traditions penetrated here and then their cultural tradition was either transformed or dispersed in the local forest zone milieu.

PAVEL SHYDLOVSKYI AND IVAN RADOMSKYI  
*Taras Shevchenko University; Mohyla Academy*

### **Early Agricultural Communities of Southwest Ukraine**

The process of neolithization of South-Western Ukraine and Moldova had a significant impact from the Balkan-Danubian Neolithic communities. Transition to reproductive economy sharply affected all elements of material culture and led to significant migrations, which resulted in widespread innovations associated with the "Neolithic package." Wide usage of the pressure technology of flint and obsidian processing was one of such innovative features. Each group of sites had specific technological methods of primary and secondary processing and a





special set of lithic artifacts. Based on the statement that the lithic technology is one of the culture-defining characteristics, comparative analysis of lithic assemblages from the early agricultural communities' sites highlights the genesis and interaction of such archaeological cultures as Krish, Bug-Dniester culture, the linear-band ceramic culture, Tripolie A, Tripolie B.

YANA MOROZOVA AND SERGII ZALENKO  
*Taras Shevchenko University*

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### **Development and Challenges of Ukrainian Underwater Archaeology**

In the region of modern Ukraine, underwater archaeology began a century ago. From beginning till the end of the 20<sup>th</sup> century, except its last decade, main activities of UA were focused mostly on surveys of submerged parts of coastal ancient cities within the Soviet general agenda of underwater scientific exploration. The era of independence has been characterized by development of the UA scientific discipline as a field in its own right. New technologies and inventions making easier access to underwater resources have raised awareness of potential and importance of Ukrainian underwater cultural heritage. The modern projects of Ukrainian UA which face modern challenges will be presented. Their educational, public and scientific approaches will be illustrated.

ELENA PRANCKÉNAITĖ  
*Klaipeda University*

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### **Archaeological Survey of Wetlands and Inland Waters: challenges and possible strategies in Lithuania**

Identification of wetland and waterlogged archaeological sites as well as Prehistoric underwater objects, help to prevent their loss as a very important cultural heritage. Today, new objects identification is one of the most important tasks in Lithuanian wetland archaeology. According to the latest data, wetlands cover about 26% of the present territory of Lithuania, but only a few Prehistoric wetland settlements were investigated (also protected) in Lithuania. Specific

technics and methods of investigation and survey techniques for archaeological prospection in wetland environments are required. This paper is a pilot presentation of methodological guidelines of possible geophysical surveys, acoustic detection and other methods in wetland environments, to show, examine and evaluate the potential for site detection without destructive interventions.

JADRANKA VERDONKSCHOT  
*University of Tübingen*

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### **The First Lake Settlers: a case study from Egolzwil 3 (Kanton Luzern, Switzerland)**

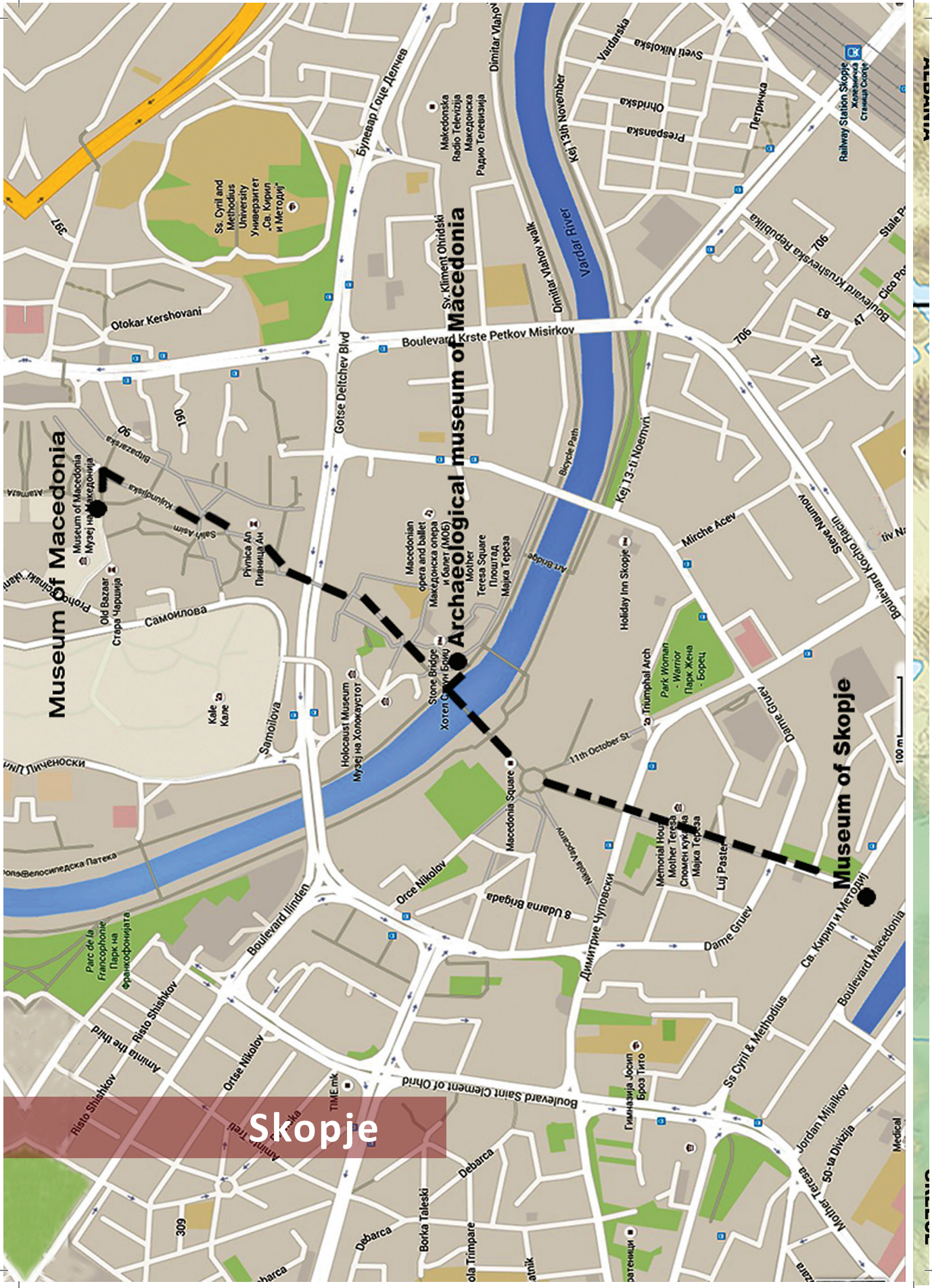
This project aims to assess some of the first European lakeside settlements, how they dealt with resources and regional dynamics, hoping to trace back variations and similarities in the mode of life in different areas. In this way it is intended to shed some light on the initial motives for moving to wetland areas. Different regions are assessed, including a general overview and several elaborated case studies. These case studies deal specifically with the use of 'direct' resources, this being the more practical raw materials such as lithics or agricultural premises, with the help of geographical methods. However, also 'indirect' resources are included, analyzing ritual, the landscape and the presence of water from a more theoretical point of view. In the current presentation the methodology and one of the first case studies, Egolzwil 3 (Kanton Luzern, Switzerland) will be discussed.





Maps

NO SMOKING  
ЗАБРАНЕНО ПУШЕЊЕ



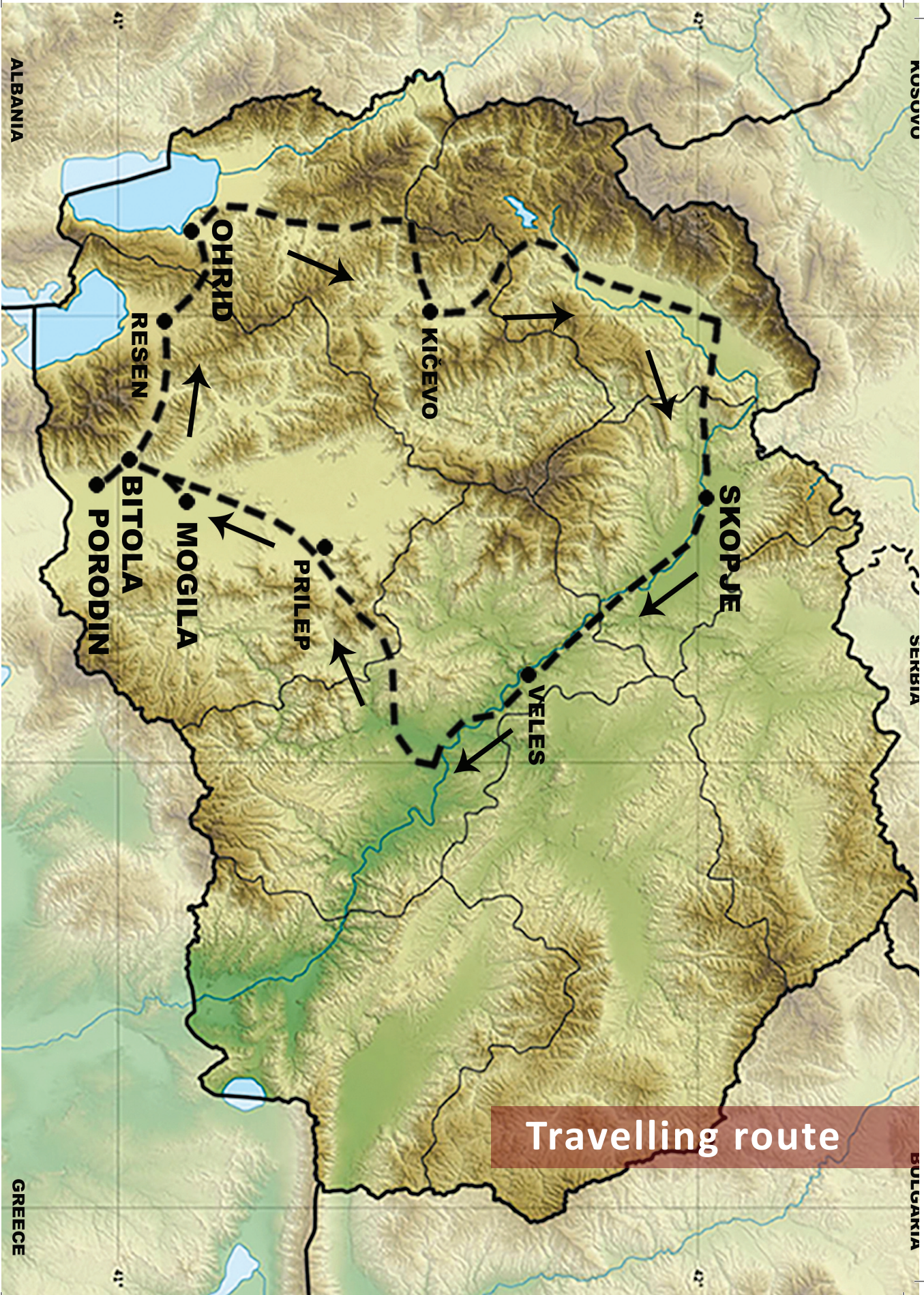
**Museum of Macedonia**

**Archaeological museum of Macedonia**

**Museum of Skopje**

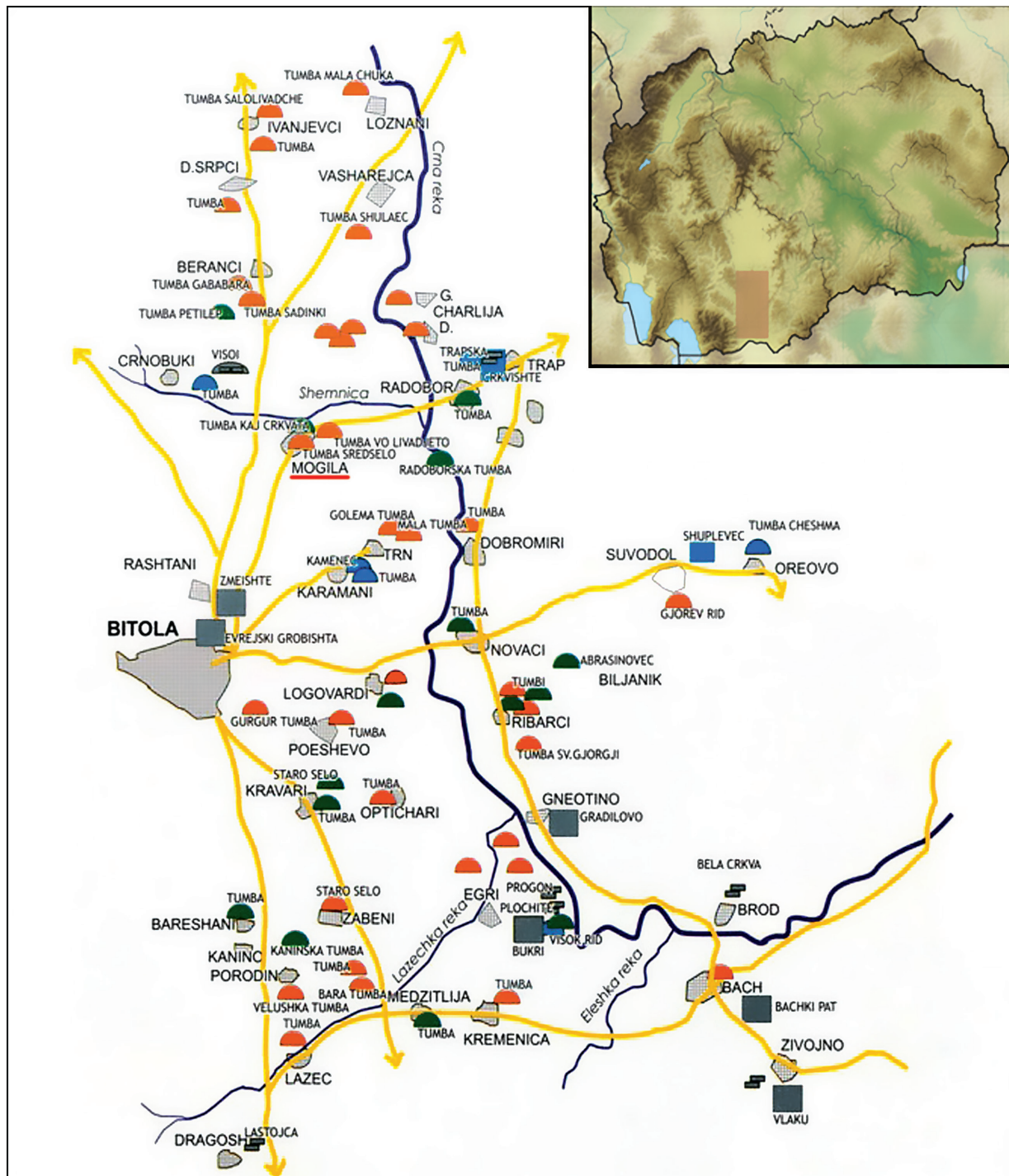
**Skopje**

100 m



Travelling route





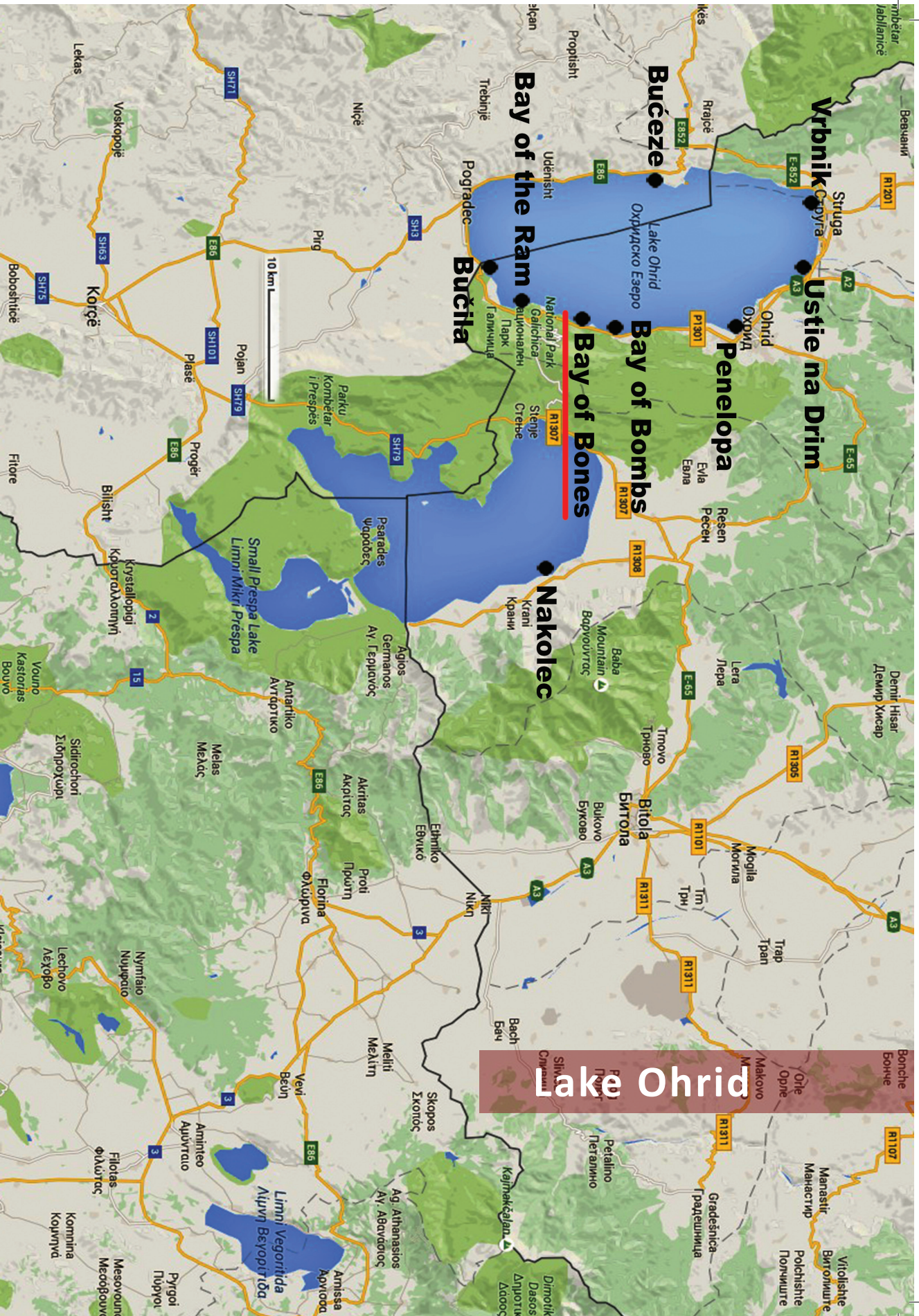
## Central Pelagonia

ЛЕГЕНДА:

- |  |                   |  |                  |
|--|-------------------|--|------------------|
|  | - населба/тумба   |  | - неолит         |
|  | - населба         |  | - енеолит        |
|  | - некропола       |  | - бронзено време |
|  | - некропола/тумул |  | - железно време  |

LEGEND:

- |  |                      |  |              |
|--|----------------------|--|--------------|
|  | - settlement/thomb   |  | - Neolithic  |
|  | - settlement         |  | - Eneolithic |
|  | - necropolis         |  | - Bronze age |
|  | - necropolis/tumulus |  | - Iron age   |



# Lake Ohrid

**Ustie na Drim**  
Устие на Дрим

**Penelopa**  
Пенелопа

**Bay of Bombs**  
Бай на Бомби

**Bay of Bones**  
Бай на Кошти

**Bay of the Ram**  
Бай на Рам

**Buĉiĉa**  
Буџиџа

**Nakolec**  
Наколец

**Bitola**  
Битола

**Limni Vegoritida**  
Лимни Вегоритида

**Small Prespa Lake**  
Малко Преспанско Езеро

**Limni Mikri Prespa**  
Малко Преспанско Езеро



# Ohrid

Samuilova Fortress  
Archaeological complex  
of Plaoshnik

Ancient Theatre

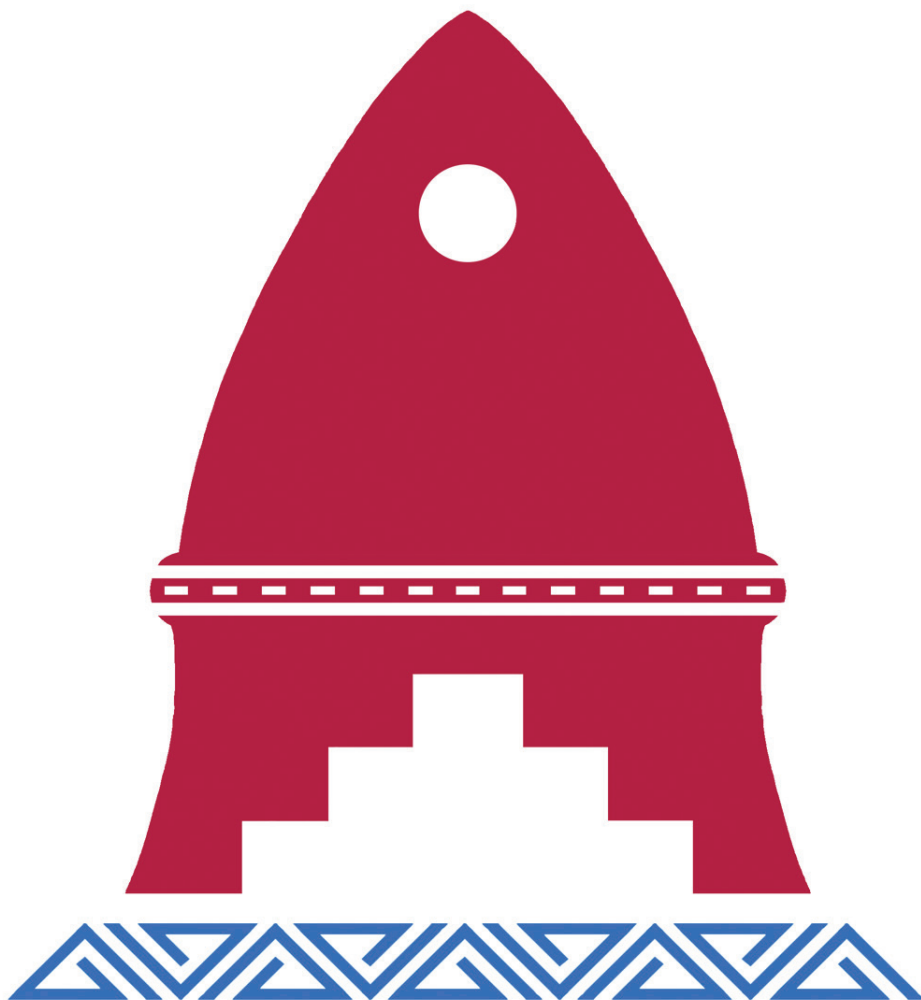
Church Holy Mary Peribleptos

Church St. Sofia

Millennium Palace Hotel

100 m

Map labels include: Dame Gruev, Karatoman, Jane Sandanski, Slavej Planina, Partizanska, Promenade Macedonia, Restaurant Orfej, P1301, Bogoritska, L'ni, Noevina, Ohridska Banka Societe Generale Group HQ, Ohridska Banka Societe Generale, Krusherska Republika, Крушевска Република, Али Паша Mosque, Цамџија Али Паша, St. Clement of Ohrid, Pellar Caley, St. Cyril and Methodius, Ilindenska, Gocce Delchev, Pirin Planina, Gocce Delchev, Ancient Theatre of Ohrid, Holy Mary Peribleptos, Света Богородица Перивлента, St. Sofia, Света Софија, Hristo Uzunov, Цар Самокил, Коста Лупсалу, Braka Mladovci, Gregor Pilecki, Church of St. John at Kaneo, Church of St. John at Kaneo, Ohrid - Kaleshta, Ohrid - Kaleshta, Ohrid - Saint Naum, Ohrid - Kaleshta, Ohrid - Saint Naum, Millennium Palace Hotel.



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