SCIENTIFIC REPORT
STAGE I 2021
Mapping the prehistoric waterscape from southern Romania (7000-3000 BC). Natural water supply and cultural water demand in the past (WATERSCAPE), no. PN-III-P4-ID-PCE-2020-2369, contract PCE 165/2021.

STAGE SUMMARY
Stage I of the project Mapping the Prehistoric Waterscape from Southern Romania (7000-3000 cal. BC). Natural water supply and cultural water demand in the past - WATERSCAPE ”PN-III-P4-ID-PCE-2020-2369, contract PCE 165/2021, implemented by the University of Bucharest, had as objectives the development of the activities proposed in the first stage 2021 (A1-A4), collecting the necessary data from both bibliographic references and field trips and of course, disseminating the first results (A5) and increasing the visibility of the research carried out by the members involved, both nationally and internationally by participating in conferences, seminars/workshops, and publication of articles (ISI or BDI indexed). All the activities proposed for this stage (A1-A4) were carried out and during the dissemination (A5) 17 presentations were made at national and international conferences and 8 articles (3 ISI and 5 BDI) in different phases of publication and the basic principles of the project were presented in a seminar and several round tables/conferences (2).

SCIENTIFIC AND TECHNICAL DESCRIPTION,

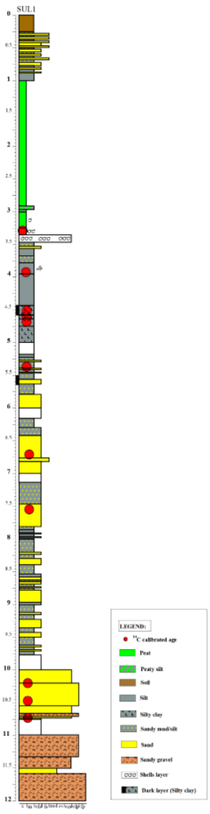
I. Detailing the project activities, how they were accomplished and the results obtained
Activity A1. Project management.
Expected results - Configuration of research directions, working tools, preliminary documents, and data collection strategy - database. Team meetings - minutes of meetings. Website
During this activity, the team held working meetings with the members to establish a coherent program for achieving the project objectives, establish the periods on the field, or set the deadlines for finishing certain individual tasks.
The creation of the project website was another requirement. It is hosted by the University of Bucharest website (https://unibuc.ro/cercetare/promovarea-rezultatelor-cercetarii/proiecte-de-cercetare/proiecte-cu-finantare-nationala/waterscape/)
Except for the activities, it was necessary to make administrative changes to the initial project contract, which were solved by initiating three substantiation notes approved by the contracting authority. In order to fill the vacant places, three competition sessions have been organized, through which three positions were filled from the project scheme (master students).

Activity A2. Field sampling and laboratories, analysis - geomorphology, databases
Expected results - Geo-spatial database, maps, site evolution models, sample databases, field reports and laboratories, statistical data.
The field component of this activity was represented by the participation of the members in the archaeological research carried out on the Măgura Gumelnița (Călărași County), Sultana (Călărași County) or Taraschina (Tulcea County) sites. This was an oportunity necessary for taking new samples, enriching geospatial data, and conducting experimental research using the local sources of raw materials.
The experimental archeology segment from Sultana-Malu Roșu, 2021 campaign, focused on conducting experiments to process common wheat (Triticum aestivum) with the help of tools available in the Neo-Eneolithic period. It was about stone tools (grinder and striker) experimentally created from stones found on the Mostiștei Valley. The aim of this approach was to analyze the methods of making tools necessary to obtain wheat flour, the main target

being to identify different processing techniques, some more efficient than others, in relation to the completion time required of the proposed operations and the amount of flour obtained in the end. Also, from the proximity of the areas where the mentioned activities were carried out, soil samples had been collected to perform some palynological analyzes in order to observe what kind of traces these technological processes can leave in the soil.

During the archeological campaigns carried out on the Măgura Gumelnița (Călărași county), Sultana (Călărași county), and Măriuța (Călărași county) sites, one of the work objectives was to document and record geospatial data using the drone and the total station. For all these sites, a series of flights were launched to document, at micro-scale, the various complexes and archaeological contexts (eg pits, graves, houses, hearths, etc.). The processing of the captured images was performed with the help of Agisoft PhotoScan algorithms, and the derived products are presented in the form of a point cloud, a dotted network, and based on them the DEMs (digital elevation modeling) and Orthophotoplans are created. In order to obtain high accuracy and precision, these flights were supported by topographic measurements. Also, another objective for the registration of archaeological data, on a micro-scale, was the registration of topographic measurements in the field with the help of the total station. All topographic measurements were documented in the absolute STEREO 70 coordinate system (EPSG: 31700) and aimed at recording archaeological material, archaeological complexes, and contexts.

Geoarchaeology. The field campaign aimed to obtain representative stratigraphic sequences, covering the Neolithic period of the Sultana and Gumelnița sites to achieve multi-proxy diagnosis to identify paleoenvironmental changes. Two cores were drilled with a percussion hammer (Eijkelkamp - Percussion hammer Cobra TT), and the sampling was performed with a closed probe (125 cm long and 6.3 cm outer diameter) in which plastic tubes were inserted, 100 cm length and 5 cm diameter, to recover the entire stratigraphy:
i) a 12 m deep core in the Mostiștea river meadow, near the village of Frăsinetul de Jos (Frăsinet commune, Călărași county) at the coordinate point: 44o 18 '20 ”N / 26o 49' 33.13” E (altitude 14.2 m), and
ii) 10 m deep core, made in the confluence zone of the Argeș and Danube meadows near the Gumelnița site (at a distance of about 100 m), on the coordinate point 44o 7 '7.06 ”N / 26o 40' 0.74” E (altitude 17.4 m).
SUL and GUM cores were first scanned in the Paleomagnetism Laboratory (Faculty of Physics) and magnetic susceptibility was measured at a distance of 2 cm using a Bartington device equipped with an MS2C sensor.



Results. SUL core stratigraphy

The stratigraphic profile obtained for the SUL core indicates five distinct depositional facies:

i) 10-12 m depth: the horizon of gravel and sand. Most likely this facies indicates a river channel environment flooded with coarse materials in MIS 2, respectively the Last Maximum Glacier.

ii) 5.25-10 m: alternations of horizons of fine and very fine sands with sandy silt. This facies is a typical active meadow with multiple floods and frequent changes of the active course.

iii) 3.55-5.25 m: fine (clayey) silt and medium gray silt, poorly sorted, most likely indicating a poorly-drained meadow facies in which lake systems co-existed.

iv) 1-3.55 m: massive peat with a horizontal horizon (3.33-3.45 m) and one of sandy silt mixed with very fine sands (3.45-3.55 m). Indicates a swampy facies

v) 0-1 m: organic muds (0-0.25 m) overlayed on a horizon with multiple intercalations of sands and silts (0.25-1 m). It indicates the resettlement of the active meadow in this sector.

Fig. 1 - Stratigraphy of the SUL core

Pollen analysis on the SUL core

18 spores-pollen samples were analyzed, out of a total of 40, between 300 and 700 cm deep.

Preliminary results show an increase in trees towards the top of the chart from 20% to 65%, due to the higher values recorded by temperate deciduous species: *Quercus, Corylus, Ulmus, and Tilia*. The presence of the Picea boreal taxon indicates pollen transported by river from distant sources. Herbaceous plants are dominated by: *Poaceae, Artemisia, Chenopodiaceae*, and on some levels by *Cichorieae*. Typical local species for shallow areas with stagnant water are more abundant and diverse in the upper part (above 370 cm).

Possible anthropic indicators are present at the base and along side the profile, being represented by *Avena / Triticum* together with *Hordeum*.

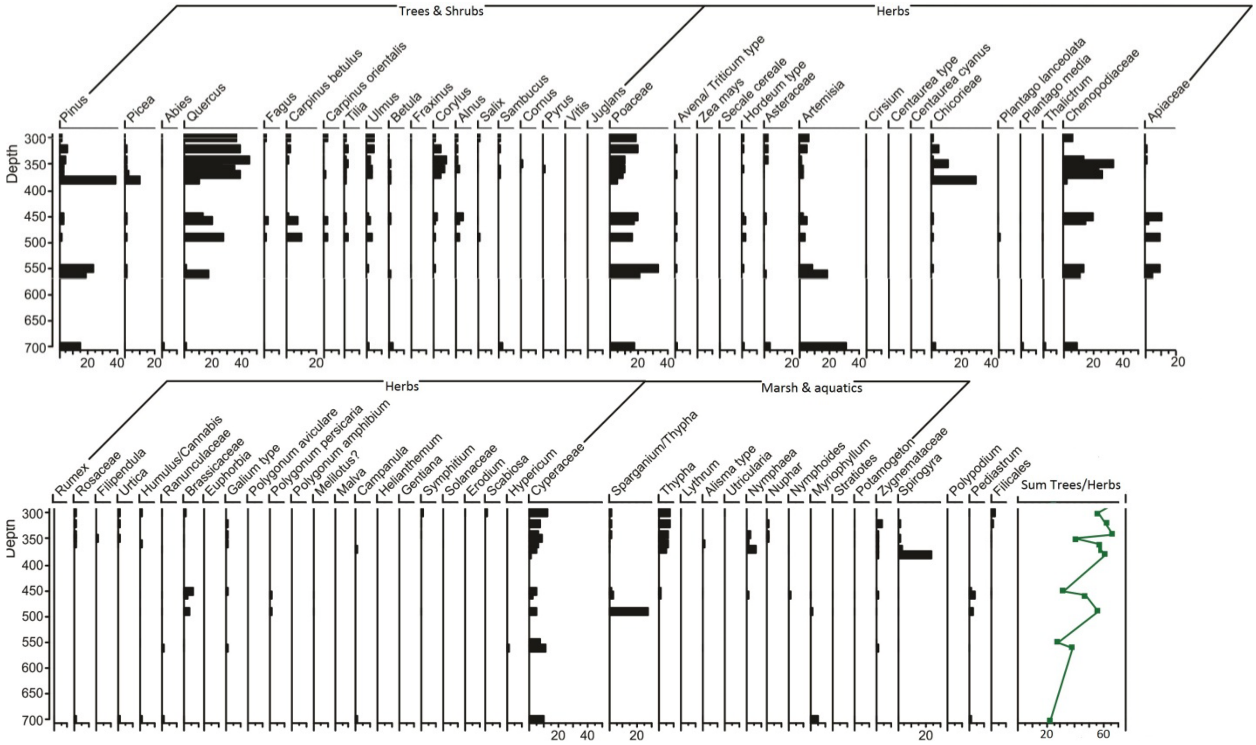


Fig. 2 - Pollen diagram for the 300-700 cm horizon from the SUL core

Charcoal analyzes on the SUL core

Macrocharcoal analysis indicates multiple horizons with high concentration, most likely associated with local fires as evidenced by the high frequency of medium and large caliber particles (> 500 μm). In the range of 300-700 cm (the one that has been analyzed so far; there are high concentrations of charcoal at the following depths: 330, 390, 450, 490, indicating especially the horizon 370-490 cm as the richest in charcoal residues from burning wood, leaves and grasses.

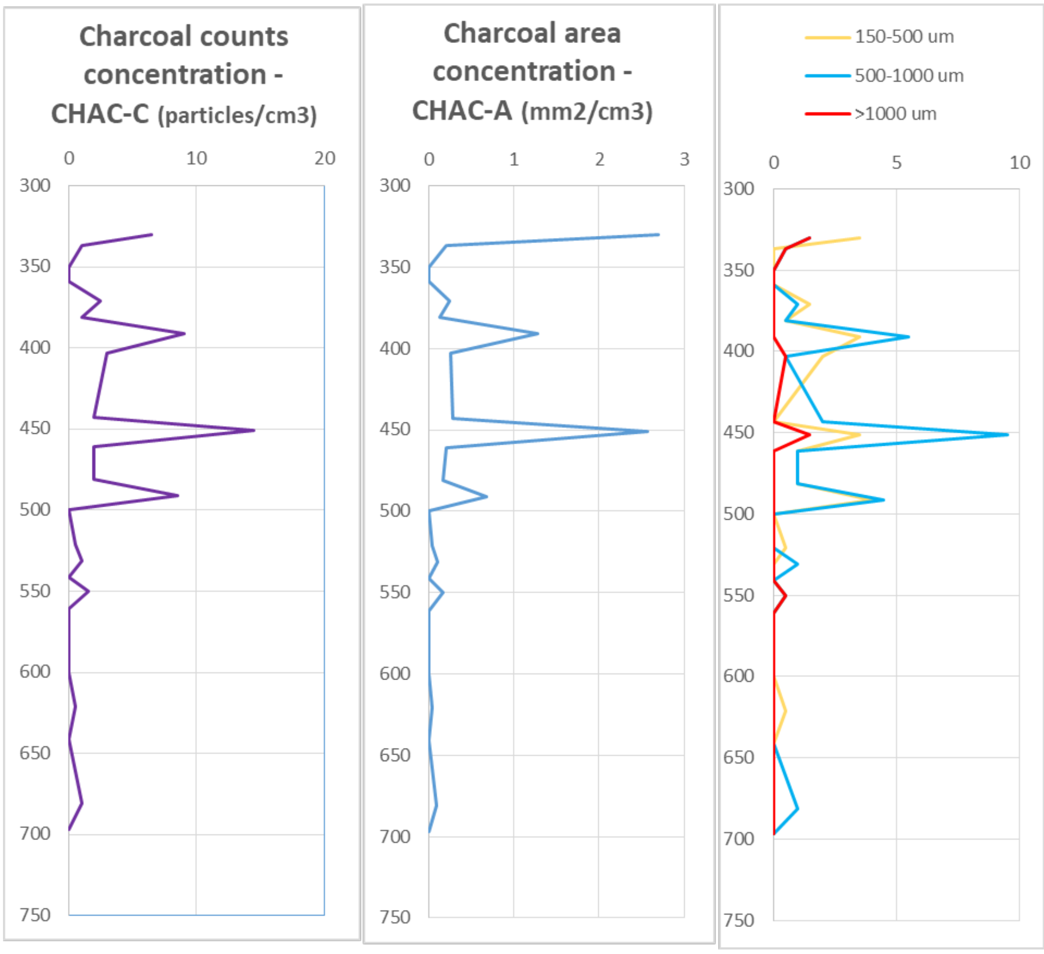


Fig. 3 - Distribution of macro-charcoal on the SUL core (horizon 300-700 cm)

GUM core stratigraphy

The stratigraphic profile obtained for the GUM core indicates an alternation of four distinct depositional facies:

i) 6-10 m depth: sedimentary matrix dominated by fine sands and massive media interspersed by two horizons of silt at depths of 8.7-9.5 and 6.6-7.2 m respectively. Both horizons composed of fine sediments have a clear tendency to decrease the average size to the top (fining upward), in parallel with the increase in the concentration of organic matter (from <1% to 4-5%) which indicates lake facies developed in an active meadow, in which the main course knew ample spatial digressions, so that the studied location alternated between canal environment, grind and then meadow lake. In the absence of absolute ages (which are scheduled to be obtained in 2022) it is difficult to estimate when these facies were put in place, but most likely in the Early Holocene.

ii) 3.55-6 m: fine silty (clayey) and medium gray silt, poorly sorted, most likely indicating a poorly-drained meadow facies. In the upper part of those facies, at a depth of 3.6-4 m very poor sorting, fine texture but especially the rapid increase in organic matter content (6-8%) indicates a lacustrine facies that probably worked for several centuries being abruptly interrupted by a change of river regime, possibly an avulsion, which leads to the movement of an active channel over the former lake.

iii) 1.2-3.55 m: medium and fine sands arranged discordantly over a lacustrine facies (presented above). This facies is a typical active floodplain with multiple floods and represents the reactivation of an active course.

iv) 0-1.2 m: very fine sands with a tendency to fine upwards (upward fining) which indicates the lateral movement of the Argeș river and the transformation of this meadow sector into a peripheral one that is less and less flooded.

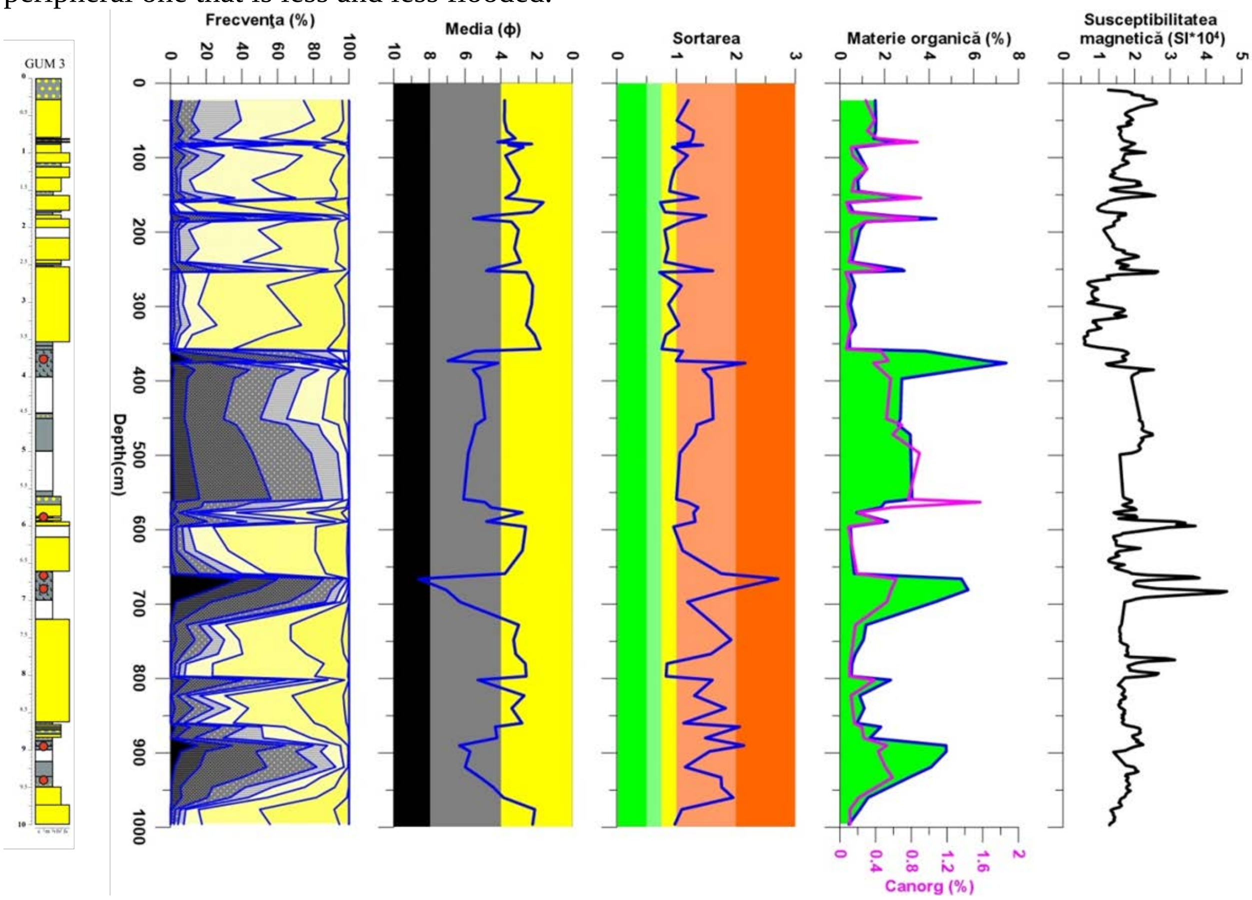


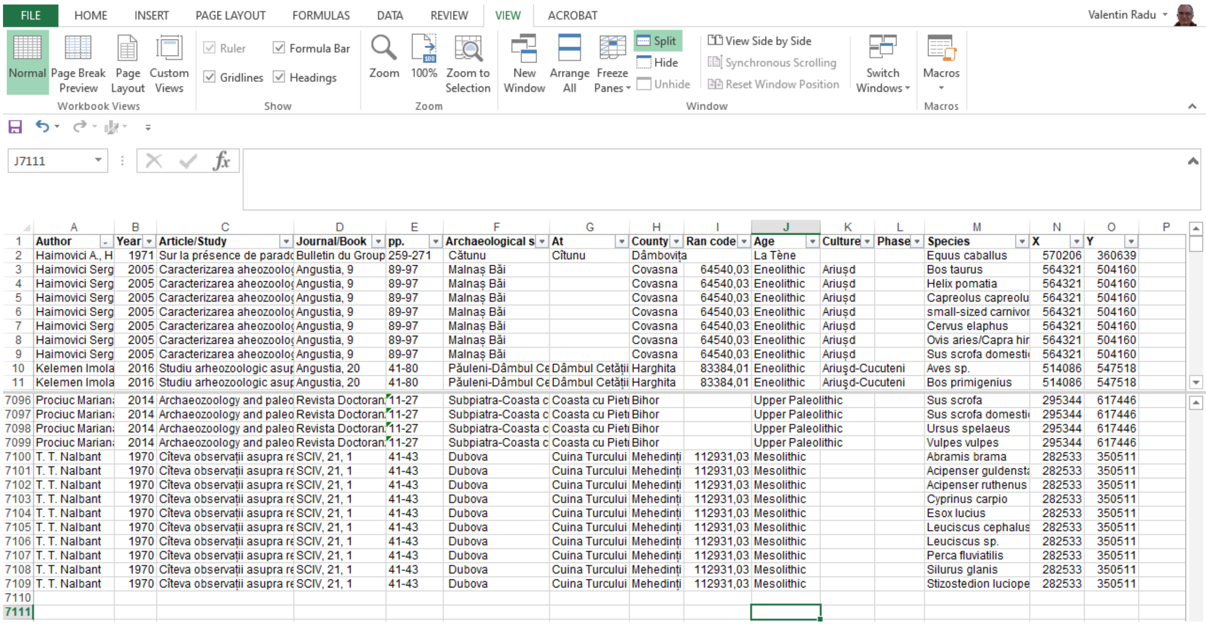
Fig. 4 - GUM core stratigraphy

Activity A3. Field sampling and analysis laboratories - bioarchaeology (pollen and carpology, zooarchaeology) databases

Expected results - Aquafauna database, wetland vegetation database, field, and laboratory reports, statistical data.

During the bioarchaeology activities, both field trips were made to complete the data of archeozoology or palynology but also to take new samples for specific analyzes in this field (isotopes of C / N / H / O atoms, 14C carbon dating, hard animal materials industry, etc.). In this sense, databases have been created (partially) for bioarchaeological materials from different sites: Milcovu din Deal (Dudești and Vădastra cultures), Techirghiol, Constanța, Palazu Mare (Hamangia culture), Sultana Ghețărie (Boian culture), Sultana terrace and Sultana tell, Gumelnița (Gumelnița culture), Taraschina (Gumelnița), Măriuța (Gumelnița). The information obtained represented the support of national and international communications (see activity A5 Dissemination).

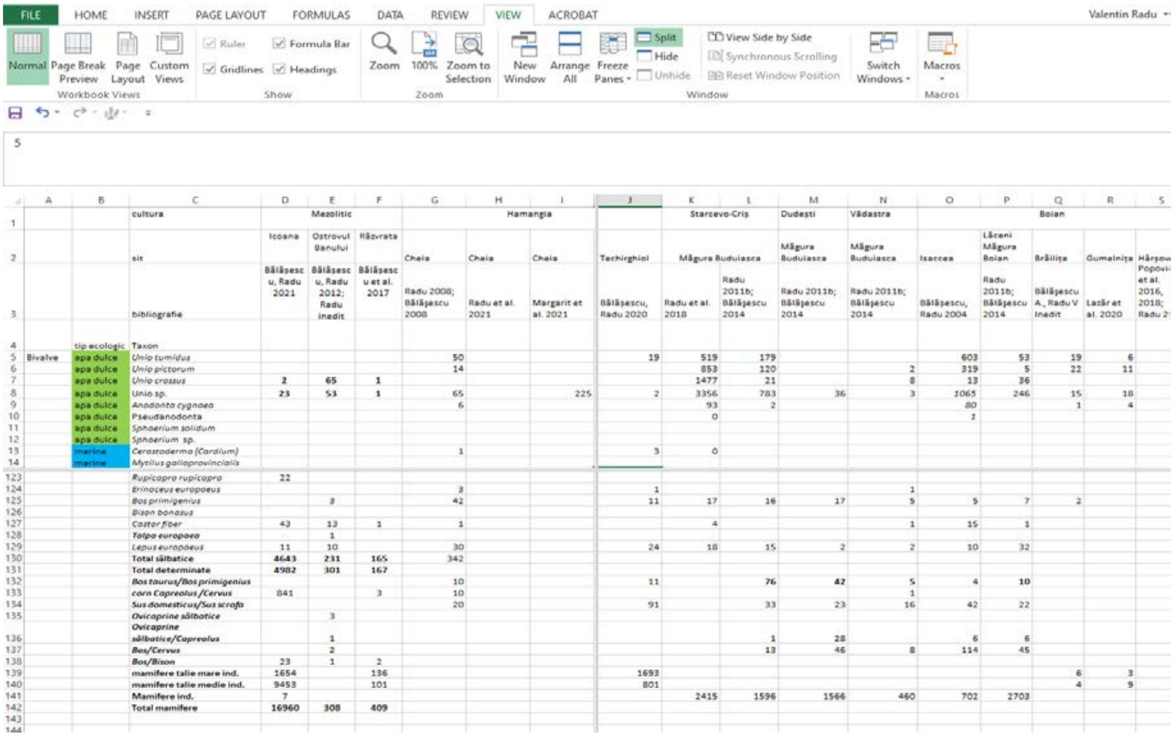
Starting from the bibliographic references (approx. 400), an inventory was made of the presence of different animals and plants on the Romanian territory (fig. 5).



	Author	Year	Article/Study	Journal/Book	pp.	Archaeological s	At	County	Ran code	Age	Culture	Phase	Species	X	Y
2	Haimovici A., H	1971	Sur la présence de paradc	Bulletin du Group	259-271	Cătunu	Cîtunu	Dâmbovița		La Tène			Equus caballus	570206	360639
3	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Bos taurus	564321	504160
4	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Helix pomatia	564321	504160
5	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Capreolus capreolu	564321	504160
6	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		small-sized carnivor	564321	504160
7	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Cervus elaphus	564321	504160
8	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Ovis aries/Capra hir	564321	504160
9	Haimovici Serg	2005	Caracterizarea aheozoolo(	Angustia, 9	89-97	Malnaș Băi		Covasna	64540,03	Eneolithic	Ariușd		Sus scrofa domesti	564321	504160
10	Kelemen Imola	2016	Studiu arheozoologic asup	Angustia, 20	41-80	Păuleni-Dâmbul Ce	Dâmbul Cetății	Harghita	83384,01	Eneolithic	Ariușd-Cucuteni		Aves sp.	514086	547518
11	Kelemen Imola	2016	Studiu arheozoologic asup	Angustia, 20	41-80	Păuleni-Dâmbul Ce	Dâmbul Cetății	Harghita	83384,01	Eneolithic	Ariușd-Cucuteni		Bos primigenius	514086	547518
7096	Prociuc Marian	2014	Archaeozoology and paleo	Revista Doctoran	11-27	Subpiatra-Coasta c	Coasta cu Piet	Bihor		Upper Paleolithic			Sus scrofa	295344	617446
7097	Prociuc Marian	2014	Archaeozoology and paleo	Revista Doctoran	11-27	Subpiatra-Coasta c	Coasta cu Piet	Bihor		Upper Paleolithic			Sus scrofa domesti	295344	617446
7098	Prociuc Marian	2014	Archaeozoology and paleo	Revista Doctoran	11-27	Subpiatra-Coasta c	Coasta cu Piet	Bihor		Upper Paleolithic			Ursus spelaeus	295344	617446
7099	Prociuc Marian	2014	Archaeozoology and paleo	Revista Doctoran	11-27	Subpiatra-Coasta c	Coasta cu Piet	Bihor		Upper Paleolithic			Vulpes vulpes	295344	617446
7100	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Abramis brama	282533	350511
7101	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Acipenser guldensta	282533	350511
7102	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Acipenser ruthenus	282533	350511
7103	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Cyprinus carpio	282533	350511
7104	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Esox lucius	282533	350511
7105	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Leuciscus cephalus	282533	350511
7106	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Leuciscus sp.	282533	350511
7107	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Perca fluviatilis	282533	350511
7108	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Silurus glanis	282533	350511
7109	T. T. Nalbant	1970	Cîteva observații asupra re	SCIV, 21, 1	41-43	Dubova	Cuina Turcului	Mehedinți	112931,03	Mesolithic			Stizostedion luciope	282533	350511

Fig. 5 – Fauna inventory present in the bibliographic references

Also for the sites researched with priority in this project (Taraschina, Năvodari, Techirghiol, Cheia, Luncavița, Brăilița, Hârșova, Bordușani, Cernavoda, Lișcoteanca, Însurăței, Săveni, Măriuța, Sultana, Chitila, Cernica, Gumelnița, Buc. Măgura, Vitănești, Mavrodin, Grădinile, Ostrovul Corbului, Schela Cladovei, Icoana) and not only those, we began to make a referencial regarding the frequencies of faunal remains (fig. 6). The ultimate goal is to introduce those informations in cultural or regional synthesis paperworks to characterize the various aspects of the animal paleoeconomy of the various human populations that inhabited the territory of Romania. Not to be overlooked is the contribution of this information to the capture of aspects related to changes in the environment around the settlements as a result of climate change or the evolution of the Black Sea level and consequently the changes in the Danube Valley.



	A	B	C	D	E	F	G	H	I
1			cultura		Mezolitic			Hamangia	
2			sit	Icoana	Ostrovul Banului	Răzvrata	Cheia	Cheia	Cheia
3			bibliografie	Bălășescu, Radu 2021	Bălășescu, Radu 2012; Radu inedit	Bălășescu et al. 2017	Radu 2008; Bălășescu 2008	Radu et al. 2021	Margarit et al. 2021
4		tip ecologic	Taxon						
5	Bivalve	apa dulce	*Unio tumidus*				50		
6		apa dulce	*Unio pictorum*				14		
7		apa dulce	*Unio crassus*	2	65	1			
8		apa dulce	Unio sp.	23	53	1	65		225
9		apa dulce	*Anodonta cygnaea*				6		
10		apa dulce	Pseudanodonta						
11		apa dulce	*Sphaerium solidum*						
12		apa dulce	*Sphaerium sp.*						
13		marine	*Cerastoderma (Cardium)*				1		
14		marine	*Mytilus galloprovincialis*						
123			*Rupicapra rupicapra*	22					
124			*Erinaceus europaeus*				3		
125			*Bos primigenius*		3		42		
126			*Bison bonasus*						
127			*Castor fiber*	43	13	1	1		
128			*Talpa europaea*		1				
129			*Lepus europaeus*	11	10		30		
130			Total sălbatice	4643	231	165	342		
131			Total determinate	4982	301	167			
132			*Bos taurus/Bos primigenius*				10		
133			*corn Capreolus /Cervus*	841		3	10		
134			*Sus domesticus/Sus scrofa*				20		
135			*Ovicaprine sălbatice*		3				
136			*Ovicaprine sălbatice/Capreolus*		1				
137			*Bos/Cervus*		2				
138			*Bos/Bison*	23	1	2			
139			mamifere talie mare ind.	1654		136			
140			mamifere talie medie ind.	9453		101			
141			Mamifere ind.	7					
142			Total mamifere	16960	308	409			
143									
144									

	C	J	K	L	M	N	O	P	Q	R	S
1	cultura		Starcevo-Criș		Dudești	Vădastra			Boian		
2	sit	Techirghiol	Măgura Buduiasca		Măgura Buduiasca	Măgura Buduiasca	Isaccea	Lăceni Măgura Boian	Brăilița	Gumelnița	Hârșova
3	bibliografie	Bălășescu, Radu 2020	Radu et al. 2018	Radu 2011b; Bălășescu 2014	Radu 2011b; Bălășescu 2014	Radu 2011b; Bălășescu 2014	Bălășescu, Radu 2004	Radu 2011b; Bălășescu 2014	Bălășescu A., Radu V inedit	Lazăr et al. 2020	Popovici et al. 2016, 2018; Radu 2
4	Taxon										
5	*Unio tumidus*	19	519	179			603	53	19	6	
6	*Unio pictorum*		853	120		2	319	5	22	11	
7	*Unio crassus*		1477	21		8	13	36			
8	Unio sp.	2	3356	783	36	3	1065	246	15	18	
9	*Anodonta cygnaea*		93	2			80		1	4	
10	Pseudanodonta		0				1				
11	*Sphaerium solidum*										
12	*Sphaerium sp.*										
13	*Cerastoderma (Cardium)*	3	0								
14	*Mytilus galloprovincialis*										
123	*Rupicapra rupicapra*										
124	*Erinaceus europaeus*	1				1					
125	*Bos primigenius*	11	17	16	17	5	5	7	2		
126	*Bison bonasus*										
127	*Castor fiber*		4			1	15	1			
128	*Talpa europaea*										
129	*Lepus europaeus*	24	18	15	2	2	10	32			
130	Total sălbatice										
131	Total determinate										
132	*Bos taurus/Bos primigenius*	11		76	42	5	4	10			
133	*corn Capreolus /Cervus*					1					
134	*Sus domesticus/Sus scrofa*	91		33	23	16	42	22			
135	*Ovicaprine sălbatice*										
136	*Ovicaprine sălbatice/Capreolus*			1	28		6	6			
137	*Bos/Cervus*			13	46	8	114	45			
138	*Bos/Bison*										
139	mamifere talie mare ind.	1693							6	3	
140	mamifere talie medie ind.	801							4	9	
141	Mamifere ind.		2415	1596	1566	460	702	2703			
142	Total mamifere										

Fig. 6 - Referential frequencies of fauna present in bibliographic references or unpublished data.

The involvement of the research team in the study of the M92 grave from Sultana Malu Roșu led to the creation of a corpus with biometric data for about 1500 constituent elements of the present inventory (829 snails Lithoglyphus sp., 680 ornaments Spondylus sp.) as well as the establishment of a photographic archive for them (the Olympus SZ61 stereomicroscope was used, with 0.67x zoom, WAAL 1x / 007 lens and 2 mm scale). The results were presented in an oral communication at the European Association of Archaeologists (EEA) international conference (see activity A5 Dissemination)

Activity A4. Stable isotopic analyzes

Expected results - Stable isotope database. Field reports and laboratories. Statistical data

For the first stage, samples of biological materials for collagen extraction were taken in order to perform stable isotope analyses δ13C, δ15N, and δ18O.

Collection of faunal material for collagen extraction

Site	Molluscs (samples no.)	Fish (samples no.)	Mammals (samples no.)	Reptiles (samples no.)	Homo (samples no.)
Tekirghiol		24	20		
Gumelnita	17	8	15	2	

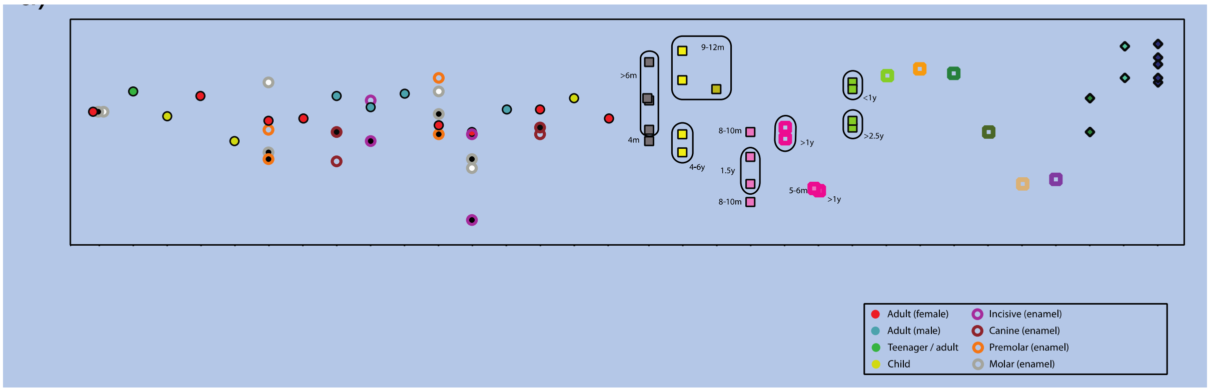
Trials samples pending

Cheia	Molluscs (samples no.)	Fish (samples no.)	Mammals (samples no.)	Reptiles (samples no.)	Homo (samples no.)
Luncavița	x	x	x		
Mariuta	x	x	x		x
Navodari	x	x	x		
Taraschina	x	x	x		
Sultana					x

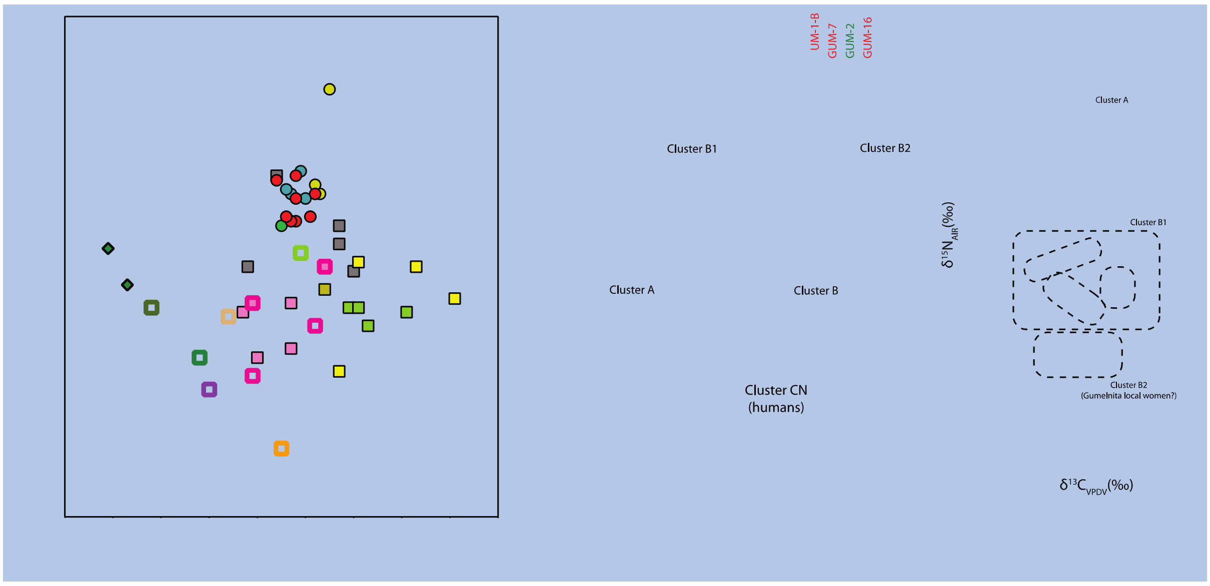
Icoana	x	x	x	x	

Other materials were selected for canine paleogenetic analysis from prehistoric sites Milcovu de Deal, Cheia, Vitănești.
The results of these analyzes will be materialized in articles that will deal with various aspects of the role of animals in food and especially of aquatic ones less investigated for this cultural area.

In the investigations with stable isotopes, we also mention the preliminary processing of δ13C / δ15N and δ18O from the Gumelnița site, for a series of human individuals. Thus, the graph below reflects the distribution of human populations, based on the values of the isotope δ18O, compared to other domestic or wild species.



Also, the graph above shows us the anatomical elements used as evidence for these isotopic investigations and the way in which different individuals analyzed are grouped in clusters, depending on the place where they were born, lived or died. In this way we aim to track the mobility of humans and animals in that site, and then compare these data with those of other sites investigated in this project.



δ15N values would be measured on the same group of individuals to detect the food background of the people from Gumelnița, in order to establish the impact of aquatic resources on the food economy of those communities for 6000 years ago. The preliminary

data obtained are presented in the graph above. From these, we observe the existence of distinct clusters of food preferences within the communities of Gumelnița.
All isotopic data will be the subject of an ISI article to be submitted in 2022.

Activity A5. Dissemination and capitalization of the scientific results of the project
Expected results - 3 presentations at national or international conferences 1 summer school, 1 academic seminar for students
During this activity, the Waterscape project team provided six (6) papers at conferences organized abroad and eleven (11) at those in Romania. Also were accepted two articles in BDI-rated country journals and a chapter in a volume published by a CNCS-listed publishing house. An article is being evaluated in an ISI-listed journal.

Conferences abroad

i. **Adrian Bălășescu, Valentin Radu,** *Arheozoologia comunităților Cernavodă I. Studiu de caz – situl de la Săveni (punctul La Movile, județul Ialomița),* International Scientific Conference „Arheologie interdisciplinară: metode, studii, rezultate / *Interdisciplinary archaeology: methods, studies, results*, Institute of Bioarchaeological and Ethnocultural Research (ICBE) from Chisinau and the Cultural-Natural Reserve „Orheiul Vechi, between 14-17 August 2021, Butuceni (Orhei district), Republic of Moldova.
ii. **Adrian Bălășescu, Valentin Radu**, *Paléoéconomie animalière des communautés Hamangia (5500-4700 BC),* Virtual metting, The XIX Congress of the Union Internationale des Sciences Préhistoriques et Protohistoriques (UISPP), 2-7 September, 2021, Meknes, Morocco
iii. **Adrian Bălășescu, Valentin Radu**, *Interactions homme-animaux au néolithique ancienne en Roumanie*, scientific session Société Préhistorique Française (Universitatea Paris Nanterre) - *Actualités de la recherche en Préhistoire dans les Balkans - Environnements, chronologies et dynamiques culturelles du Dernier Maximum Glaciaire au début du Néolithique (ca. 23 000 à 6000 ans cal. BC)*, 4-5 october 2021, Paris.
iv. **Valentin Radu**, Monica Mărgărit, **Cătălin Lazăr**, *Exploring the quantitative wealth of past people. A case study from Sultana-Malu Roșu cemetery (Eneolithic; Romania)* 27h European Association of Archaeologists (EEA) Annual Meeting, 6-11 september 2021, Kiel, Germany.
v. **Covataru Cristina**, Opris Ionela, Opris Vasile, Ignat Theodor , Panaiotu Cristian, Dimofte Daniela, **Lazăr Cătălin**, *A song of gis and fire. Determination of firing trajectories in an off-tell Eneolithic construction at Sultana-Malu Roșu (Southeastern Romania),* 27h European Association of Archaeologists (EEA) Annual Meeting, 6-11 september 2021, Kiel, Germany.
vi. **Bogdan Radu Manea**, Opriș Vasile, Ignat Theodor, Popescu Gabriel, **Lazăr Cătălin**, *Kilns and Builders: an experimental study on human factor in the construction and use of pottery firing installations in Chalcolithic*, 27h European Association of Archaeologists (EEA) Annual Meeting, 6-11 september 2021, Kiel, Germany.

Conferences in the country

i. **Adrian Bălășescu,** *Interaction between men and animals during the neo-Eneolithic in SE Romania,* „Archeoclimate BP (I) - Interactions between climatic and environmental conditions and human societies during the Holocene in SE Europe" workshop, 16-17 February 2021, Cluj-Napoca.

ii. **Adrian Bălășescu, Valentin Radu**, *Exploatarea animalelor în cultura Hamangia. Studiu de caz - situl de la Techirghiol Paloda (jud. Constanta),* Symposium "Archaeological and Numismatic Research", 7th edition, September 17, 2021, Bucharest.

iii. **Cătălin Lazăr**, Johannes Müller, Theodor Ignat, Vasile Opriș, Adelina Darie, Mădălina Dimache, Theodor Zavalaș, Valentin Parnic, **Cristina Covătaru, Bogdan Manea, Andreea Toma, Valentin Radu**, Adrian Șerbănescu, Gabriel Popescu, Cristian Panaoitu, Daniela Dimofte, Ovidiu Frujina, Cristian Roth, Vlad Ioan, Mihai Florea, Marian Voicu, **Adrian Bălășescu**, Mihaela Golea, Robert Hofmann, Wiebke Kirleis, Marta dal Corso, Sonja Filiatova, Mila Shatino, Stefan Dreibrodt, Walter Dorfler, Ingo Feser, Wolfgang Rabbel, Natalie Pickartz, Manuel Zolchow, Elisabeth Glück, Maurice Enriko Weber, Ercan Erkul, Simon Fischer, Erman Lu, Eileen Eckmeier, Giacomo Bilotti, Yevhenii Sliesariev, Khadijeh Alinezhad, Agnes Heitmann, Cornelis Stal, *Primele rezultate ale proiectului internațional „The dynamics of the prehistoric communities located in the Mostiștea Valley and Danube Plain (between Oltenița and Călărași),* Symposium "Archaeological and Numismatic Research", 7th edition, September 17, 2021, Bucharest.

iv. Adelina-Elena Darie, Dragoș-Alexandru Mirea, Valentin Parnic, **Cătălin Lazăr**, *Noi date privind piesele din cupru din arealul Gumelnița pe baza analizelor PIXE si XRF*, Symposium "Archaeological and Numismatic Research", 7th edition, September 17, 2021, Bucharest.

v. **Andreea Toma**, Gabriel Vasile, Pavel Mirea, **Cătălin Lazăr**, *Analiza antropologică preliminară și datarea radiocarbon a materialelor osteologice eneolitice descoperite la Măgura (jud. Teleorman)*, The national conference "Oltenia. Cultural interferences ", 10th edition, Craiova 10-12.11.2021.

vi. **Adrian Bălășescu**, *Arheozoologia comunităților Dudești pe teritoriul României*. The national conference "Oltenia. Cultural interferences ", 10th edition, Craiova 10-12.11.2021.

vii. **Adrian Bălășescu, Valentin Radu**, *Exploatarea mamiferelor în cadrul paleoeconomiei animaliere a comunităților Hamangia (mileniile VI-V, România),* PONTICA International Scientific Session, Edition 54: HISTORY AND ARCHEOLOGY IN THE WEST-PONTIC SPACE, November 17-19, MINA Constanța.

viii. **Valentin Radu**, Valentina Voinea, **Adrian Bălășescu**, *Importanța peștilor și a pescuitului în paleoeconomia animală a comunităților Hamangia (mileniile VI-V, România),* PONTICA International Scientific Session, Edition 54: HISTORY AND ARCHEOLOGY IN THE WEST-PONTIC SPACE, November 17-19, MINA Constanța

ix. **Cătălin Lazăr, Bogdan Manea, Cristina Covătaru, Andreea Toma**, Vasile Opriș, Theodor Ignat, Adelina Darie, Gabriel Vasile, Mădălina Dimache, Valentin Parnic, Tiberiu Sava, *Cimitirul preistoric de la Gumelnița,* PONTICA International Scientific Session, Edition 54: HISTORY AND ARCHEOLOGY IN THE WEST-PONTIC SPACE, November 17-19, MINA Constanța

x. **Bogdan Manea**, Mircea Lechitan, Gabriel Popescu, Theodor Ignat, Vasile Opriș, Florin Constantin, Mădălina Dimache, Valentin Parnic, Roxana Bugoi, **Cătălin Lazăr**, Interdisciplinary analysis of prehistoric weights made of burnt clay International Scientific Session PONTICA, Edition 54: HISTORY AND

ARCHEOLOGY IN THE WEST-PONTIC SPACE, November 17-19, MINA Constanța

xi. Adelina-Elena Darie, Dragoș-Alexandru Mirea, Valentin Parnic, **Cătălin Lazăr**, The results of the elementary analyzes performed on a batch of Gumelnița copper pieces PONTICA International Scientific Session, Edition 54: HISTORY AND ARCHEOLOGY IN THE WEST-PONTIC SPACE, November 17-19, MINA Constanța

Articles

Under evaluation (ISI indexed)

i. **Valentin Radu**, Monica Mărgărit, Valentina Voinea, Adina Boroneanţ, Ioana Daniela Dulama, *Processing the Testudo carapace in Prehistoric Romania, (8th and 5th millennia BC),* Archaeology and Anthropology Sciences.

ii. Colline Brassard, **Adrian Bălăşescu**, Rose-Marie Arbogast, Vianney Forest, Céline Bemilli, Adina Boroneanţ, Fabien Convertini, Muriel Gandelin, **Valentin Radu**, Patricia A. Fleming, Claude Guintard, Tracey L. Kreplins, Cécile Callou, Andréa Filippo, Anne Tresset, Raphaël Cornette, Anthony Herrel, Stéphanie Bréhard, *Unexpected morphological diversity in ancient dogs compared to modern relatives,* Proceedings of the National Academy of Sciences of the United States of America (PNAS).

iii. Vasile Opriș, Alin Velea, Mihai Secu, Arpad-Mihai Rostas, Angel-Theodor Buruiană, Corina-Anca Simion, Dragoș-Alexandru Mirea, Elena Matei, Cristina Bartha, Mădălina Dimache, **Cătălin Lazăr**, **'**Put variety in **W**hite**': Multi-analytical investigation of the white pigments inlaid on Early Chalcolithic pottery from Southern Romania**, Journal of Archaeological Science: Reports.

Acceptated, *in press* (Scopus indexed)

i. Vasile Opriș, **Bogdan Manea**, Theodor Ignat, Roxana Bugoi, Mircea Lechitan, **Cătălin Lazăr**, *Between object and subject: Multiple approaches on a prehistoric human-shape pot from Romania*, Documenta Praehistorica (Accepted 30.11.2021).

Acceptated, *in press* (BDI indexed)

ii. **Adrian Bălășescu**, Adrian Mestecăneanu (in press), 2021, *Fauna neo-eneolitică de la Milcovu din Deal (culturile Dudești și Vădastra)* (capitol), în C.E. Stefan, *Cercetari interdisciplinare in asezarea neolitica de la Milcovu din Deal (jud. Olt, Romania)*, Editura Cetatea de Scaun, Targoviste.

iii. **Adrian Bălășescu**, Adina Boroneanţ, **Valentin Radu**, Clive Bonsall, 2021, *Mesolithic Icoana revisited (II) – a reappraisal of the faunal remains*, Primul Supplementum al Materiale și Cercetări Arheologice: *Scripta Praehistorica. Miscellanea in honorem Mariae Bitiri dicata*.

iv. **Adrian Bălășescu, Valentin Radu**, *Fauna de la Techirghiol Paloda. Studiu arheozoologic preliminar*, Pontica 54.

v. **Cătălin Lazăr**, Vasile Opriș, **Bogdan Manea**, Theodor Ignat, Dan Pîrvulescu, Adelina Darie, **Cristina Covătaru**, Gabriel Popescu, Valentin Parnic, Madalina Dimache, Theodor Zavalaș, Mihaela Golea, **Andreea Toma**, Gabriel Vasile, **Adrian Bălășescu, Valentin Radu**, *Gumelnița: Research results of the 2021 fieldwork season,* Cercetări Arheologice și Numismatice Journal, no. 7 (in press).

Other manifestations

i. Introduction to Bioarchaeology Seminar organized by the "Vasile Pârvan" Institute of Archeology & University of Bucharest (ICUB-Archeoscince) for students of the faculties of Biology and History, July 6, 2021, Bucharest. The seminar is dedicated to students, masters and doctoral students, to conduct introductory courses related to the interdisciplinary research of the past, in terms of methods specific to the field. The event aims to be an introduction to the field of bioarchaeology, more precisely in the study directions of physical anthropology, carpology, palynology, zooarchaeology, malacology, and archeohtiology. The necessary guidance was provided by specialists from the ArchaeoScience # RO, ICUB department of the University of Bucharest, and members of the Waterscape project, Dr. Valentin Radu, master student Andreea Toma and Dr. Adrian Bălășescu together with researchers Mihaela Golea and Vasile Gabriel from the Institute of Archeology "Vasile Pârvan ".

ii. Workshop organized by the Collaborative Research Center 1266 'Scales of Transformation' of the Christian Albrechts-University of Kiel, Germany from November 24-27. The participation of Waterscape project members consisted in making presentations related to the preliminary results obtained for the prehistoric sites on the Mostiștei Valley (Sultana Malu Roșu area), during the field campaign in the summer of 2021 (July 9-August 27, 2021). The following presentations were given by members of the Waterscape project team: i) Theodor Ignat, Cătălin Lazăr, Stratigraphic Matrix: All for All !; ii). Adrian Bălășescu, Valentin Radu, Andreea Toma, Osteological Materials (Ex-Humans & Ex-Animals); iii). Bogdan Manea, Vasile Opriș, Theodor Ignat, Ceramics here, ceramics there, ceramics everywhere; iv). Vasile Opriș, Theodor Ignat, Bogdan Manea, Past lessons and future prospects: The Boian-Vidra pottery from Sultana-Ghețărie; v). Cristina Covataru, Do good things always come to an end? Things from the current past, lessons for the current future! The next thematic workshop in this series will take place in March 2022, in Bucharest and will be organized under the auspices of the Waterscape project.

iii. Archeoclimate BP (II) - Interactions between climatic and environmental conditions and human societies during the Holocene in SE Europe, an event organized by the ArchaeoSciences Division within the Research Institute of the University of Bucharest (ICUB), on May 13, 2021, in Bucharest, brought together specialists from ICUB, "Vasile Pârvan" Institute of Archeology Bucharest, Cluj-Napoca Institute of Archeology and Art History, "Emil Racoviță" Institute of Speleology Cluj-Napoca and the National Museum of History of Romania. The event was organized under the auspices of the Waterscape project and with partial support from the University of Bucharest through the CNFIS-FDI-2021-0405 D6 / 2021 project. from the transition period from Mesolithic to Neolithic in Romania, as well as some observations from Neolithic-Eneolithic; Cătălin Lazăr - The Neolithic process of the Balkans and data about the so-called 'Neolithic Package'; Adrian Bălășescu - Data on domestic and wild mammals from the Early Neolithic. The main aim was to integrate the results obtained into complex, relational databases that will be the subject of siting articles for geographical and cultural areas in the northern Balkans.

Three events in which the members of the project signed up with four presentations were canceled due to the health situation generated by the COVID pandemic:

i. Valentin Radu, Valentina Voinea Adrian Bălășescu, New evidence of fishing in the Black Sea during Hamangia Culture (VI-Vth millennia, Romania), Paper ID: 51652, International Council for Archaeozoology, Fish Remains Working Group (ICAZ FRWG), 23-28 August, 2021, Vienna, Austria.

ii. Adrian Bălășescu, New data on the archeozoology of Dudeşti communities in Romania, Scientific Session, Culture and Civilization on the Lower Danube, 18th Edition, Museum of the Lower Danube Călărași, November 4-5, 2021, Călărași, Romania
iii. Bogdan Manea, Vasile Opriș, Theodor Ignat, Cătălin Lazăr, Experimental analysis regarding the construction and use of prehistoric pottery firing installations, Scientific Session, Culture and Civilization on the Lower Danube, 18th Edition, Călărași Lower Danube Museum, 4-5 November, 2021, Calarasi, Romania
iv. Bogdan Manea, Vasile Opriș, Theodor Ignat, Cătălin Lazăr, Befriending Clay and Fire: the critical importance of experimental archeology in providing new data regarding individuals and the process of ceramic manufacture in Prehistory, The Norwegian Forum of Experimental Archeology (NFEA) 2021, 17- 19 September, Midgard Viking Center, Horten, Vestfold, and Telemark County, Norway.

IMPACT OF THE PROJECT IN STAGE I OF 2021

The impact expected in stage 1/2021 targeted in particular the national and international scientific community as well as the university environment.
The principle of excellence was a priority for the project team, the aim being to increase the visibility of research conducted by members involved, both nationally and internationally and that of dissemination, closely related to the previous was achieved by the effort to publish the results research in application journals, indexed ISI or BDI / ERIH plus (8 submitted). This last principle also includes the series of scientific communications (17) presented at various international (6) and national (11) events in the field, as well as the seminar (1) and the round tables/workshops (2) where the project team participated with the first results.

CONCLUSIONS

In the first stage of the project Mapping the Prehistoric Waterscape from Southern Romania (7000-3000 cal. BC). Natural water supply and cultural water demand in the past / Cartografierea waterscape prehistoric din sudul României (7000-3000 cal. BC). Natural and cultural water sources from the past - WATERSCAPE ”PN-III-P4-ID-PCE-2020-2369, contract PCE 165/2021, implemented by the University of Bucharest, all the proposed objectives were achieved, a fact fully reflected by the result indicators obtained, following the principles of excellence and dissemination.

Project director
Radu Valentin