Archaeology:
Just Add Water

volume II

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Archaeology:
Just Add Water
Underwater Research at the University of Warsaw

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Preface

Dear Colleagues,

It is our great pleasure to present to you the second volume of the U Supplement Series of the "Światowit" periodical. To a large extent it is based on the papers presented during the *3rd Warsaw Seminar on Underwater Archaeology*, which took place at the University of Warsaw on the 17th and 18th of January 2019.

An efficient and prompt process of editing we owe to the funding from the Ministry of Science and Higher Education, grant no. 959/P-DUN/2018.

Organization of the Seminar and publication of the hereby volume was possible thanks to the co-operation with the Polish Chapter of the Explorers Club, in particular its President, Professor Mariusz Ziółkowski, and the Vice-President, Marcin Jamkowski, to whom we are deeply grateful.

We would also like to acknowledge and appreciate the support of the University of Warsaw, namely the Vice-Rector Ph.D. habil. Maciej Duszczyk, the Dean of the Faculty of History, Ph.D. habil. Małgorzata Karpińska, Professor UW, as well as the Director's Board of the Institute of Archaeology: Ph.D. habil. Krzysztof Jakubiak, Ph.D. Michał Starski, and Ph.D. Marta Żuchowska.

The special thank you we traditionally owe to the Diving Museum by the Warsaw Diving Club, especially the Museum's Curator, Karina Kowalska, and the Club's President, D.Sc. Grzegorz Kowalski, who have been supporting our activities for many years, and constantly guide and help us in numerous enterprises.

We would like to extend our gratitude to all the Authors and Reviewers, who have been extremely diligent and punctual to keep up with our strict deadlines.

During the editing of the volume we have received invaluable consultations in the matter of ancient languages by Tomasz Płóciennik and Ph.D. Joanna Wegner, who we would also like to thank with all our hearts. The post-editing process was successful due to the the kind assistance of Ph.D. Rafał Dmowski, who we owe enormous gratitude.

The whole book was once again skilfully supervised and managed by the one and only irreplaceable Ph.D. habil. Bartosz Kontny, Professor UW. Him we would like to thank for all the advice and help with difficult choices, as well as the dedication to the organizational matters, even though the really tight schedule.

Last but not least, we would like to thank all the Readers who have reached for the hereby volume. We sincerely hope you will enjoy the outcome of our efforts and wish you pleasant reading!

Aleksandra Chołuj

Małgorzata Mileszczyk

Magdalena Nowakowska

3rd Warsaw Seminar on Underwater Archaeology

3rd Warsaw Seminar on Underwater Archaeology held on 17th-18th of January 2019
at the University of Warsaw
(photos by: M. Sugalska)

Foreword

The volume, which we hereby present to our esteemed Readers, is the vivid proof that underwater archaeology at the University of Warsaw is doing more than well. It is the second publication in the ***"Światowit" Supplement Series U: Underwater Archaeology***, issued for now (and we hope this pace will be sustained!) with a frequency of a periodical. Within the book one might find i.a. the texts being an outcome of the international ***3rd Warsaw Seminar on Underwater Archaeology***, organized in the Institute of Archaeology, University of Warsaw. The Readers will discover here the articles presenting broad chronological and geographical range of issues: from the Prehistory until the Second World War, from Guatemala and Peru to Poland and Slovakia. We are trying to reflect this diversified character also by the choice of photographs on the cover.

The leitmotif of all this vast range of archaeological issues is **water**: realm bearing a magnificent symbolic character. Changing its colour (even during the day – from the blackness, through greyness, then blue, until the bloody-red at the sunset, turning again into black) and visibility, it has manifested also other features, which can be contemplated as signs of its animation, such as movement: horizontal (currents, waves, tides) and vertical (fluctuations of the surface). It was also the source of life quite literally, providing food and dihydrogen monoxide, essential for living.

Along with its whole mystery and dangerousness, water may also serve as a refuge (lake settlements from the early Iron Age) and a trade route, at the end of which there is a (hopefully) safe harbour. That is how underwater archaeology marches onto the land... Although, it is neither place nor time for the deliberation about the definitions of archaeology related to water environment; the discussion in this matter has lasted for many years, abound in more and more new terminological propositions, still being far from any resolutions. Whichever position we assume in the aforementioned debate, it is impossible not to notice that the symbolism, the rituals, and everyday casual activities essential for life and connected with water pass through each other, which is well-exemplified by the hereby volume. Objects lost during transportation and other kinds of exploitation of water basins, items put in the water as a matter of rituals, military aspects connected with watery environment, lake settlements, harbours, and trade – all of that and even more you can discover in *Just Add Water 2*. To all the Readers, who are going to immerse themselves into this topic, I wish a pleasant intellectual adventure and... good dives!

Bartosz Kontny

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Naval Supply Lines for the Roman Army in *Moesia Inferior* – Basic Considerations for the Danube Underwater Heritage Project

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Abstract:

Around the Black Sea significant settlements were created during the Greek colonization. Towards the middle of the 1st century A.D. the area known as Moesia was stepwise developed into a province and equipped with fortifications, as the limes was following the Danube. Supplies and resources that could not be acquired locally, but were needed by the garrisons, had to be brought in, preferably by ship. Eventually, army camps were built along the last stretch of the Danube between the Yantra tributary and the river delta, facilitating even more intense ship traffic and connecting the Greek cities, which functioned as supply bases. The overall idea of the Danube Underwater Heritage Project is to examine and assess archaeological remains at the bottom of the Danube River in its delta, the nearby Razim-Sinoe lagoon, and selected spots on the Romanian Black Sea coastline. An important scientific problem is the evaluation of the sediment in the river delta and the resulting limitations for underwater investigations. The Roman period is of particular interest; the first season of the non-invasive underwater project took place in September 2017, when various sites within the Danube Delta were verified.

Key words:

Roman *limes*, army supply, army logistics, naval supply, *Histria*, *Argamum*, Danube Delta, underwater archaeology, *Moesia Inferior, Scythia*

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Introduction

In the early days of the Empire the initial tendency to keep a permanent border, which turned into a fact commonly known as the *limes* (a good introduction to this transition: Campbell 2010; *vide*: Eich 2009: 565; Ørsted 1985: 20; Polak and Kooistra 2013: 359), led to a significant reorganization of the troops in order to provision the units now stationed on the frontiers. After all, the Roman army was by far the biggest organization in the Empire (Speidel 2009: 283) and with its wide range of tasks beyond the simple border security (Sarnowski 1988: 69; Duch 2015 *passim*; Lemke 2016: 10–12) still had to find the time and personnel to implement a complex logistical system, because military success was heavily dependent on a continuous provision of supplies: soldiers at frontier outposts simply needed to eat. With the Rhine and Danube forming the *limes* across Europe, most legionary camps in the Empire were located on a major river and in *Moesia Inferior* a bulk of the supplies was transported on the Danube and its tributaries, while the access point for long range supplies led through the Black Sea and – obviously – the Danube Delta.

Around the Black Sea, significant settlements had appeared during the Greek colonization, and a number of these Pontic cities were located on what would after 86 A.D. become the coastline of *Moesia Inferior* and *Scythia Minor* in Late Antiquity. There is a well-grounded theory that Rome chose to include the area today known as the Dobrudja/Dobrogea in the 1st century A.D. for reasons of logistical security: the Danube was the most important communication and supply route for the existing and developing *limes* outposts below the Iron Gates (particularly during the Dacian campaigns of Trajan, *cf.* Poulter 1986; on *Scythia*, *vide*: Matthews 2018). It was crucial to control the Lower Danube on its entire length and also to offer sufficient protection to the Pontic cities (see below) which played a major role in the supply chains (**Fig. 1**).

The *Danube Underwater Heritage Project* was started in 2017 as the result of a co-operation agreement between the Eco-Museum Research Institute "Gavrilă Simion" in Tulcea[1] (Tulcea County, Dobrudja region, Romania) and the Antiquity of Southeastern Europe Research Centre of the University of Warsaw[2]. The overall idea is to examine and assess archaeological remains on the bottom of the Danube River in its delta as well as the nearby Lake Sinoe, the Razim lagoon, and selected spots on the Romanian Black Sea continental shelf (Lemke *et al*., forthcoming). Finds from the Roman period are of particular interest, even

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though any information regarding the overall research conditions and preserved finds on the seabed will be considered valuable. An important scientific problem is the evaluation of the sediment in the river delta and the resulting limitations for underwater investigations.

The Danube Delta

The delta of the Danube was once described by the Prussian strategist Helmuth von Moltke as a heaving sea of ten feet high reed beds (Moltke 1845: 46). In Antiquity, the Delta was considerably smaller than it is today, and during the 20th century the area has been managed considerably, but it is still a separate geographical unit with its old corridors, lakes, islands, and a specific flora and fauna (Panin and Overmars 2012; Panin *et al*. 2016). The Delta was created from a former lagoon (Panin 1983: 177), similar to the alluvial areas of lagoons and shallows, located along the coast south of the Delta. The large lakes of Razim, Sinoe, and Goloviţa, nowadays called the Razim-Sinoe lagoon, are the remains of a former sea bay called *Halmyrys* (Zahariade 2006a: 169). In the period between the 5th century B.C. and the 2nd century A.D., the main distributary of the Danube, which had previously been the Sulina, changed into the Delta. At that time the branch of Sfântu Gheorghe (*Peuce*, *Hieron Stoma*), previously silted, was reactivated, creating an additional branch at the city of Dunavăţi with an outlet to Razim Lake (Panin 1983: 182; Bony *et al.* 2015: 190) – a fact of great importance for navigation in ancient times, which also generated a freshwater lagoon environment (Bony *et al.* 2015: 201).

Roman Army Logistics and the Danube Delta

Legionary camps and forts were obviously meant to be as self-sufficient as possible, but the garrisons were heavily interconnected with one another and with other centres near and far, to ensure stable supply routes. Provisioning an army locally may have always been the most economic option, but only when certain prerequisites had been fulfilled. Regarding the province of *Moesia Inferior*, the supply system had become considerably reliable in the times of Vespasian, when this stretch of the frontier was significantly strengthened as part of the reorganization of the Empire defences (Lemke 2016: 15). However, Trajan's Dacian campaigns with the eventual annexation of Scythia (modern-day Dobrudja) made the dislocation of another legion into the region necessary, including additional *auxilia*, which was difficult considering obligations in other parts of the Empire (Poulter 1986: 521) and the sometimes tricky

conditions for local supply (Lemke 2016: 15; Poulter 1980: 731–738). The solution for increased requirements could have been an intensified settlement programme (Poulter 1980: 736; Matthews 2018: 213) or an import of grain/food by ships from a distance, for instance Asia Minor (see below) or possibly the Crimea region (Matthews 2018: 31).

In spite of a certain risk connected with water travelling, the Roman army seems to have preferred this type of transportation, as it was cheaper and quicker than overland movement and much more convenient for heavy loads (Aricescu 1980: 114; Roth 1999: 190–191; Rickman 1980: 120; *cf.* Livy on moving army supplies by ship: Liv. 38.3.11.); even though it has to be kept in mind that it was considerably easier to move ships downstream a river than upstream.[3]

While the fleet possessed war-ships (in the case of *Moesia* particularly the *legio I Italica*, *cf.* Fiederling *et al.*2017: 289) and was supposed to patrol the *limes* and deny enemies the possibility of crossing the river (while also suppressing smuggling activities), a major task was also delivering supplies to the camps. Stamped legionary tiles, found in cities on the coast of the Black Sea, give proof of intensive shipping of building materials not only to, but also from army camps, where the bricks and tiles were produced and from where they were distributed (Sarnowski 1988: 78). Wine, olive oil, wood, and stone were regularly transported by ships (Casson 1965: 31; Sarnowski 1997: 498), so was grain, on *naves frumentariae*.

The Moesian fleet, operating since Claudius or Nero (Sarnowski 2006: 89), was reorganized by Vespasian after 69/70 A.D., receiving the title of *Flavia* at some point. *Noviodunum* (Isaccea, Tulcea County, Dobruja, Romania) was the seat of the *praefectus classis*, where in the 2nd and 3rd centuries a *vexillatio* of the *I Italica* was stationed. This site not far from the Delta is largely considered the main base of the Moesian fleet (Aricescu 1980: 31; Bounegru 2006: 109; *vide*: Fiederling *et al.* 2017: 288–289).

[3] Steve Matthews prefers the idea of intensive land transport (2018: 32). However, upon stating that: "*so maybe luxury goods were moved upriver* (…), *but not staples*" (Matthews 2018: 264), one has to bear in mind the numerous examples of transports of stone from the Hotnica quarries (near Veliko Tarnovo, Bulgaria) to *Novae* on the *limes* near Svishtov, Bulgaria, which will certainly have occurred travelling the Yantra River downstream and then upstream on the Danube (Skoczylas 1999: 130). Similarly, it seems extremely unlikely that the supplies brought to Novae within the *pastus militum* from Asia Minor would have been transported overland. An upon noting that "(…) *on the lower reaches* [of the Danube] *there are extensive marshes today, and surely there were in antiquity also, that would have excluded towing*" (Matthews 2018: 264) one should bear in mind that even though in Antiquity there were more stretches of marshland on either bank of the unmanaged Danube; by virtue of geography it is the left bank which is affected most (Lemke 2015: 845) and towing ships along the right 'provincial' bank cannot be categorically excluded.

Regarding structures resembling a port, it has to be kept in mind that even when transporting heavy goods, a quay or similar construction was not a precondition for unloading a ship. Small light barges were used for this purpose, connecting with a natural port on a river bank (Houston 1988: 561–563). Still, remains of more or less solid ports were found at *Novae*, *Dimum* (Bulgarian Danube), *Halmyrys*, *Flaviana*, *Capidava*, *Axiopolis* as well as *Carsium* (Romanian Danube; *vide*: Sarnowski and Trynkowski 1986: 540; Bounegru and Zahariade 1996: 85; Bounegru 2006: 109). However, one should be sceptical of the ideas of Mitova-Džonova (1986 and 1994) regarding a rather sophisticated dock at Belene/*Dimum*. For the fleet headquarters at *Noviodunum* a port can be postulated, but the results of earlier research likewise need to be treated with care (Fiederling *et al.* 2017: 293).

The Pontic Cities

The economic activity in the Black Sea area was concentrated around coastal urban agglomerations. Since the late Archaic Period cities have been built and developed there, achieving great importance in the Hellenistic Period. During the Mithridatic Wars these cities – organized as a community – attracted the attention of Rome. Marcus Terentius Varro Lucullus, proconsul of *Macedonia*, conquered several Greek Black Sea towns in 72–71 B.C., but they were lost again ten years later. Rome annexed them anew in 29–28 B.C., handing the rest of the Dobrudja area to the kingdom of Thrace (for an introduction on the Roman control of the western Pontus *vide*: Matei-Popescu 2017; 2014a; 2014b; Nawotka 1997; Jones 2016: 125). The cities possibly became autonomous colonies, *civitates foederatae*, late in Augustus' reign (contra: Matei-Popescu 2014a: 179–180) and Rome certainly gave them a sense of security, guaranteeing the stability of the entire region (Bărbulescu and Buzoianu 2014; Matei-Popescu 2014b; Jones 2016).[4] A recently found and quite fascinating inscription concerning *Histria* (Bărbulescu and Buzoianu 2014; Jones 2016) sheds new light on the nature of this security, confirming Anton von Premerstein's deductive reasoning. The monument acknowledges the help of the Roman commander Iulius Vestalis, who saved the town from abandonment, stating verbatim: "(…) *sent by Tiberius* (…) *for the preservation and safety of the Greek cities* (…) *and especially of our city because we are situated very close to the barbarians (…)*" (Jones 2016: 124). The association of six cities (*Histria*, *Tomis*, *Callatis*, *Dionysopolis*,

[4] Among the many woes of an exiled poet Ovid there was the obligatory duty in the city guard of Tomis (Constanța, Constanța County), before Rome provided protection by the army (Ov. *Trist*. 4.1.69; *Pont*. 1.8.7).

Odessos in *Moesia Inferior* and *Mesembria* in *Thracia*) and the community known as κοινόν (*koinon*; Nawotka 1990), to which the above cities, among others, belonged, retained a somewhat unique status.

These rather densely populated cities (*cf*. Matthews 2018: 132–134 for a discussion on the quantification of inhabitants) possessed extensive territories with fertile soils suitable for both land cultivation and livestock farming, and had a strong political, economic, and cultural impact on the surrounding population, playing a significant role in supplying the garrisons of *Moesia Inferior*. Traces of grape cultivation have also been found. Facilitating maritime trade between the Black Sea regions and the Eastern Mediterranean was also important. Wine, olive oil, and fish were the main commodities (Prešlenov 2008: 301).

For the context of this contribution, it seems helpful to briefly mention three selected sites and three documents (or document types). The two Pontic cities on the Razim-Sinoe lagoon are of particular interest because of their vicinity to the delta: *Argamum* and *Histria*. Additionally, *Axiopolis* (Cernavodă, Northern Dobruja, Romania) deserves some attention, even though its significance seems rather understated in the contemporary literature.

Axiopolis

Axiopolis, near modern day Cernavodă, is not located in the project area *per se*. However, it lies in a peculiar spot, which can be appreciated best while looking at a map. The course of the Danube turns sharply north, because the Dobrudja massif blocks the shortest way to the Black Sea. This is why the Danube–Black Sea Canal was built here (opened in 1984), which allows ships to bypass the long way through the delta. While the canal itself is a modern phenomenon, its route – on land – had already been of importance even before Rome established a province here and possibly also in the 3rd century when *Scythia* (Dobrudja) found itself outside a second defensive perimeter marked by the *Valul lui Traian* (Trajan's Wall) connecting *Axiopolis* and *Tomis* (a possibility which is currently under investigation; Hanson and Oltean 2012; Rankov 2015) had not yet been included into the area protected by the Lower Danube *limes*. This route connected the Pontic cities, primarily *Tomis*, with the lower Danube, thus providing Greek merchants with a connection to the distant hinterland of barbarian territories. It has been suggested that the origins of this colony – with a Greek name rare among the Danube sites in *Moesia Inferior* – are connected with the expeditions of Lysimachus in the 3rd century B.C.

(Aricescu 1980: 36), when *Axiopolis* was possibly created as an emporium (Matei-Popescu 2017: 25 fn. 60). The city can be seen as an example of the Roman army seizing Thracian strongholds and adapting them to their needs (Matei-Popescu 2017: 25), a variation on the common theme of taking advantage of existing settlements for logistic convenience (Lemke 2016: 27). Certainly, since the beginning of the 2nd century A.D. *Axiopolis* had been an important seat for the *classis Moesica*. Stamped bricks also suggest the presence of *cohors II Commagenorum* (Gudea 2005: 446). Additionally, *Axiopolis* not only was a trading outpost, but also a significant place of ceramics production (Dyczek 2009: 166); and it possessed a huge quarry, exploited during the construction of the city and fortifications, where the connection to Hellenistic culture is highlighted by a depiction of Hercules carved into the rock (Radulescu 1972: 190–195; Florescu 1937; Rabadjiev 1990).

Argamum

Argamum and *Histria* are two Pontic cities within the research area of the *Danube Underwater Heritage Project*. Both were founded at the same time, in the mid-7th century B.C., but in spite of their proximity to each other, they have developed very differently, because of the dynamic geographic conditions (Bony *et al.* 2015: 200). *Argamum* (originally Greek *Orgame*) is located about 5 km east of the small town of Jurilovca, on the vast Razim lagoon (Bilde *et al.* 2007/2008; Coja 1972; 2005; Anghel and Brustur 2007). The town, founded by Greek colonists, have continued a settlement since the Iron Age. Stamped amphorae from the Hellenistic Period indicate very intensive trade contacts with the cities of the Hellespont and the Mediterranean (Lungu 1992: 71). The Roman period was not published more widely (*cf.* Coja 2005: 30–35), but it seems likely that the city continued to function in a similar way. The development of *Orgame*/*Argamum* has recently been investigated in the context of geological changes along the Danube Delta and the adjacent Black Sea coastline (Bony *et al.* 2015). The population mediated trade between the areas of Dobrudja and Dacia and the Mediterranean Sea and, like the inhabitants of nearby *Histria*, was engaged in fishing in the Razim Bay.

Histria

Histria (initially a colony of *Miletus* by the name of *Istros* which was also the Greek name for the Lower Danube) is currently also located on a vast lagoon stretching along the coast, in its southern

part, on a small peninsula (Bilde *et al.* 2007/2008: 126–127; Höckmann 1999; 2001; Höckmann *et al*. 1997; 1996/1998; Bounegru 2003; Dabîca 2010; Avram 2006). The Greeks attracted indigenous people into their city (Avram 2006: 63), which functioned well under Roman control, but due to its northern position it fell early under the invasions of the 3rd century (Suceveanu 1969: 364). Many agricultural sites around *Histria* were created during the period of the Moesian colonization (Avram 2006: 59). In the 2nd century, the city was expanded and occupied an area of 24–30 hectares within the walls, which is a lot more than in the Hellenistic times (Musielak 2003: 104). The inhabitants were engaged in shipping and trade, particularly of fish. There are also traces of iron mining near *Histria*. A convenient insight into the status of *Histria* and its potential is given by the set of documents presented on an inscription commonly known as the *horothesia* of Laberius.

The Horothesia *of Laberius and other Relevant Documents*

In 1914 two fragmentary copies of a dossier concerning the exploitation of a pine grove and the fishing rights of the *Histrians* were discovered in excavations at *Istros*/*Histria* (Inscription from *Istros/Histria*, after: Pippidi 1983: 67, 68; Oliver 1965; Pippidi 1956; 1958). The inscription consists of copies of eight juridical documents concerning the town and its citizens and named the *horothesia* of Laberius Maximus, who was the governor in the times of Trajan, although some of the relevant documents were first issued around the middle of the 1st century A.D. (Inscription from *Istros/Histria*, after: Oliver 1965). The importance of fishing in the Peuce/Razim branch for the local economy is emphasized here. The sale of salted fish was a major source of income for *Histria* (Bounegru 2009). At one point there had been a conflict between the residents of *Histria* and the chief officer of the customs area *ripae Thraciae*. Laberius Maximus defined the boundaries of *Histria*, while in the epistle of Pomponius Pius it is written:

"*In order that the rights of the city might be not only preserved but increased, I have decreed that the revenue from fishing below Peuce be yours with the same right as your ancestors and fathers obtained these dues by the grace of the emperors*" (Epistle of Pomponius Pius, after: Oliver 1965).

Further insight into Roman supply lines on the Moesian *limes* is given by a document known as Hunt's papyrus/*pridianum* (British Museum Papyrus 2851). It is almost a summary of the topic of Roman army logistics (a closer look at the document including the relevant

literature: Lemke 2016), dated to the very beginning of the 2nd century (Speidel 2009: 299). Apart from the information on single soldiers and units, the system of army documentation included also data on quotidian issues like supplies of food, arms, equipment, raw material, and other goods, so the commanding officers knew what they had at their disposal and thus could anticipate and properly document the necessary expenses. The unit in question is the *cohors I Hispanorum veterana*, which belonged to the garrison of Egypt before it was moved to *Moesia*. Its strength was 546 soldiers (Hunt 1925: 268). The documents allow analysing certain aspects of the long distance supply routes: soldiers of this cohort were sent to *Gallia* for clothes and grain, and also, on horseback, beyond the unidentified *Erar* River. The grain guarded by the soldiers of the cohort was transported in ships, *naves frumentariae*. Added to many examples of local provisioning, this source highlights the importance of long range supply lines operated both by civilian contractors and the soldiers themselves.

Regarding civilian contractors, inscriptions concerning the *pastus militum* are another important source. For *Moesia Inferior* this is mostly a series of epigraphic monuments found in *Novae* (Epigraphic monuments from Novae, after: Sarnowski 1999; 2013). Starting around 300 A.D., the *primipilarii*, civil functionaries responsible for organizing supplies, resumed the tradition of setting votive statues in the headquarters courtyard, which had been started by their namesakes, the first centurions (*primipili*) of the legion (Sarnowski 1999; 2013). These civilians came from the Cyclades, *Hellespont*, and *Phoenicia*. The duty of the *primipilarii* was to transport supplies from the province in which they were collected (which was also their home province) to the location at which a given legion was stationed, so in the case of *Novae* the transports naturally had to come by ship, possibly through the Danube Delta. Supplying the legions of *Moesia Inferior* from rather distant provinces of the Mediterranean seems to have been a consequence of the devastations the Goths brought with them and the subsequent logistic complications (Sarnowski 2013: 144; Poulter [ed.] 2007: 37–38).

Underwater Archaeological Research in the Region

Details regarding the state and history of underwater research around the Danube Delta have been published elsewhere (Lemke *et al*., forthcoming). At this point, with the context of naval supply lines in mind, only a particular and recent example should be brought to mind, probably the most important underwater discovery in recent years in Romania: wreck Portița A, discovered in 2016 by a joint team from the Eco-Museum Research Institute in Tulcea,

the Bavarian Society for Underwater Archaeology from Kempten[5], and the Ludwig Maximilian University of Munich[6] (Nuțu *et al.* 2017; Pflederer *et al.* 2016). This second-century-A.D. wreck sunk off Gura Portiței (the ancient entrance into the *Halmyris* bay, today known as the Razim--Sinoe lagoon), coming from the Black Sea. The cargo has been estimated to consist of over 1000 amphorae of the so-called 'light clay narrow neck' type (Shelov C/SinIVC), most of them entirely preserved and arranged in six rows. It is easy to conclude that this was a supply ship, even though a detailed report on the remains to be published at this point.

The 2017 Season of the Danube Underwater Heritage Project

The first season of the non-invasive *Danube Underwater Heritage Project* took place in September 2017. Various sites within the Danube Delta were verified. The prospection included Bazinul Mare (Sulina estuary), but also Lake Sinoe adjacent to ancient *Histria* and Lake Razim where the ancient *Argamum* is located (**Fig. 2**). The relevant spots had been chosen after consulting the archaeologists in charge of the excavations there.

In the fairly shallow Bazinul Mare (maximum depth 9–10 m) the area was investigated by sonar and sub-bottom profiler; selected points were verified by divers and, where possible, documented. Altogether, 21 anomalies have been identified, five of which looked like potential wrecks. Three points were verified, including the shipwreck named Sulina A – the best preserved of the discovered wrecks. The preserved length of the wooden hull with metal reinforcements is about 30 m (**Fig. 3a, 3b**). The wreck contains cannonballs and probably cannons and can be dated to the 19th century. Shipwrecks Sulina B and Sulina C are also wooden constructions, but less accessible.

The prospection was carried in the Razim-Sinoe lagoon (**Fig. 4a, 4b**). A part of the archaeological site of *Histria*, which investigations were possible thanks to the support of Mircea Angelescu, Ph.D. and Mircea Dabîca, Ph.D. is now under water. Local researchers suggest the existence of early Roman city walls underwater, and indeed, a stone structure under the layer of silt could be measured with a mobile RTK device, but further verification is needed. A photomosaic has also been prepared for the whole site.

There is a theory that a part of ancient *Orgame*/*Argamum*, located on a high cliff, has collapsed into Lake Razim during an earthquake. Sonar and sub-bottom profiler were employed to investigate

[5] German: *Bayerische Gesellschaft für Unterwasserarchäologie.*
[6] German: *Ludwig Maximilians Universität München.*

the area off *Argamum* towards Bisericuţa islet. Certain anomalies noticed there will be revisited in the future, as well as in the Delta itself. The Black Sea coastal waters between the mouths of the two Danube distributaries: Sulina and Sfântu Gheorghe will be prospected, too.[7]

A systematic and comprehensive survey along Romania's Black Sea coast is also foreseen as a future project. This will make it possible to reconstruct the course of the ancient coastline with settlements and the sea routes used by ships transporting, among other things, supplies for the legionary camps on the Danube, but also to evaluate whether there is any point in carrying underwater campaigns with divers on a larger scale.

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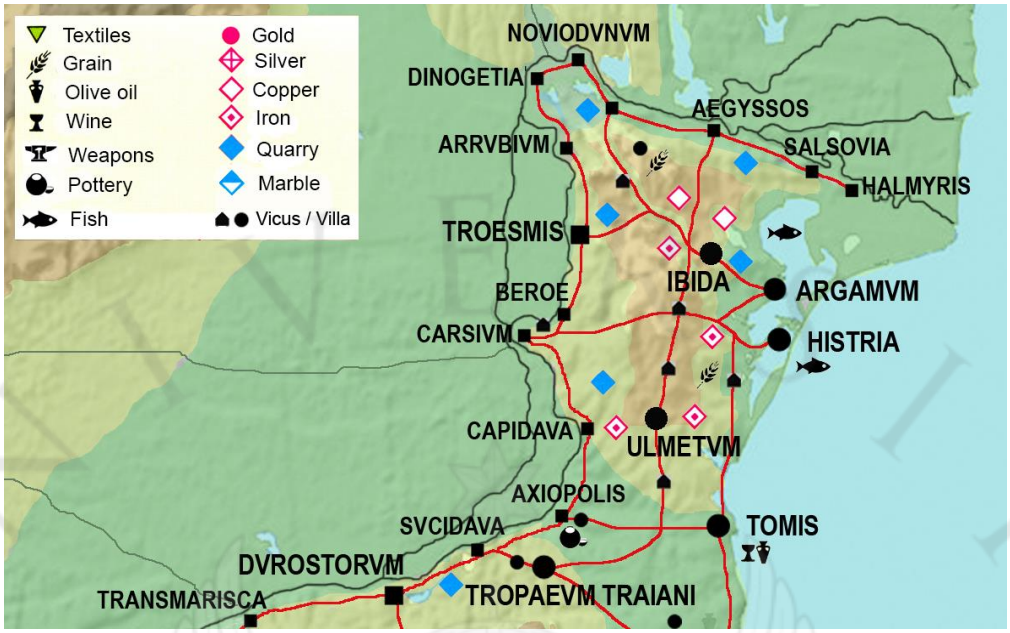

Fig. 1 – The Danube Delta in Roman times (after: Lemke 2016)

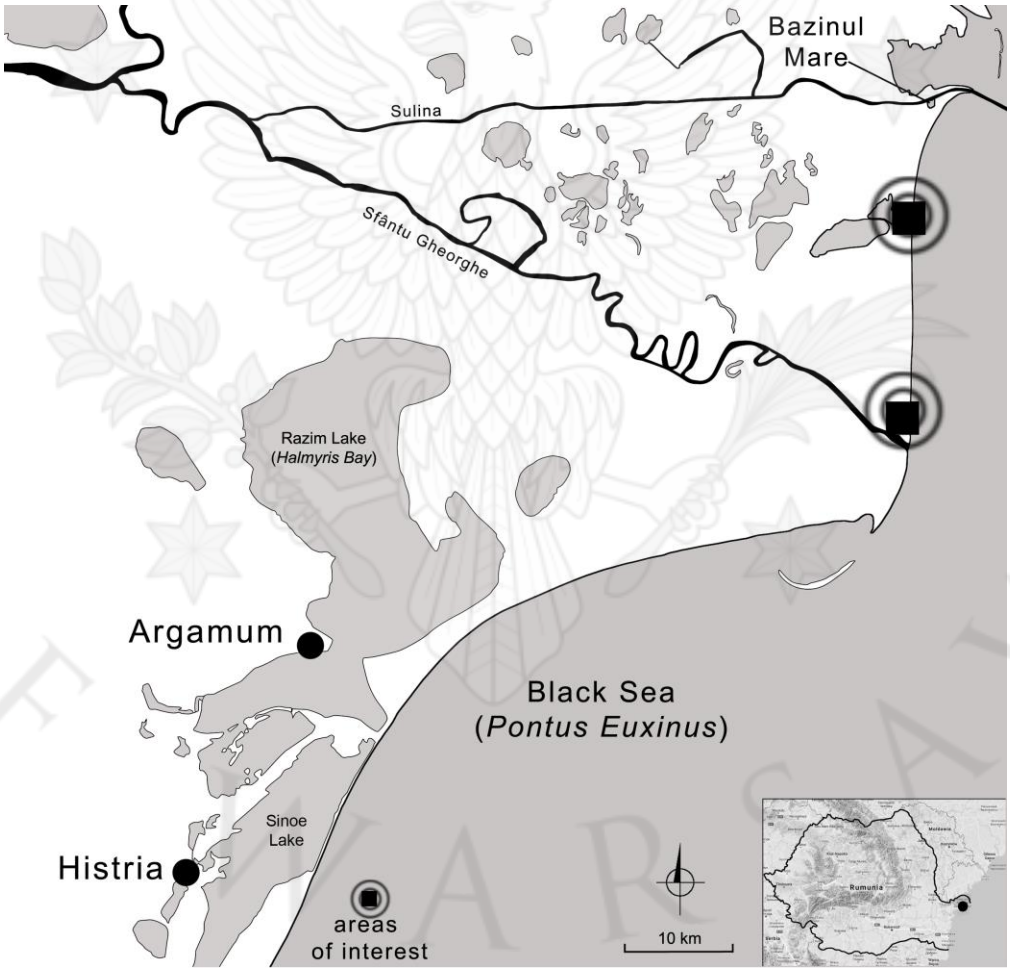

Fig. 2. – The area of interest for the Danube Underwater Heritage project today (elaborated by: M. Bajtler)

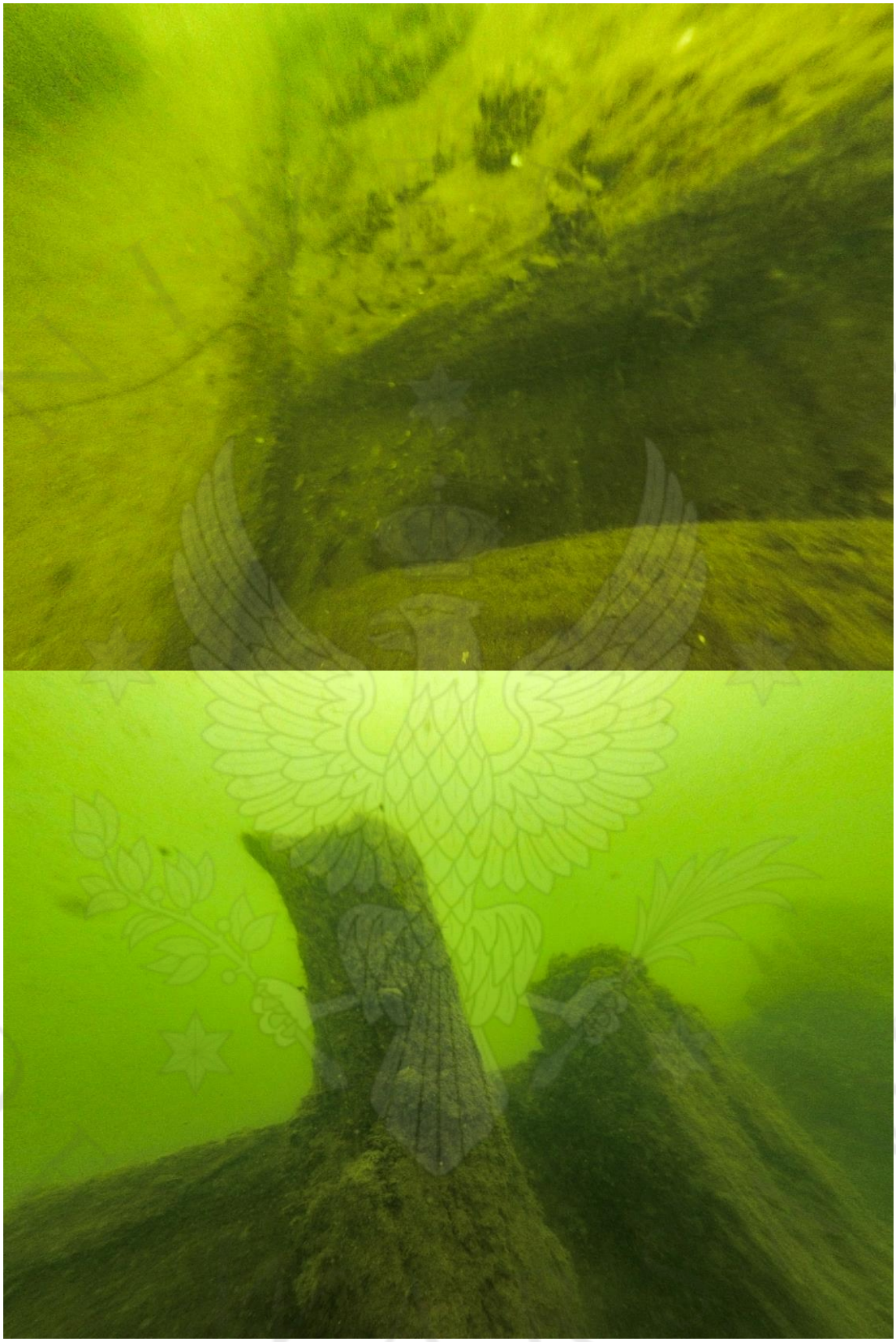

Fig. 3a, 3b – Sulina A shipwreck: up – keelson, bilge futtocks, garboards and planking; down – frames and planks (photo by: Danube Underwater Heritage Project)

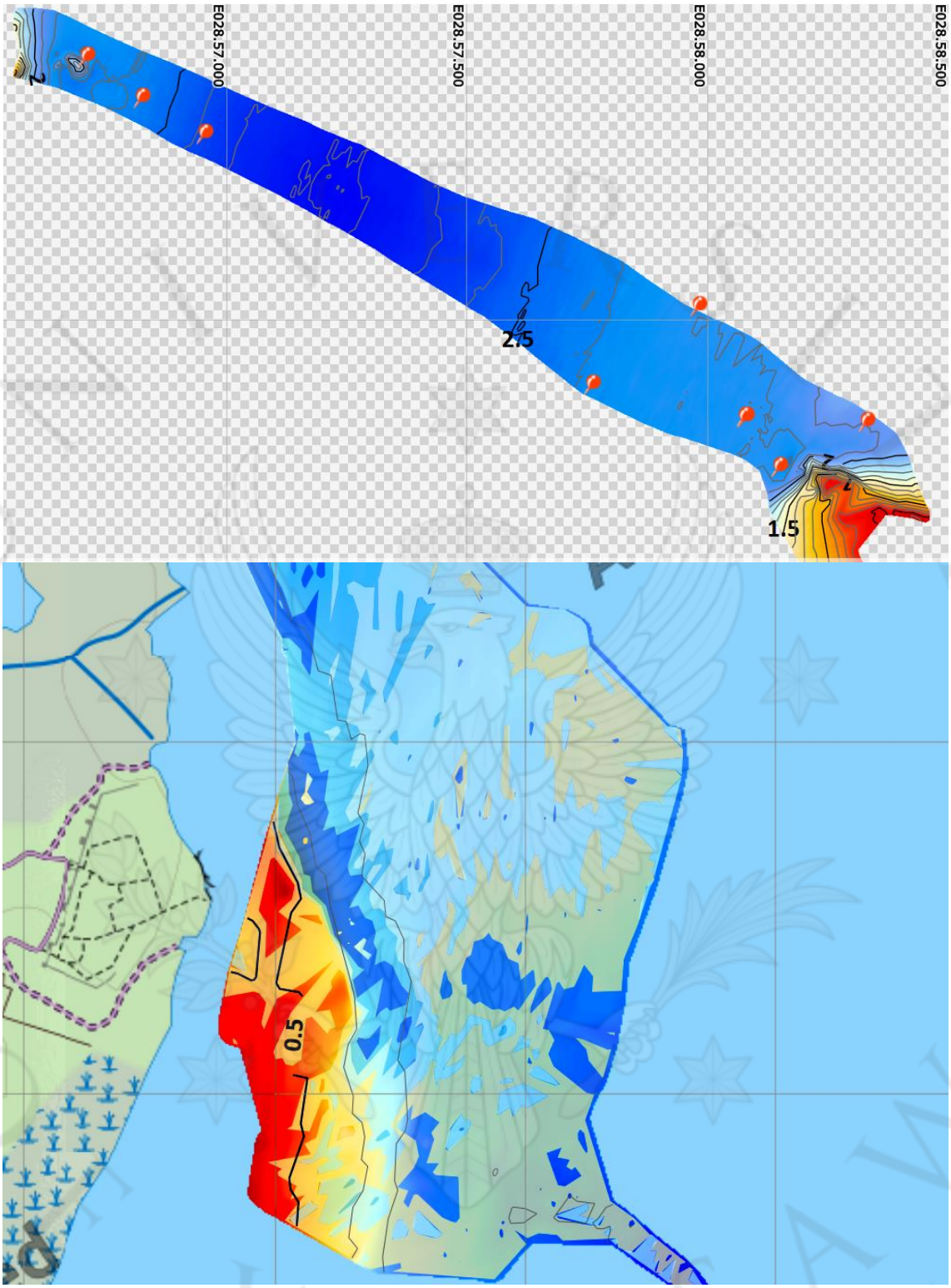

Fig. 4a, 4b – Bathymetry of *Histria* (up) and *Argamum* towards Bisericuța islet (down)
(elaborated by: Danube Underwater Heritage Project)

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