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MILITARY AND CIVILIAN SITES IN THE HINTERLAND OF *TROESMIS* (TURCOAIA, TULCEA COUNTY, RO)

Abstract: Within the framework of a multidisciplinary research project (2010-2015), the basic features of the topography of the Roman-Byzantine settlement at *Troesmis* (Turcoaia, Romania) could be clarified. Key was the localization of the approximately 16 ha legionary fortress and the approximately 30-35 ha civilian settlement located nearby. On the basis of old maps, remote sensing data, geophysical prospection as well as extensive field surveys, it was not only possible to determine the boundaries of the ancient settlement, but also to register for the first time numerous new sites in the surroundings of *Troesmis*. The results of the large-scale surveys formed the basis for targeted geomagnetic measurements in the hinterland (in 2015-2017). The central settlement of *Troesmis* is embedded in a dense network of roads and rural settlement sites of different types. The water supply was mostly provided by an aqueduct, the course of which could be verified over a length of about 7 km. Furthermore, two temporary Roman military camps could be detected for the first time in the region.
Keywords: *geophysical prospection, archaeological survey, temporary camp, rural settlement, water supply.*

Cristina-Georgeta ALEXANDRESCU
"Vasile Pârvan" Institute of Archaeology, Bucharest
cgetalexandrescu@gmail.com

Christian GUGL
Austrian Academy of Sciences,
Austrian Archaeological Institute, Vienna
christian.gugl@oeaw.ac.at

Gerald GRABHERR
Institute for Archaeology, University of Innsbruck
gerald.grabherr@uibk.ac.at

Barbara KAINRATH
RA Research Archaeology
barbara.kainrath@uibk.ac.at

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TROESMIS-PROJECT[1]

The "Vasile Pârvan" Institute of Archaeology, in cooperation with the Austrian Academy of Sciences and the University of Innsbruck, has been conducting multidisciplinary research in the *Troesmis* area (Fig. 1), in Northern Dobruja (RO)[2] since 2010. The monuments still visible above the ground could be documented (Fig. 2) during these years. These monuments include the Late Antique Eastern fortification, the Middle Byzantine Western fortification and the remains of the former *canabae* from the 2nd/3rd century, which were uncovered during the rescue excavations in 1977[3]. The *Troesmis* area is ideal for non-invasive archaeological prospection, because nothing is overbuilt, apart from an agro-industrial complex.

The extent of the ancient settlements can be very accurately determined (Fig. 3), thanks to the field surveys and the geomagnetic

[1] This paper was presented to the 24th International Congress of Roman Frontier Studies, Serbia 2018. Given the significant delay in publishing the conference proceedings, the authors decided to withdraw the manuscript and publish it in this journal. No changes have been made to the content since the article was completed in May 2019.

[2] The research results for the 2010-2014 period were presented in several interim reports and studies (ALEXANDRESCU *et alii* 2014; ALEXANDRESCU/GUGL 2015; ALEXANDRESCU/GUGL 2016; GRABHERR/KAINRATH 2016; GUGL/WALDNER 2016b), and finally in ALEXANDRESCU/GUGL/KAINRATH 2016.

[3] SIMION *et alii* 1980.

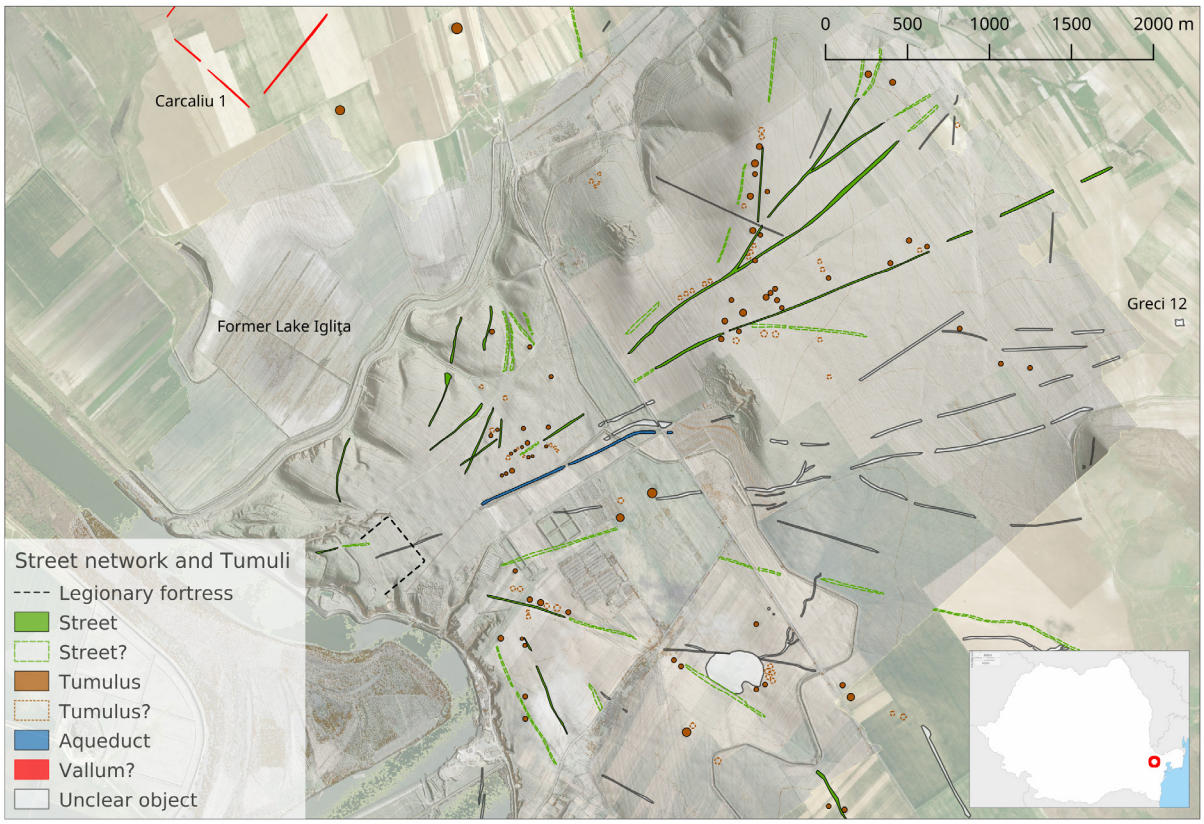

Fig. 1. Air photo interpretation of the *Troesmis* area (processing status: 2015). – © Gugl (ÖAW-ÖAI); orthophoto: ANCPI Bucharest.

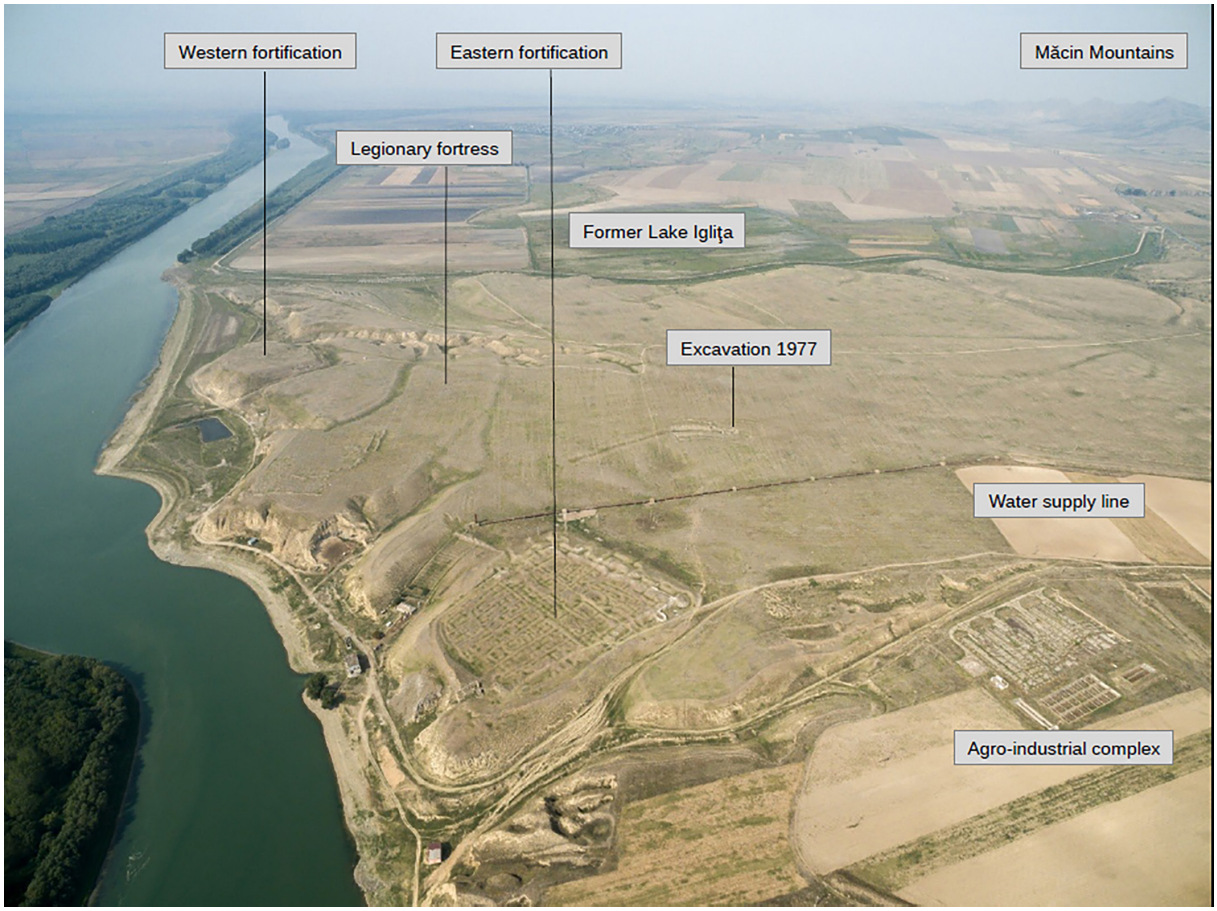

Fig. 2. Oblique air photo of the *Troesmis* site, view from the southeast (2015). – © Gugl (ÖAW-ÖAI).

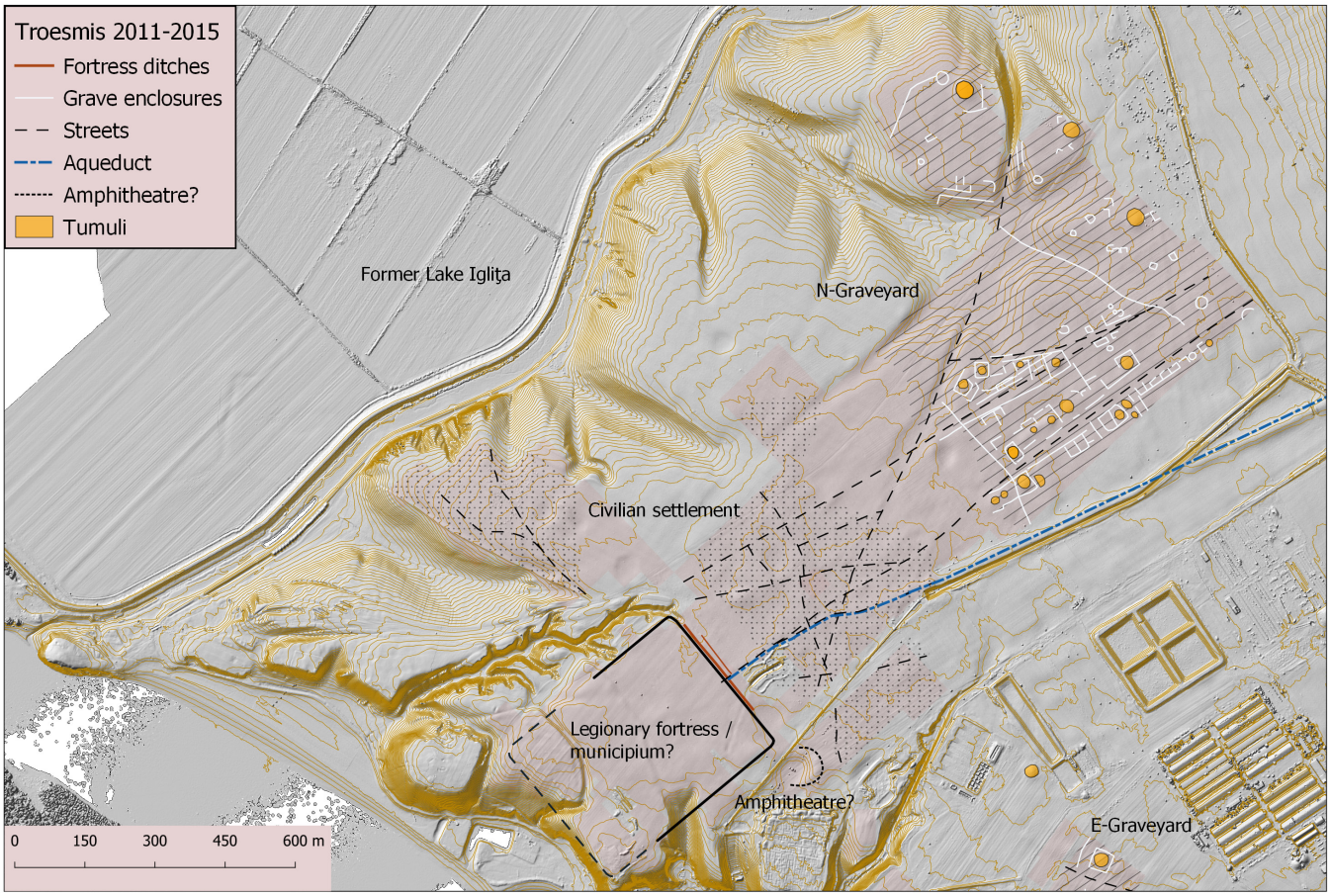

Fig. 3. *Troesmis* - general map of the archaeological discoveries 2011-2015: in transparent-light red - geomagnetically surveyed areas. © Gugl (ÖAW-ÖAI); DTM: ALS data provided by Airborne Technologies (Wiener Neustadt).

measurements in particular. The maximum area of the civilian settlement in front of the legionary fortress ranged from 30 to 35 ha. The most successful results were obtained in the northern and eastern graveyards. The used methodology made it possible to document for the first time the structure of necropolises that are characterized by burial mounds and enclosure ditches. The location of the fortress of *legio V Macedonica*, from which three sides of the camp could be detected, was essential. The praetorial front facing the Danube can be reconstructed on the basis of various indications. Therefore, the area of the legionary fortress covered about 16 ha[4].

Troesmis lied in a very fertile landscape between the meandering Danube and the Măcin Mountains, a Hercynian mountain range running from northwest to southeast (Fig. 2 and 4)[5], with heights of up to 467 m. The settlement area is bordered by Iacob and Priopcea hills on the southeast. On the northwest, a wetland between Pricopan Hill and the Carcaliu Hill forms a border towards ancient *Arrubium*, today's Măcin. The geological subsoil is covered by a loess layer. The flood-safe loess terraces rise 30 to 40 m above the river level, but drop down steeply to the Danube valley. The loess plain is crossed by several streams, which spring from the Măcin Mountains. One of them is Valea Plopilor, which extends into a wetland north of *Troesmis*.

Remote sensing data are essential for the reconstruction of the ancient road network and the identification of settlement sites in the surrounding area[6]. Due to the topography and the location of the groups of burial mounds, the roads to the north, south-east and into the hinterland to the east can be reconstructed (Fig. 3-4). In contrast to *Durostorum* and *Novae*[7], the topographic situation is different in *Troesmis*. Instead, the main and secondary roads come from the hinterland towards the Danube, where they lead to two of the gates of the legionary fortress, *porta decumana* and *porta principalis sinistra*.

WATER SUPPLY

In recent years (2016-2017), it was possible to clarify the course of the main water pipeline almost completely (Fig. 4). On the western slope of the Măcin Mountains there are now numerous find-spots of ceramic water pipes (Fig. 5)[8].

[4] GRABHERR/KAINRATH 2016.

[5] For the geological map, see Alexandrescu/GUGL/KAINRATH 2016, Fig. 1. On the landscape changes and anthropogenic intervention, see Alexandrescu/GUGL/KAINRATH 2016, 15-28; ALEXANDRESCU/OLARIU 2017.

[6] ALEXANDRESCU/GUGL/KAINRATH 2016, 452-465, Fig. 177-178.

[7] Durostorum: DONEVSKI 2006; TOMAS 2017, 98-104; Novae: TOMAS 2016; TOMAS 2017, 45-50, Fig. 15.

[8] The documentation up to 2014 was published within ALEXANDRESCU/GUGL/KAINRATH 2016, 473-482. The newest results will be prepared for publication in the second monographic volume of the ***Troesmis*** project.

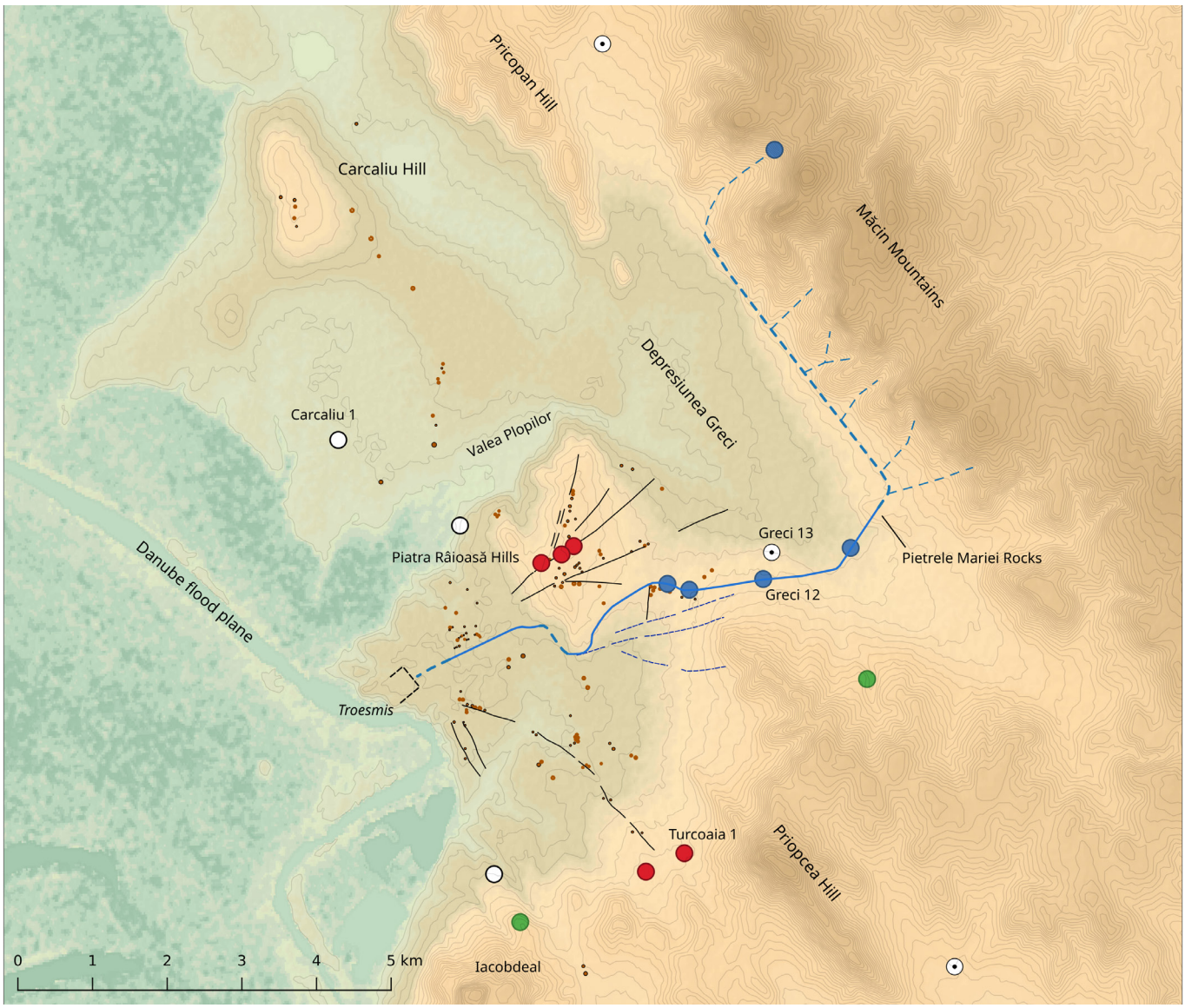

Fig. 4. The hinterland of Troesmis: ancient roads, Roman tumuli and aqueduct. – Sites along the main roads (red), sites on topographically prominent points (green), remote/protected sites (white circle with black dot), sites along the water supply line (blue), other (non-classified) sites (white). – Gugl (ÖAW-ÖAI); DTM: SRTM-data.

Fig. 5. Ceramic tubes of the Roman water supply system found on the western slope of the Măcin Mountains. – © Alexandrescu (IAB).

In the impassable valleys and gorges, there may have been tributaries to the main water pipeline, which probably ran along the foot of the mountain. The further course is validated over a length of seven kilometers from the rocky hills of Pietrele Mariei onwards to just before *Troesmis*. Due to the building material (stones, clay building materials, mortar) visible above ground, the results of the geomagnetic survey and the topography, it should be assumed that the water pipe was constructed differently depending on the line section. The Greci basin (Depresiunea Greci) was probably crossed by means of a pressurized water pipe (Fig. 6). Fragments of ceramic pipes can be found up to here. Afterwards, there are still remains of walls, of covering stone slabs, but no more ceramic pipes. The water pipe follows the contour lines by running south of the Piatra Râioasă Hill. The last section, however, which is severely disrupted by land development measures, is documented in aerial photographs from the 1950s.

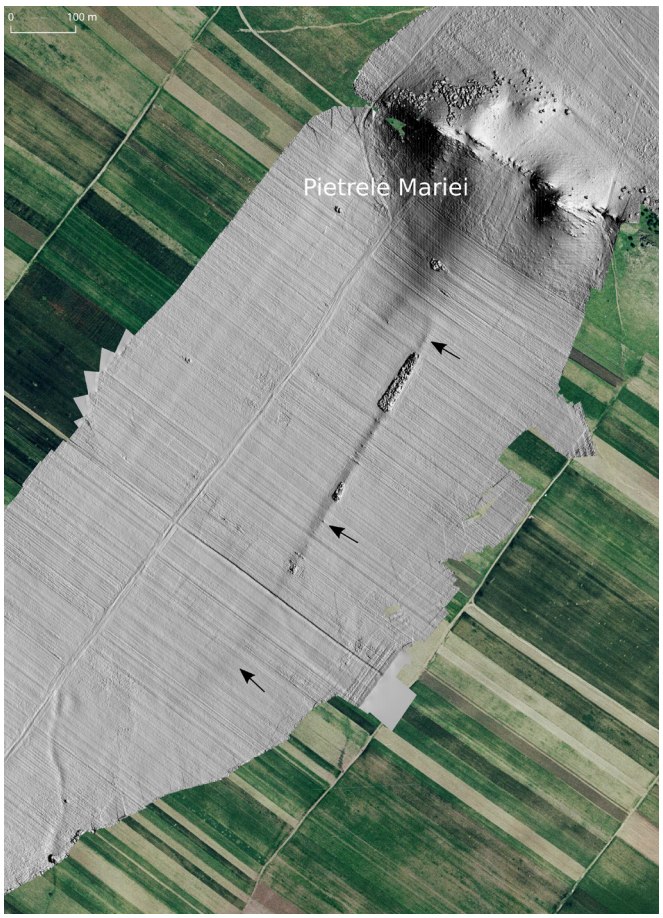

Fig. 6. The Roman water supply line at the site of Greci 2 (southwest of the rocks of Pietrele Mariei). – © Gugl (ÖAW-ÖAI); DTM: Hernandez Cordero (ÖAW-ÖAI); orthophoto: ANCPI Bucharest.

In *Moesia Inferior*, a similarly elaborately constructed water pipeline had previously been examined in greater detail only in the area of *Tropaeum Traiani*[9]. There are technical design similarities between the two water supply systems. The new monographic publication of the research on the water supply system of *Nicopolis ad Istrum* provides insights into the technical details of the system as well as observations on the chronological aspects of the problem, analysing also the available information on the water supply system for 19 ancient sites on the territory of Bulgaria[10]. In addition, G. Papuc published in 2005 his results on the water supply of Roman and Late Roman *Tomi*[11]. In order to clarify further questions on the chronology and, in particular, on technical details in *Troesmis*, specific excavations will have to be carried out at key points.

RURAL SETTLEMENTS

Apart from the road network and the water pipeline[12], a number of other ancient sites can now be located in the hinterland of *Troesmis*. Most sites in the investigation area have only been discovered in recent years through the systematic use of air photo interpretation, field surveys and magnetic prospection as well as with the help of the local population. Based on their topographical position, the following classification can be made (Fig. 4):

a. sites along the main roads;
b. sites on topographically prominent points such as a ridge;
c. remote, protected sites in the rear valley areas.

Especially in the Greci basin, alongside the Măcin Mountains and the Priopcea Hill, one can find several remote, isolated side valleys, in which Roman sites on the bottom of the valley could also be located.

For the first time, a rural settlement in the immediate vicinity of *Troesmis* could also be identified. The site of Turcoaia 1 (Fig. 7) is not far from the main road to the southeast, on the southwest slope of the Priopcea Hill. Due to the distribution of the surface finds and the geophysical measurements, two larger buildings could be interpreted. The eastern building appears to be a negative anomaly in the prospection data. It measures about 40 by 20 m and is apparently made of stone. It is a long rectangular building with several rooms, probably also with corner pavilions. The second building, which is situated some 50 m to the west, can be identified only by the artifact distribution on the surface. Magnetic measurements are affected here by the concentrated occurrence of roof tiles and pottery sherds. Several linear anomalies can be seen around the buildings. They certainly do not belong to a perimeter wall. It is more likely to interpret them as remains of the old road network[13] or of the modern irrigation system. At this stage of our knowledge, site Turcoaia 1 is one of the few examples of a villa-like complex in the vicinity of a Roman city in the north of *Moesia Inferior*[14].

In the surroundings of this 'villa' - on the southwestern slope of the Priopcea Hill (Fig. 4) - a votive inscription to Liber Pater (*ISM* V 218) came to light as early as 1913[15]. Marcus Antistius Caecina, an eques of the *ala I Dardanorum Antoniniana*, donated it *ex viso* in the early 3rd century. The unit has been documented in the army of the province of Moesia since the 70s of the 1st century AD[16]. In the 2nd and 3rd century, the ala is in *Arrubium*, 13 km north from *Troesmis*, in garrison. The Antistii family, originally from Galatia, has been epigraphically recorded several times in the *Troesmis* area since the 2nd century, where both veterans

[9] ȘTEFAN 1972.
[10] TSAROV 2017.
[11] PAPUC 2005.
[12] See also ALEXANDRESCU/GUGL/KAINRATH 2016, 445-482.
[13] In one case, a road is still visible on an old map from the mid-20th century: Sheet 5352 (Carcaliu) of the Romanian maps under 'Lambert-Cholesky' projection system. Army Geographic Service 1940, 1:20,000. On the cartographic record of the region, see ALEXANDRESCU/OLARIU 2017.
[14] Roman rural settlements in the northern part of Moesia Inferior have been archaeologically investigated only by chance. Under these circumstances, the identification of settlement nuclei as villa, farm or vicus are based only on circumstantial and subjective criteria. More often, the state of research is limited to the historical interpretation of epigraphic evidence and analogies with the Mediterranean regions and with the archaeological finds from the southern part of *Moesia Inferior* and other Danubian provinces. For the state of research, see for instance: BAUMANN 1983; OPAIȚ/OPAIȚ/BĂNICĂ 1992; SUCEVEANU 1998; DINCHEV 2006; POULTER 2007; BÂLTÂC 2011; RIND 2015, 220-226.
[15] COATU 1930, 16-17.
[16] MATEI POPESCU 2010, 169-172.

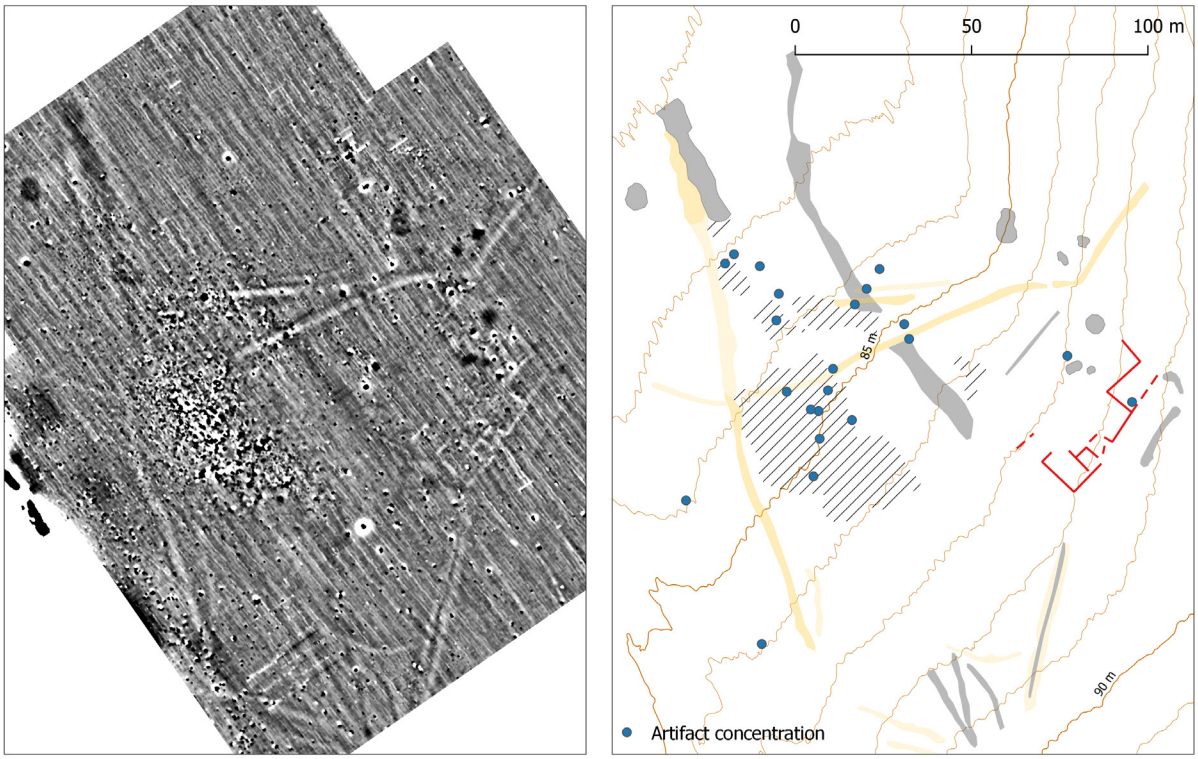

Fig. 7. The site of Turcoaia 1 - magnetogram and interpretation: in red - the eastern Roman building. – © Gugl (ÖAW-ÖAI); geomagnetic image: Grabherr /Kainrath (University Innsbruck).

Fig. 8. The site of Greci 12- magnetogram and interpretation. – © Gugl (ÖAW-ÖAI); geomagnetic image: Grabherr /Kainrath (University Innsbruck); orthophoto: ANCPI Bucharest.

and civilian dignitaries are known[17]. It cannot be excluded that 'villa' Turcoaia 1 was owned by the Antistii family and that a sanctuary was located in the immediate vicinity of the country estate.

The sites Greci 12 and Greci 13 are two examples of remote sites in the eastern part of the settlement area, about 5 km from *Troesmis*, behind the Piatra Râioasă hill range (Fig. 4). At the site Greci 12, the geophysical measurements should clarify whether a crop mark visible on aerial photographs belonged to the Roman water supply system or not[18]. Finally, it turned out that the water pipe passed south of the rectangular structure (Fig. 8). Apparently, the structure visible on air photos is a large, isolated tumulus in a tomb precinct[19].

The Greci 13 site, about 350 m to the north of Greci 12, comprises one or more stone buildings spread over an area of about 80 by 45 m, which can be located by striking concentrations of stones, roof tiles and ceramic vessels as well as the magnetogram, which is difficult to interpret (Fig. 9). To the north of this building complex, a ditch runs along in east-west direction. Its function, possible connection to the main water supply line and dating remain unclear.

TEMPORARY CAMPS

Surprisingly, the magnetogram of the Greci 13 site also showed the southern corner of a Roman camp, which

[17] MIHAILESCU BÎRLIBA/DUMITRACHE 2012, 42-43. 62-63.

[18] For its localization and first interpretation, see ALEXANDRESCU/GUGL/KAINRATH 2016, 482, Fig. 193/7.

[19] Similar features have been identified within the necropolis: KAINRATH/GRABHERR 2016, 193, Fig. 134, tumulus T23.

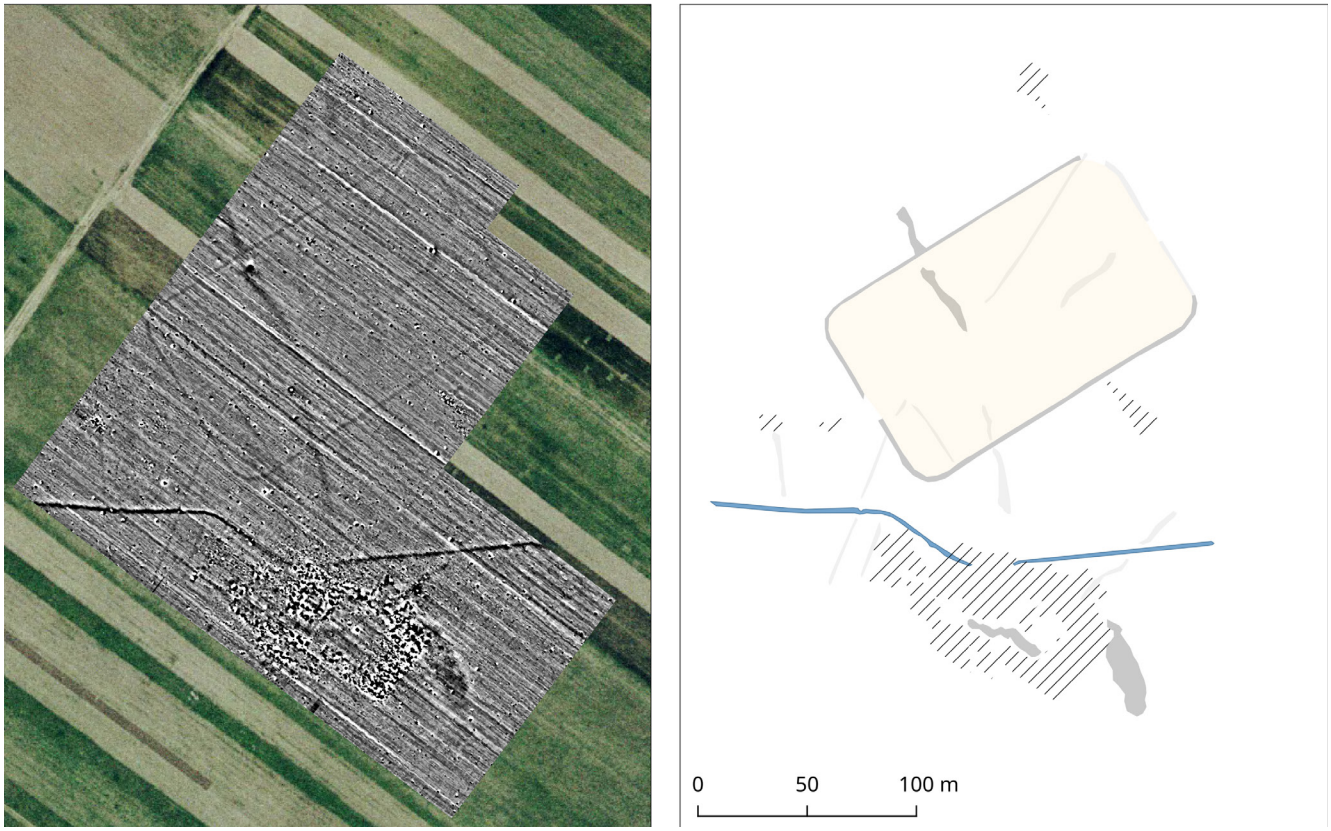

Fig. 9. The site of Greci 13 - magnetogram and interpretation. – © Gugl (ÖAW-ÖAI); geomagnetic image: Grabherr /Kainrath (University Innsbruck); orthophoto: ANCPI Bucharest.

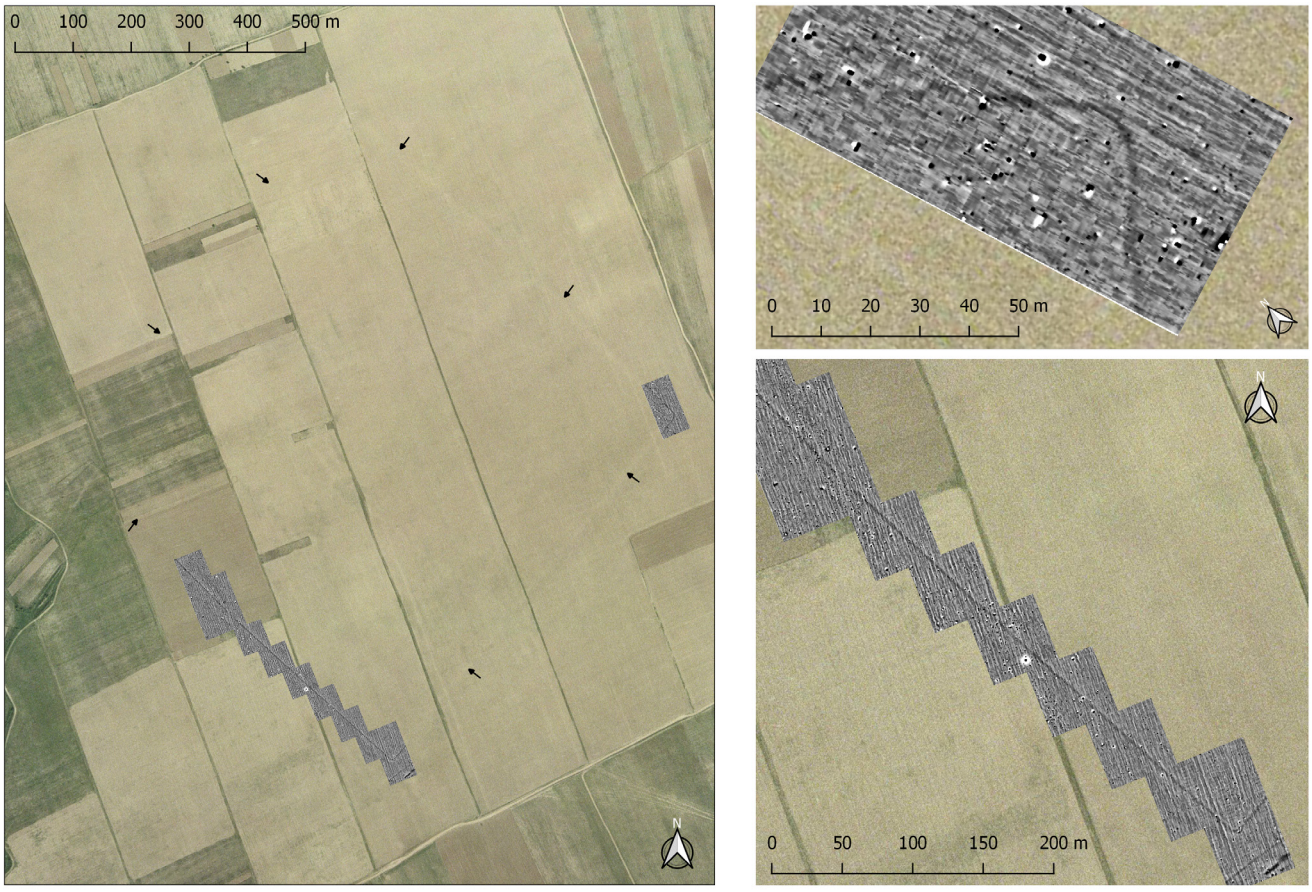

Fig. 10. The site of Carcaliu 1 - air photo and magnetogram. – © Gugl (ÖAW-ÖAI); geomagnetic images: Grabherr /Kainrath (University Innsbruck); orthophoto: ANCPI Bucharest.

was then measured in its full extent (Fig. 9). The camp (about 152 x 92 m) is southwest-northeast oriented. While no gates can be seen on the long sides, there could have been one entrance in central position on each of the two short sides. Compared to a permanent fort, the size of 1.3 ha would provide space for a *cohors quingenaria peditata*.

The second known temporary military camp is located about 3 km north of *Troesmis* in the territory of today's village of Carcaliu (Fig. 4), near the Danube. The site was identified several years ago on aerial photographs on the basis of specific crop marks[20]. At first, it seemed that the corners of the simple trench were pointed (Fig. 1). During the geomagnetic measurements in 2017, it turned out that the southern and eastern corners were rounded (Fig. 10). The course of the southwest side could be followed over a length of almost 500 m. Here the magnetogram seems to show a gate situation. The ditch is likely to be interrupted over a length of about 15 to 17 m. A linear, positive anomaly could be observed about 10 to 11 m in front of the ditch. This may be a *titulum*. Further gates are currently not known. According to the aerial photos, the whole complex is almost square with dimensions of approximately 760 by 770 m. This results in an inner area of around 57 to 58 ha. According to the current state of knowledge, this very large complex has to be interpreted as a temporary Roman military camp[21]. Further investigations are planned to clarify the ground plan and dating.

Until now, temporary military camps of the Roman Imperial period have not been the focus of research in the province of *Moesia Inferior*. Around a legionary base like *Troesmis*, numerous military facilities used for a short time, as for instance in *Carnuntum* or *Brigetio*[22], have to be taken into consideration. With prospection data alone, it is almost impossible to make statements about the function and historical background of the camps. Due to its dimensions, the Carcaliu camp is likely to have housed a major military force during a campaign.

In *Troesmis*, the methodical approach of carrying out large-scale prospections has proved very successful. After seven years of field research, the complex settlement structure around *Troesmis* has become somewhat clearer. On the middle and upper Danube and in the north-western provinces, it is certainly easier to carry out projects with comparable objectives. Apart from *Novae*, there are hardly any activities comparable to the *Troesmis*-project on the Lower Danube. The surveys of recent years have highlighted the strengths and weaknesses of this methodological approach. Of course, it would be useful for both science and heritage management to obtain further information about sites in the surrounding area of *Troesmis*, continuing on this methodological basis. However, it will be possible to answer further questions in more detail only by means of archaeological excavations.

[20] ALEXANDRESCU/GUGL/KAINRATH 2016, 27-28, Fig. 13.

[21] See also the large temporary camp from Engelhartstetten: GROH/SEDLMAYER 2015.

[22] NEUBAUER *et alii* 2018, 65-70 Fig. 27, 30, 36, 39-42, 44, 56-57.

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