

## REVISITING CAPUT BUBALI – RESULTS OF THE TOPO SURVEY ON THE ROMAN FORT IN CORNUȚEL (CARAȘ-SEVERIN COUNTY)

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(Abstract)

This paper reports the non-invasive research on the archaeological site in Cornuțel. The Roman fort, located deep in the woodland, is not visible in the freely accessible remote sensing data, i.e. maps, low-resolution digital surface models, and aerial and satellite imagery. We present here the results of a topo survey in and rendered high-resolution topographical models of the fort.

The research was conducted in March 2015, as a part of the “Tibiscum Project” – a Polish-Romanian research project, funded by the Ministry of Science and Higher Education in Poland within the Diamond Grant program<sup>\*\*\*</sup>. Based on the results of the survey along with the analysis of previous materials, we have established that the earth and timber fort measured 45 × 45 m and it was located in the vicinity of the roman road between *villa rustica* from Brebu, excavated by Ovidiu Bozu, and the large castellum from Tibiscum-Jupa (the present day Archaeological Reservation).



Fig. 1 – The 1999 plan of the fortlet georeferenced with GIS tools, based on the collected topo survey data.

fortification on the Tabula Peutingeriana, *Caput Bubali* (ox's head) with the position of a high fort guarding the imperial road<sup>1</sup>. The small fortlet, located approx. 10 km West from Tibiscum (almost a marching day for a campaign army), was discovered for the first time, in the 19<sup>th</sup> century, by the diligent pioneer of Banat archaeology, a Highschool professor Gábor Téglás. Decades later, the naturalist Alexandru Borza in the interwar period of the last century, confirmed the existence of this fort

### Introduction

The existence of a Roman fort in the area of modern village of Cornuțel (Caras-Severin county, Romania), on the Limes-line Lederata – Zăvoi, was demonstrated by Dumitru Tudor, who correlated the toponym before the Tibiscum

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<sup>1</sup> Tudor 1967, 48.

and the fact that it was made of timber and earth, located close to the ancient stone-paved road crossing the forest<sup>2</sup>. There are no finds that would allow the identification of the military garrison unit, nor to determine the chronology or construction phases of this structure<sup>3</sup>.

The only graphical plan of the fort has been published in 2000 by the main author of this paper<sup>4</sup>.

*The geographical situation and background of the research*

The site is located in the woodland of Paltiniș forestry administration, close to the border of the territorial unit of the commune of Brebu, but geographically closer to the village of Cornuțel. This fact favoured the naming of the fortification by the researchers after the latter locality. The site („Cetățuie” point on the top of a hill) can be reached from Caransebeș – Reșița road. Heading to Reșița, approx. 400 m from the 8th-kilometre



Fig. 2 – The location of the fortlet on the first Habsburg military map of Banat.



Fig. 3 – The location of the fortlet on the second Habsburg military map of Banat.

<sup>2</sup> Borza 1943, 66–67.

<sup>3</sup> Benea 2016, 142.

<sup>4</sup> Lungu *et alii* 2001.



Fig. 4 – The location of the fortlet compared between an old austrian map from years 1763–1785 and up-to-date satellite imagery from Google Earth. The evolution of the landscape and changes in the land use might be noticed (after Nemeth et alii 2011, fig. 14)

road sign, a dirt road is going up to the forest and passing under the high voltage wires of the Oțelul Roșu – Reșița line leads to the top of the hill, where the *castellum* is located<sup>5</sup>. Approximate coordinates of the location of the fort in Stereo70 Romanian National Coordinate System are: 272000E, 439950N.

The plateau on which the Roman fort is located offers a good perspective to the northeast to *Tibiscum*-Jupa and southwest towards Brebu. The water supply was assured thanks to the spring located approx. 100 m to the north. The spring is still active today, even during periods of drought.

<sup>5</sup> Lungu et alii 2001, 113.

From the geological point of view, the site is located on Pliocene gravels, sands and clays<sup>6</sup>.

Taking the history of the research into account, the fortification at Brebu-Cornuțel did not draw too much of the researchers' attention. Téglás's discovery, followed by the field research by Alexandru Borza, for a long time was not considered much credible by Romanian archaeologists specializing in Roman military. This may explain the absence of the site in *Limes Dacicus* of Nicolae Gudea (published in 1997)<sup>7</sup>. The only scientific interest and activity related to the site was a survey carried out

<sup>6</sup> Harta Geologică a României, scara 1: 200 000

<sup>7</sup> Gudea 1997, 23–33.

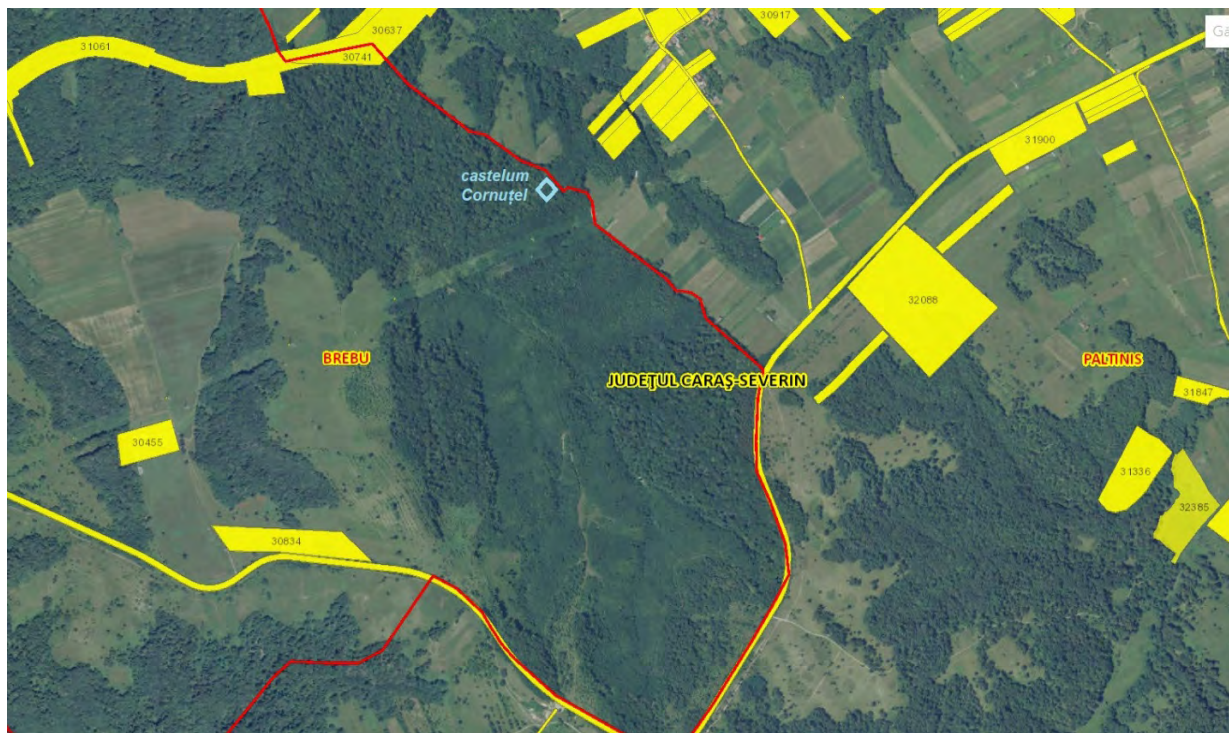


Fig. 5 – The place of the fortlet in relation to the administrative limits of Brebu and Păltiniș localities. After the Romanian digitalized cadastral (ANCPI).

in the Summer of 1999 by a group of archaeology students from the West University of Timișoara (UVT). At first glance, based on the topography of the site, it seemed to be a road *statio* – a fortlet from emperor Trajan’s reign time. This type of a structure was very common for the first years of the province of Dacia. The 1999 survey revealed that the site was devastated by the illegal activity of treasure hunters. Large pits dug by the looters harmed the archaeological substance severely, especially the northern side of the fortlet<sup>8</sup>.

Based on observations made by Timoc and Lungu in 1999, it was possible to provide the rough dimensions of the fort. The 1999 students’ survey was carried out with rather modest technical means – a tape measure and some basic excavating tools. The team was not capable of delivering the precise topography model, nor the geographical location of the place<sup>9</sup>. For more precise details, a return to the area with more up-to-date surveying methods was necessary.

The opportunity came only in 2014, when the Polish-Romanian “Tibiscum Project” was launched<sup>10</sup>. The research focused on the hinterland of the Tibiscum Roman fort and *municipium*, as a part of the trending Landscape Archaeology

studies, taking into account not only the archaeological substance, but evaluation the whole landscape in which the human activity in the past was set<sup>11,12</sup>. Among others, the access ways leading to and from Tibiscum were a subject of that research. One of the targets was the Roman road to Lederata, by which the Cornuțel fortlet was located. After visiting the site in October 2014, more advanced investigations were carried out in Spring 2015.

#### *Aim and Methods*

The 2015 survey aimed at recording the relative ground elevation in order to create a Digital Elevation Model (DEM) of the site. The DEM was supposed to:

- Record the location, shape and size of the fort to update the Romanian archaeological databases
- Provide the data to support and enhance the archaeological interpretation of the site.
- Record the damage done to the site over years by the treasure hunters

The fort has been looted possibly from the 90s until present day. We assume it was done by the local community members, believing that they would find Roman coin hoards<sup>13</sup>.

Topo survey was carried out with Leica TCR407

<sup>8</sup> Lungu *et alii* 2001, 114.

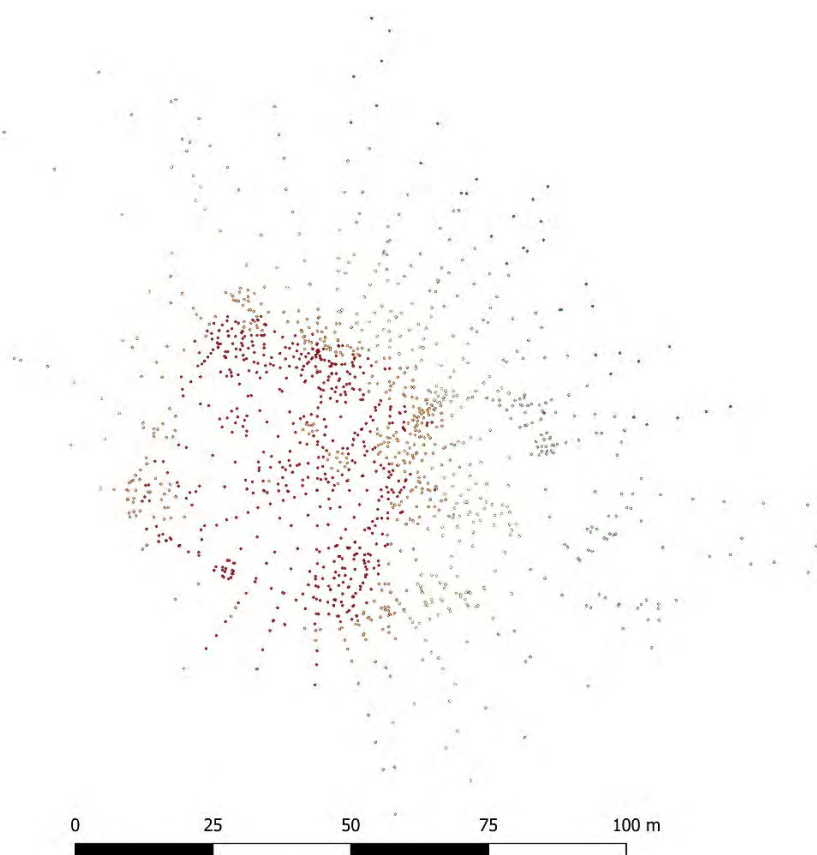
<sup>9</sup> Lungu *et alii* 2001, 114–115.

<sup>10</sup> Pisz, Timoc 2014, 823

<sup>11</sup> Gaffney *et alii* 2018, 255–269.

<sup>12</sup> Hegyi *et alii* 2019, 21–32.

<sup>13</sup> Informations given by Richard Petrovsky. We are thankful for that!



*Fig. 6 – the distribution of all the collected points topo measurements around the site*



*Fig. 7 – Wiktor Rutkowski, member of the Polish team of research, in an attempt to reach the bottom of one of the looting pits on the fort to carry out the topo measurements.*

Total Station. The measurements were taken in a local coordinate system, since no reference points were available for a resection into the national or global coordinate system. Some fixed points have been measured in the local coordinate system in order to reproject the measurements in the Stereo70 system after measuring these fixed points with RTK GNSS. Topo measurements have been taken with a prism. Points were measured randomly with keeping the most regular coverage pattern (Fig. 6). Additional measurement points were taken around

the looters pits, in order to represent their shape and size with greater accuracy (Fig. 7).

### Research Results

The result of the topo survey was a set of nearly 1500 measured points. The points have been gridded and plotted with GoldenSoftware Surfer. Several 3D models and 2D plans of the structure have been rendered, in the way to emphasize the topography of the site (Fig. 8). Subsequently, selected models have been georeferenced (based

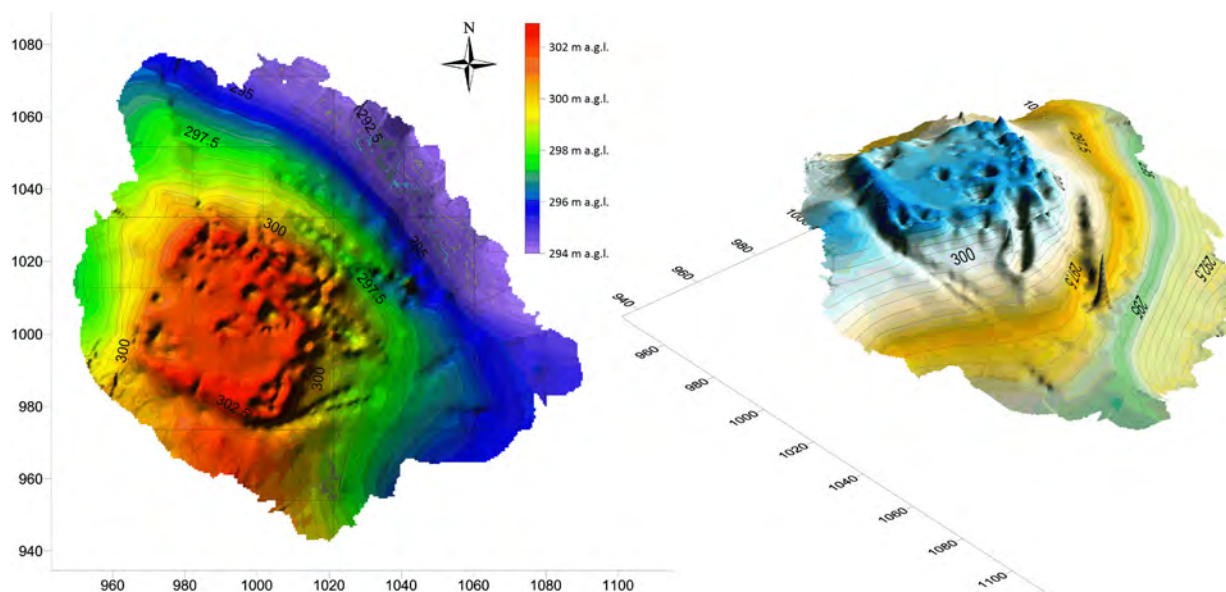


Fig. 8 – 3D models of the site rendered based on the DEM gridded data. X and Y coordinates are given in the local coordinate system, height values are recalculated to meters above sea level values.

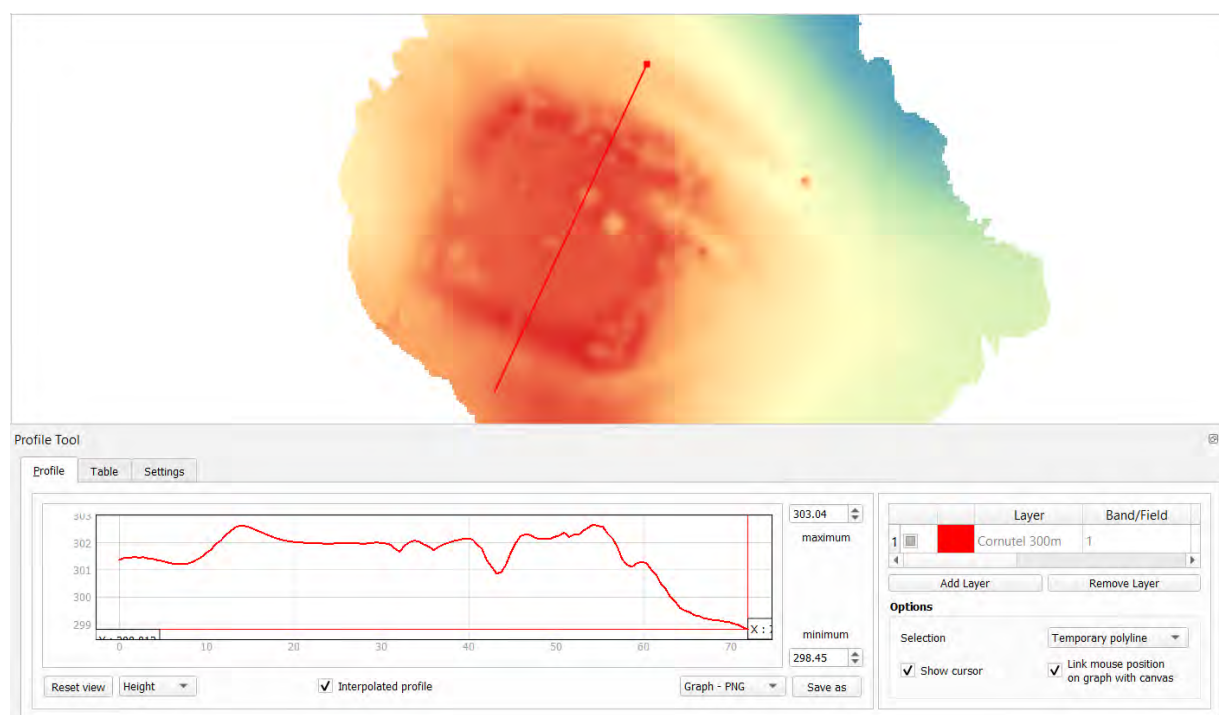


Fig. 9 – Analysis of the processed DEM. GIS tools allowed to analyse terrain elevation's cross sections, including the assessment of the depth of looting pits.

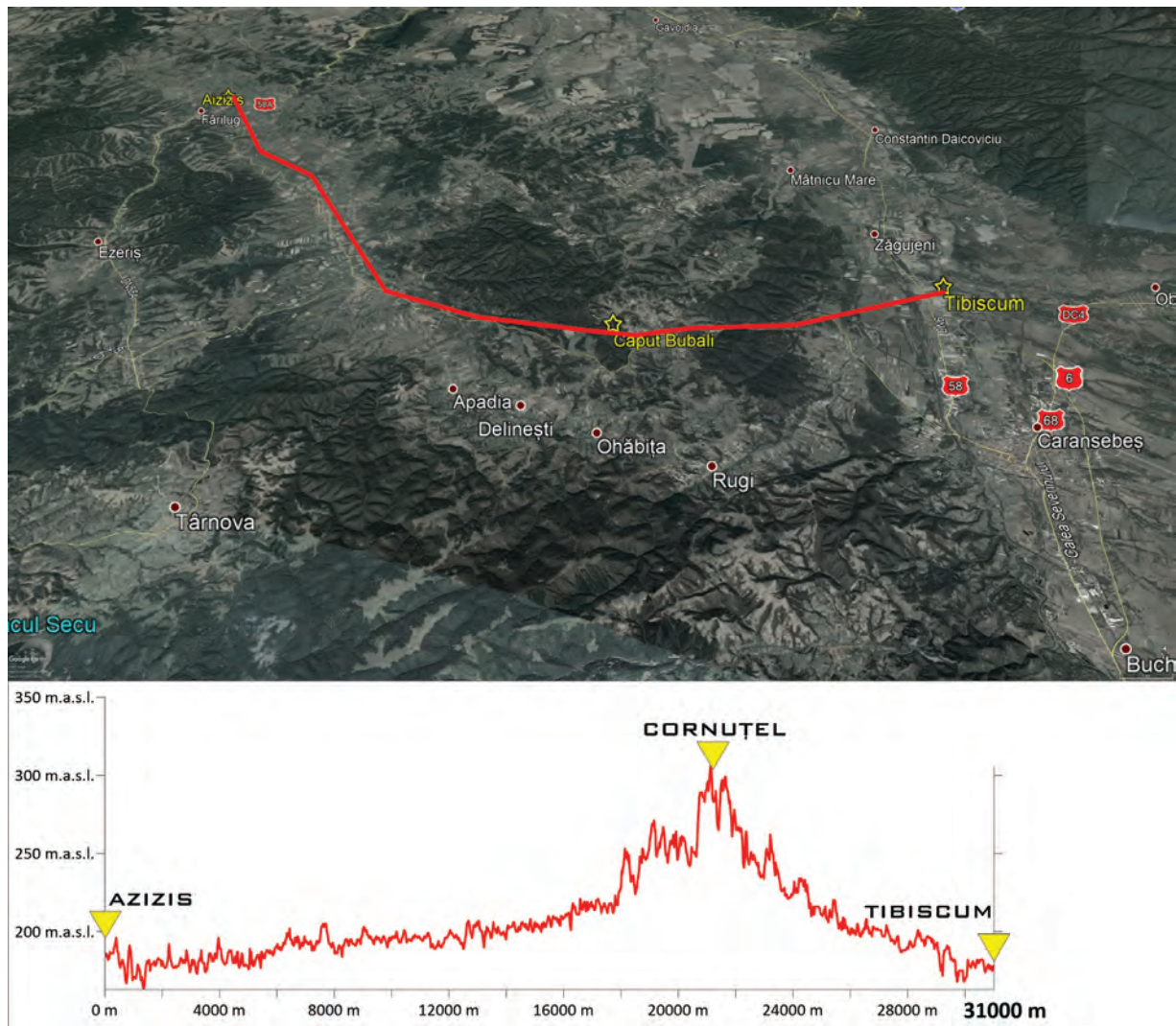


Fig. 10. The topography analysis of the hypothetical course of the Azizis-Tibiscum road leading through Lederata. Elevation model derived from ASTER GDEM data.

on the reference GNSS RTK measurements) and uploaded to GIS database, where more thorough spatial analyses were carried out (Fig. 9).

The DEM, once georeferenced in QGIS, has been analysed and following conclusions were made:

1. The dimensions of the fort are ca. 45 × 45 meters. These are average lengths between the foots of the walls in NNE-SSW and WNW-ESE directions.

2. The estimated surface of the inner plateau is ca. 1200 square meters. It was hard to estimate the actual usable area since the *vallum* is much eroded and devastated. Moreover, we are not certain what was the construction of the fortification – either was it *agger* with a wooden palisade on the top, or a stone wall, which has been dismantled and which remains are currently covered with eroded rampart remains.

Looter pits were present all around the fort, harming both the defensive structures and the inside of the fort.

### Discussions and Conclusions

The archaeological site in Brebu-Cornuțel should be interpreted as a fortlet on the imperial road from *Aizis* to *Tibiscum*. The fortlet was located on the highest point of the course of the road linking both Roman localities. Such a location offered a very convenient point for observing and supervising the imperial road.

We argue that the site might be interpreted as *Caput Bubali*, mentioned in *Tabula Peutingeriana*<sup>14</sup>. The toponym might be associated with the site's topography (ie. ox's head). The Romans might have regarded the highest point on the road as such. Even nowadays, the site forested with young trees is still well pronounced in the landscape, despite the fact that the *agger* is no longer as high as before.

<sup>14</sup> Fodorean 2003, 54.

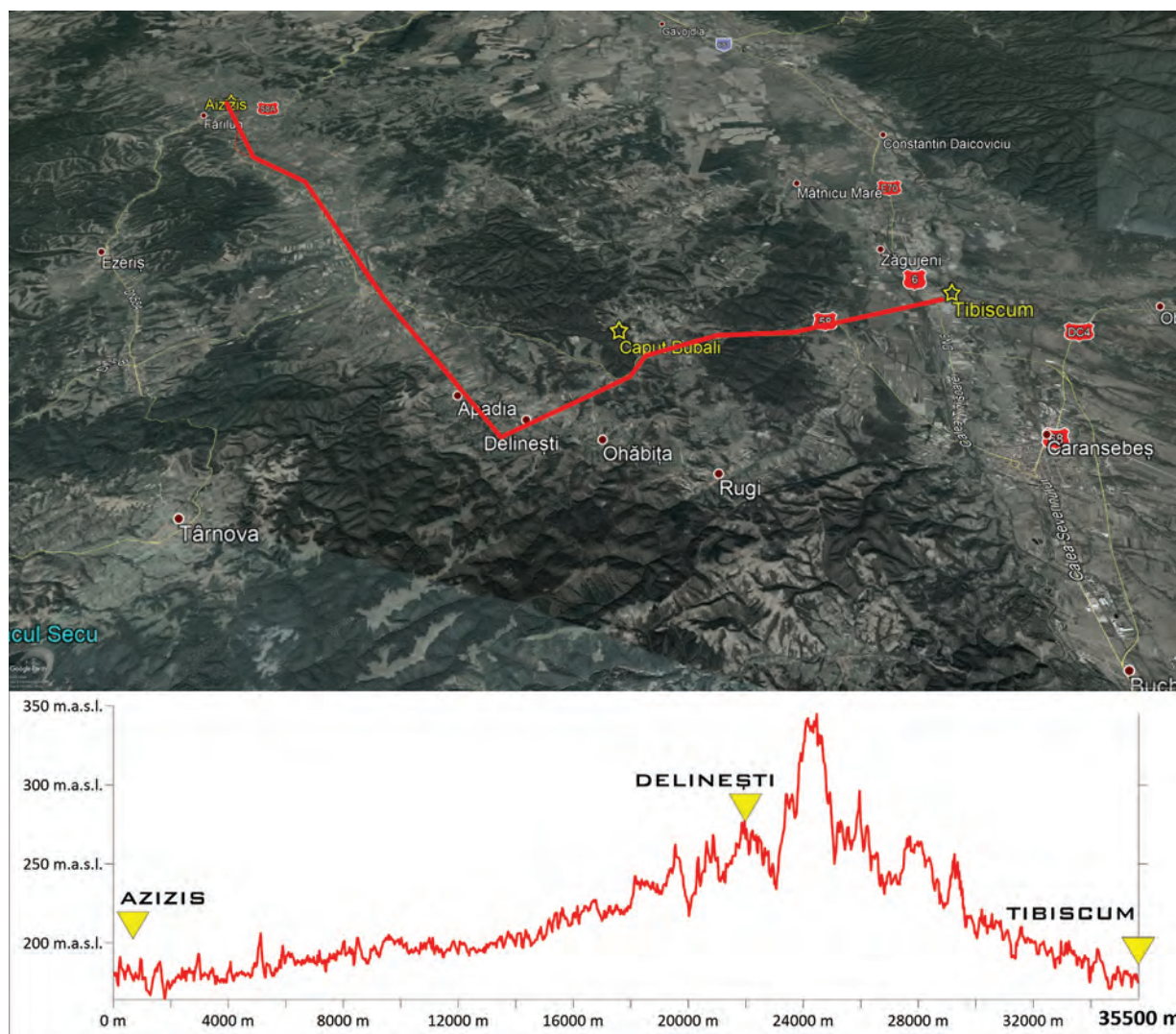


Fig. 10. The topography analysis of the hypothetical course of the Azizis-Tibiscum road passing by Cornuțel fortlet. Elevation model derived from ASTER GDEM data.

Unlike G. Téglás and Al. Borza, who located *Caput Bubali* in Brebu-Cornuțel<sup>15</sup>, Traian Simu reported some information we cannot agree with<sup>16</sup>. We agree with Eduards Nemeth's observations that the defensive and surveillance role of this imperial lasted no longer than the first decades of Roman rule in Dacia<sup>17</sup>. It is likely that the fortlet had been used only for a short period of time (hence the relatively small size and no apparent traces of multiple phases of the structure). Therefore, the erection of the defensive structure must be related to Dacian wars of emperor Trajan. It might have been one of the series of fortifications similar e.g. to Surduc or the first fortlet in Tibiscum-Jupa. The role of such defensive structures was the surveillance and

protection of the strategic imperial infrastructure (ie. road) in order to support the advance of the battlefield<sup>18</sup>.

Besides the toponym and its potential correlation to the site's location in the landscape, as well as the correlation between the site's function and location, we have carried out additional spatial analyses to prove our hypothesis.

The *statio* of *Caput Bubali* was often located in the area of nearby Delinești, approx. 5 km south from the fortlet in Brebu-Cornuțel. Such a location is given e.g. in the Digital Atlas of Roman Empire<sup>19</sup> and was published by certain scholars<sup>20</sup>. We see no justification for such a location of the

<sup>15</sup> Borza 1943, 65–66.

<sup>16</sup> Simu 1924, 34.

<sup>17</sup> Nemeth *et alii* 2011a, 341.

<sup>18</sup> Benea 2016, 149.

<sup>19</sup> <https://imperium.ahlfeldt.se/>

<sup>20</sup> About the problem of identifying in the field the fortification 'Caput Bubali', see: Nemeth *et alii* 2011b, 50–51.



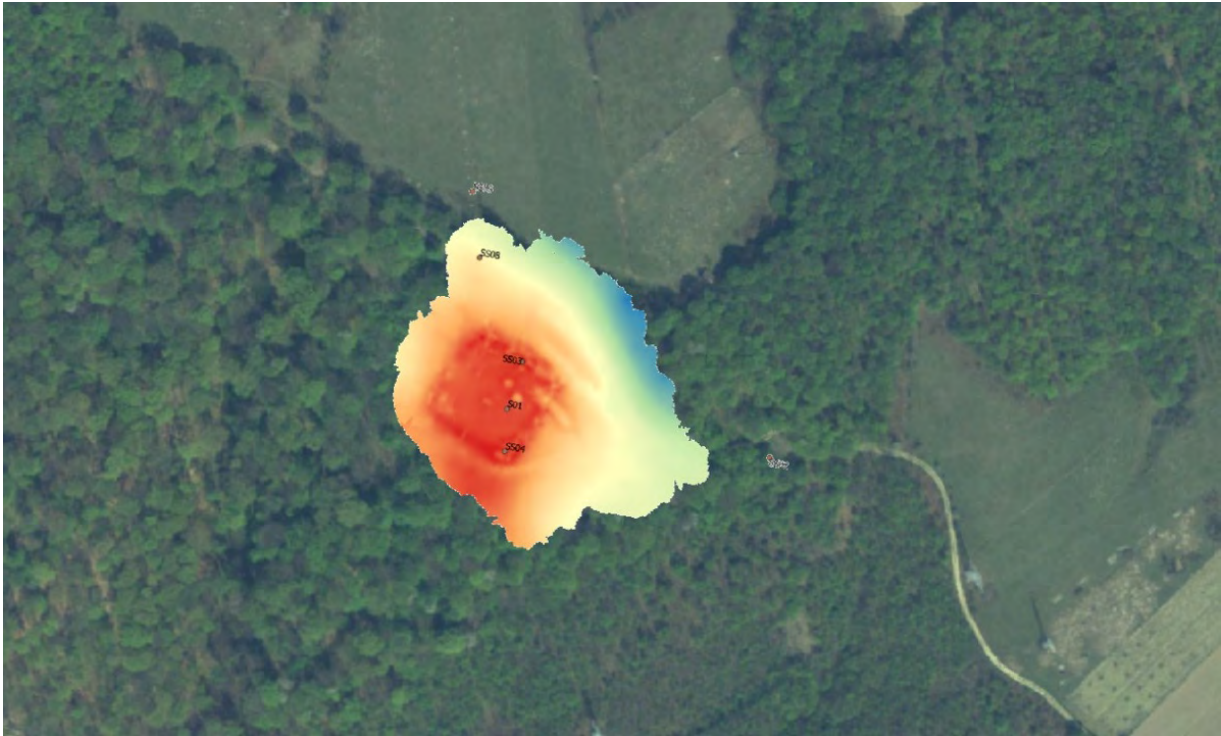


Fig. 11 – DEM of the fortlet derived from Total Station topo survey, georeferenced in QGIS in Stereo70 Romanian national coordinate system.

*statio*, nor the imperial road. We analyzed the topography of the landscape along the potential course of the road from Aizis to Tibiscum.

First of all, the road leading from Azisis to Tibiscum through Delinești would be considerably longer, ie. c. 35 km (Fig. 10), than the road

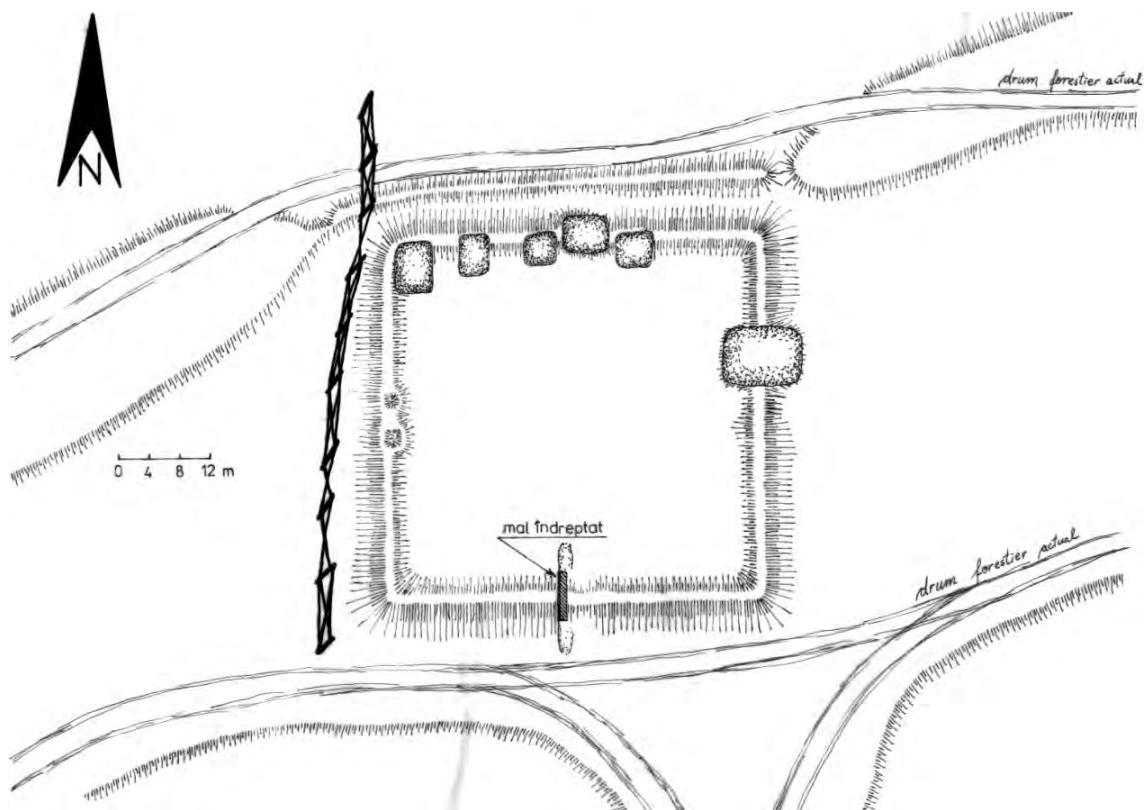


Fig. 12 – Drawings of the Brebu-Cornuțel fortlet sides in 1999, done during a students-survey, after Lungu et alii 2001, fig.1.

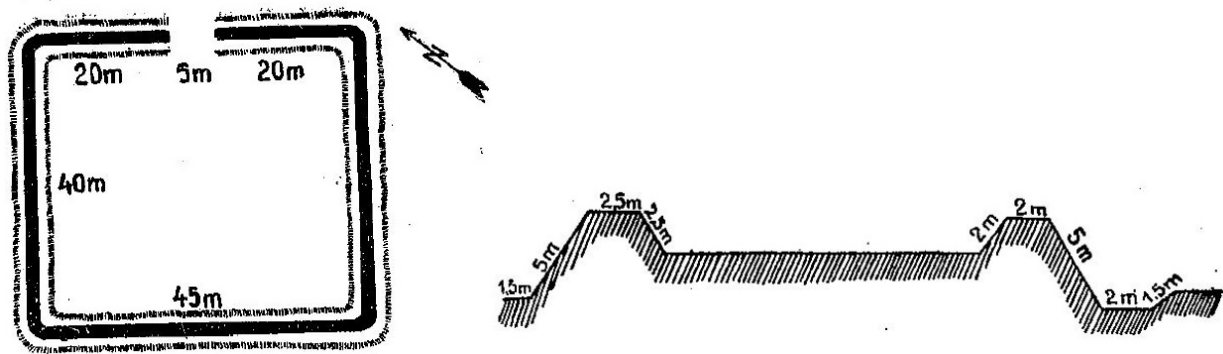


Fig. 13 – Drawings of the shape of the Brebu-Cornuțel fortlet, with earth-structures section made by Gábor Téglaş, after Borza 1943, fig. 13–14.

passing by the Cornuțel fortlet, which would be only c. 31 km (Fig. 11).

Second of all, getting to Delinești would require much more effort, since considerable additional elevations gains would have had to be overcome. Moreover, the location of *Caput Bubali* in Delinești would mean, that the most challenging section of the road would have to be covered within a single attempt, instead of splitting it evenly, by locating *statio* at the highest peak of the trail.

Last of all, the function of a *statio* requires a good overview over the surveilled area. The area of Delinești does not offer such possibilities and Brebu-Cornuțel seems to be much more convenient location for such an activity.

Taken all the above into account, we argue that *Caput Bubali* from *Tabula Peutingeriana* might have been the name of the locality related to the preserved remains of the Roman fortlet in Brebu-Cornuțel, and should not be located in Delinești.

Thanks to the study presented in this paper, we were able to:

- precisely locate the Roman fortlet
- record present a detailed and georeferenced topographical model of the structure (Fig. 11)
- assess the damage done to the site by the illegal looting activity
- compare the scale of the damage with 1999 data derived from drawings (Fig. 12, 13)
- determine the potential function of the site
- associate the archaeological site with a historical record of the archaeological landscape from the Roman period, namely the *statio* of *Caput Bubali*.

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