

Life Along Communications From Roman Times to the Middle Ages

ROADS AND RIVERS 2

Edited by
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Introduction

The research presented in the book was carried out within and was partly financed by the project of the Croatian Science Foundation, LRR - Life on the Roman road: communications, trade and identities on Roman roads in Croatia from 1st – 8th CE (UIP-05-2017-9768). The project aimed to explore various aspects of Roman life brought by the construction of the roads. It is often said that roads in Roman times were the arteries of the Empire itself. They connected provinces and cities; without them, the Romans could not have conquered and held onto the territories they ruled. They were means of moving military officials and civilians and transporting goods. Roman roads gave excellent links for organizing life and establishing various settlements in periods after the collapse of the Empire. The engineering and surveying skills of the Romans provided the basis for many of today's routes. Life on some Roman roads continued after the fall of the Empire and has not stopped until today. The project's main objective is an interpretation of everyday life on the Roman road from the beginning of Roman rule to the period of decline, acculturation and integration of new identities. This project tried to explore a chance for a fresh perspective: how does life develop around Roman roads and a path during the primary usage of the roads and after it's over?

With an interdisciplinary approach to archaeological research and analysis of small archaeological materials, the project tried to present how life on the Roman road was organized. Activities on the project utilize landscape surveys and studies of material assemblages to track the development and decline of the Roman way of life. The broad perspective of the project by the end of the research offers a starting point/foundation for a significant number of future comparisons, analyses and projects. During the Life on the Roman Road project, Roman roads are studied as the essential artery of the Roman world but also as a metaphor for introducing, accepting and living the Roman way of life. After the decline of the Roman world, Roman roads represent the metaphors of heritage and tradition of what was once a vast Empire.

The publication in front of us consists of thirteen papers dedicated to the regions of Roman provinces *Dalmatia*, *Pannonia* and Upper *Moesia*. Contributors to the publication gave their brand new data about research on selected study areas.

The first five articles are dedicated to the Roman province of *Dalmatia*. *Šibenik's Donje Polje* (**review article**) by Toni Brajković, Andrija Nakić and Željko Krnčević and *Discovering Roman Roads of the Trilj Area* (**preliminary communication**) by a group of authors Domagoj Bužanić, Jelena Bužanić, Blaž Glavinić, Karla Ivak, Marko Jukić, Lucija Prusac, Domagoj Tončinić and Ivan Vidović present a new data collected by a field survey of road sections. *A Fort on the Road* (**review article**) by Andrej Janeš and Nikolina Vrančić brings us a report about the fort situated on the coast in present-day Novi Vinodolski; fort Lopar represents a rare example of an early 4th-century AD fortification in the north Adriatic. Ana Konestra, Fabian Welc and Paula Androić Gračanin present (**original scientific paper**) *An Island of Connectedness. Intra-Insular and Inter-Regional Communications of Rab Island (North-East Adriatic, Kvarner gulf)* bring us essential insight into insular communications. *The Roadside station at Žuta Lokva* (**preliminary communication**) by the editor of the publication and PI of the project, Ivana Ožanić Roguljić, presents the analogies of the only fully excavated roadside station in Croatia.

The following five articles are dedicated to Roman *Pannonia*. *Petrijanec - Aqua Viva* (**preliminary communication**) by Lovorka Štimac Dedić provides information about this important Roman settlement. A brand new approach to studying roads that in ethnological records are called "Roman Roads" is seen in the article *The Unknown about the Known; The Moždenec - Sudovec Roman Road* (preliminary communication) by Jere Drpić. In the article by Andrej Janeš, Marina Matković Vrban and Ivana Hirschler Marić *New Data, Old Town: The Case of Aquae Balissae* (**preliminary communication**), we see an excellent introduction to the problems regarding the research of urban archaeology. *The road from Mursa to the north - segments of the road on remote sensing data* (**preliminary communication**), by Mislav Fileš and Miroslav Vuković uses remote sensing methodology to enhance the knowledge about known parts of the road. The results of the research performed in the Lower *Pannonian* part of the Danube *Limes* are presented in the article *On the Road from Ad Herculem to Rittium* (**original scientific paper**) by a group of authors Biljana Lučić, Alessandro De Rosa, Sara Zanni, Gorana Lamajić, Sonja Štefanski-Zorić, Radoslav Muždeka and Uroš Nikolić.

Upper *Moesia* is presented by Nemanja Mrđić and Angelina Raičković Savić with the article *Lifeline of the Frontier: The Road and Port Network and the Concept of Supply and Distribution in Moesia Superior* (**original scientific paper**).

This project also tried to explore a chance for a new perspective: how does life develop around Roman roads during the primary usage of the roads and after this phase is over? Part of this research question is answered in the articles *Signposts of Settlement: Roman Communications and Avar-Age Sites in Continental Croatia: Overlap Pattern Analysis* (**original scientific paper**) by Lorena Jurakić and Pia Šmalcelj Novaković and *Small Items, Big Results* (**professional paper**) by Anita Rapan Papeša.

This publication has gone “public” and each article has been “blind” reviewed. So the editors would like to express their gratitude to all the reviewers (Martin Auer, Vladimir Petrović and Iva Kaić) and the scientific board (Maja Petrinec, Bartul Šiljeg and Pia Šmalcelj Novaković). Without their help, we would not have been able to complete the publication. Then we would like to thank all the authors, as they accepted the challenges we set as project goals and helped us meet them. Special thanks go to Pia Šmalcelj Novaković and Mislav Fileš, who took the time to help us proofread and edit the publication.

Editors

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COVER ILLUSTRATION INFO

Map of the River network, Roman road network and Roman provinces in the S-I Europe

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<https://api.maptiler.com/tiles/topo/{z}/{x}/{y}.webp?key=mBJY9x5P2uYxCRKXnlsF>

vector layers: Roman road network; McCormick *et. al.* 2013, “Roman Road Network (version 2008)”, <https://doi.org/10.7910/DVN/T10KAU>, Harvard Dataverse, V1; Roman provinces; <https://github.com/klokantech/roman-empire>

COPERNICUS Land Monitoring Service, 2019: EU-Hydro; <https://land.copernicus.eu/imagery-in-situ/eu-hydro>)

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Lifeline of the Frontier: The Road and Port Network and the Concept of Supply and Distribution in *Moesia Superior*

Nemanja Mrđić and Angelina Raičković Savić

Abstract: Defining the relationship between the Danube as a major river route and adjacent limes road with all its crossroads and shortcuts proved to be a challenging task. Both military and civilians were focused on both routes exploiting them to the maximum. From the earliest decades after forming *Moesia* as a province, legions were tasked to build roads through some of the harshest terrains. The importance of these actions can be traced through time with tablets, both imperial and legionary celebrating these enormous undertakings necessary for the frontier to function. Placing and coordination of military distribution centres were crucial for the supply of garrisons in smaller forts that had no facilities for long-term storage of food. In theory, major routes are simple and follow the course of a river. In the field, the situation is far more complicated.

Viminacium as a case study had its network of roads directed towards all directions with multiple roads intersecting and merging. Following the distribution of villas, cemeteries and production centres for almost 20 years to this date—a vivid network came to life. The city and legionary fortress were in the centre of this road network with Mlava and Danube to encircle and open it worldwide towards both east and west.

Limes was the best economically developed region in *Moesia Superior* with most of its production potential focused on the Danube for distribution. Local production of pottery and coinage from *Viminacium* mint found its way to remote provinces along this line.

KEYWORDS: ROMAN *LIMES*, ROMAN FRONTIERS, ROMAN ARMY, ROMAN PORTS, ROMAN ROADS, SUPPLY, LOGISTICS, DANUBE, IRON GATE.

Introduction

During the last decades, within Roman provincial archaeology, great attention has been paid to supplying the army. The concept of supply in *Moesia Superior* was not studied thoroughly enough. In this sense, this paper could represent an introduction to further study of the supply and transport of goods and other products. During the past few decades in Serbia, the question of supplying Roman troops in *Moesia* was most studied by Petar Petrović (Petrović 1980; Petrović 1983; Petrović 1991) and *Viminacium* research team (Ilić *et al.* 2011).

The backbone of the military supply system was the *classis*-navy. Ships could carry large quantities of provisions to all military posts along the river more effectively than any other means available on the frontier.

But river navigation was subject to numerous potential problems that could slow, obstruct or fully stop supply. Can be interfered with by both human and natural factors. Bad weather and harsh winters with frozen rivers proved to make this means of transport highly unreliable. This fact brings back the focus on the limes road that in these situations had to take over the full circulation of men and supplies.

Port network

Generally, in *Moesia*, any commander would expect more ports judging by the importance of river transport and supply. The main concept of the *classis*/fleet to transport and supply is designed on the two bases. The first one is the force and tactics of opponents—there is no force of battleships to fight. The lack of opponents' battleships is more than clear. Invasion troops have the core force of dugouts/monoxylons. The second one is the pure need to maintain their defensive system.

The Discovery of the flat bottom ships-barges that are in use even today proves the practical side of Danube navigation with the deployment of the ship type that doesn't require complicated port infrastructure. These barges with low-depth gauges and flat bottoms were capable of landing almost anywhere along the Danube banks. Protected landing zones by the military posts, with low sandy banks, were all that was needed to load or unload, embark, or disembark cargo, provisions, and man. The flexibility of this concept was wonderful, simply functional and practical. If the river was not frozen, and there were no heavy winds that could make the river the backbone of the frontier maintenance.

Within the project "Living Danube Limes" one of the activities was a connecting cruise of the *Lusoria*-type

ship. Authors participated in this journey and had firsthand experience in the navigation with the rowing boat on the Danube.

The good and bad sides of the different ship types were clear and understandable. Although with better combat characteristics *Lusoria* ships showed numerous problems that appeared during this journey. Limited docking capabilities made it hard to stop on many occasions.

With the strong currents of the Danube, it is logical to assume that all heavy transport was dominantly directed downstream while the ships came back empty upstream. The main supply centre could be identified in *Horreum Margi*, located in the relatively safe hinterland and with the Morava River as the crucial transport route. Today, Morava is not considered to be a navigable river, only some 8 km upstream from its mouth to the Danube. But with the gauge of the Roman barges, we see no obstacle for the shipping to normally and regularly circulate between *Horreum Margi* (Ćuprija) and *Margum* (Dubravica). Other supply centres are identified at Porečka reka and Mala Vrbica Konopište near *Pontes* (Kostol) and modern-day Kladovo. Both legionary fortresses at *Singidunum* and *Viminacium* could also be considered to be regional supply and distribution centres.

Smaller ports were located in Tekija (*Transdierna*), Čezava (*Novae*), Hajdučka vodenica, Karataš (*Statio Cataractarum Dianae*), Brza Palanka (*Egeta*) and Kusjak near Prahovo (*Aquae*). *Viminacium*, *Aquae* and *Novae* had ports separated from the main fortification, while on the other sites, ports were situated next to the fortifications and were protected with perimetral walls relying on the main defensive wall of each of the fortifications. Such positioning of ports is known from *Singidunum*, Hajdučka vodenica, *Diana*, *Egeta*. In German literature, such fortified ports are described as *Landeburg* and they are often encountered along the Rhine, although less along the middle and the lower Danube valley (Petrović 1991: 207-216).

Road network

The *Limes* road is crucial communication for the frontier. It was set up to follow the river in the best possible way and connect military posts. Serbia has poorly explored Roman roads as until recently this was not an attractive topic for research, except for Iron Gate roads, always attractive with their unique concept.

As it was noted road was traced to be as close to the Danube on high banks that were not endangered by flooding. At the approaches to *Viminacium* it had large and deep ditches on both sides for water drainage, and



Figure 1: Zone of *Viminacium* as the intersection of the major land routes (Basemap: Google Earth, author: N. Mrđić)

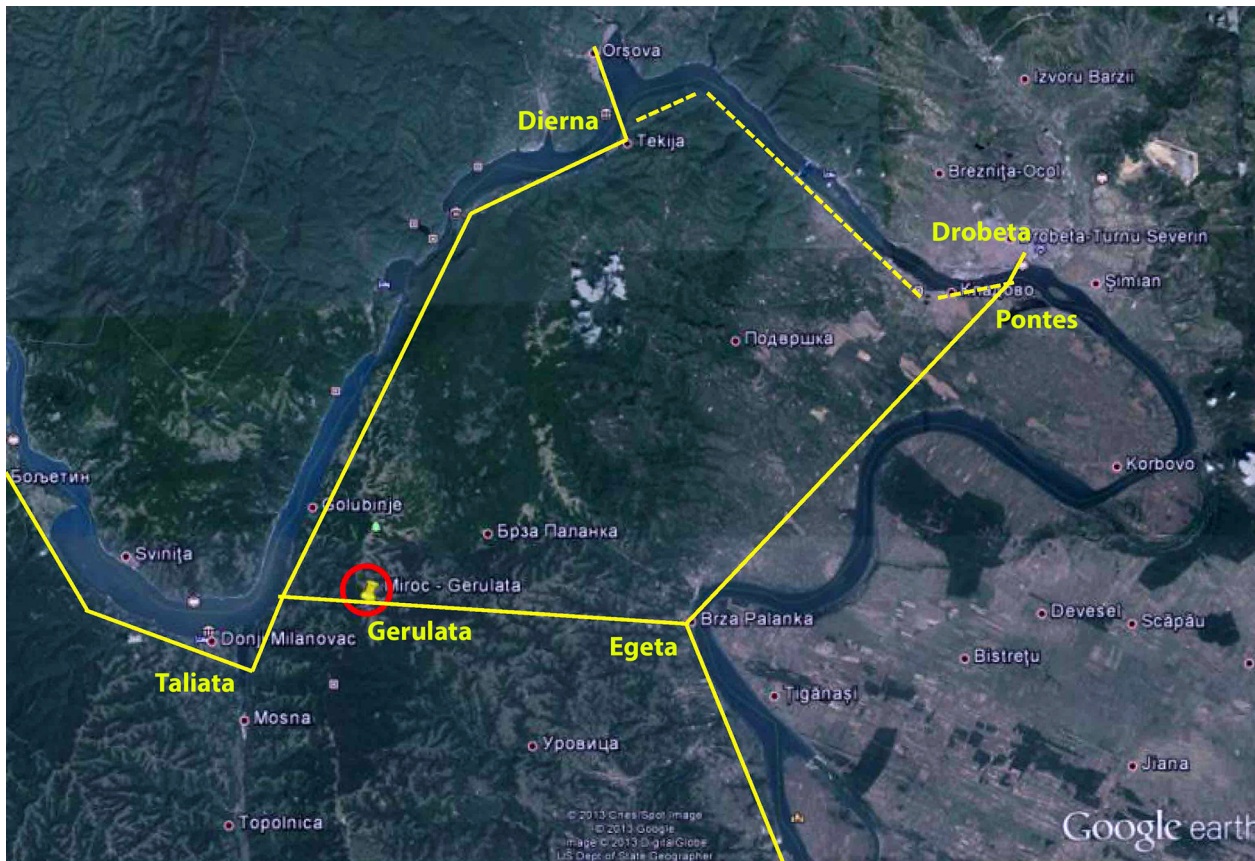


Figure 2: Limes section between Taliata and Egeta with major land routes along the river and over the Miroč mountain (Basemap: Google Earth, author: N. Mrđić)

even at sections where pavement or substructions were missing the path could be easily followed by following these double ditches. But according to the itineraries on two locations, an exception was made and the main road went the shortest route leaving the banks of the Danube. Leaving the *Viminacium* if one should follow the Danube route, he would travel *Viminacium - Lederata - Pincum*. But *Lederata* is located on the tip of the peninsula. Travelling to Dacia one should go in this direction and cross the Danube into the neighbouring province. The Danube route would be approximately 35 km compared to the direct line *Viminacium - Pincum* which should be 26 km long (*Viminatio XIII Pinco - 19.24 km*), (Figure 1). The same principle is seen at the shortcut over the Miroč mountain. Danube Road goes from *Taliata* (Donji Milanovac) to *Egeta* (Brza Palanka) and instead of going along the Danube for 100 km, the shortcut road over the mountain is only 30 km (*Tabula Peutingeriana: Faliatis VIII Gerulatis VI Unam VI Egeta - 29.6 km*), (Figure 2).

For the fast deployment of troops or rapid interventions, these shortcuts were of crucial importance and therefore they were marked in the itineraries. This network concept seems to be very functional not

just for longer-range transports, but also for sending couriers command post transfers etc.

Discussion and Conclusion

Often it was discussed how long military posts can survive on their own without resupply. Ancient sources claim that *castra* could hold provisions for a year. Our research and capacities of *horrea* discovered in legionary fortresses put this claim rather in the realm of wishful thinking. Quantities of provisions in Auxiliary forts seemed to be measured by several months while *burgi* and watchtowers could hold several weeks. This means that the supply system had to be continuous and always functional.

Several *horrea* were discovered along the Upper Moesian Limes, within fortifications of different sizes and shapes: in Sapaja (Dimitrijević 1984: 29-71), Čezava (*Novae*) (Vasić 1984: 91-122), Boljetin (*Smorna*), (Zotović 1984: 211-225), Veliki Gradac (*Taliata*), (Popović 1984: 265-282). Forts of smaller dimensions did not have enough room for such buildings.

Stopping the navigation along the Danube meant that the land route remained the only available option. And

high cliffs and impassable terrain had to be overcome in some way.

Building the road through the Iron Gate gorge lasted for 70 years. This marvellous undertaking was almost mission impossible. With no explosives, power tools, or heavy machines, but only with the chisels and pickaxes of the legionnaires, this was a long-lasting challenge. Building strategic land communication where there was no space even for the hiker's path was a marvellous undertaking beyond engineering and normal human possibilities, (Figures 3-5).

Although the road that was cut into the almost vertical cliffs, was safe and stable it still wasn't wide enough for regular functions. That is why another effort was made. Below the path cut into the cliff square holes were made. In these holes, wooden beams were installed as



Figure 3: Roman road in the Iron Gate cut into the cliff/section 1 (Photo documentation of the Institute of Archaeology, Belgrade)



Figure 4: Roman road in the Iron Gate cut into the cliff/section at the Tabula Traiana (Photo documentation of the Institute of Archaeology, Belgrade)



Figure 5: Roman road in the Iron Gate cut into the cliff/section 3 (Photo documentation of the Institute of Archaeology, Belgrade)

consoles to carry the construction of a wooden path that extended the road over the river itself. Only then road through the gorge gain its full functionality and made the possible normal flow of people and goods.

In total nine imperial *tabulae* and two legionary inscriptions testify to the enormous importance of these supply routes. Two *tabulae* were left by the Tiberius troops, one of the Claudius, two of Domitian, three of Trajan and one of Diocletian, (Figure 6). Two of Trajan's were dedicated to river navigation and were dedicated to the building of the Sip canal, (Figure 7), and the port of Kusjak. Six remaining *tabulae* were dedicated to the building of the road through the Iron Gate.

Both military inscriptions dedicated to the soldiers of *Legio VII Claudia* and *III Flavia* were related to the building of the roads above the Danube. One inscription is located below the Turkish Ram fortress and the other is close to *Tabula Traiana* in Kazan, (Figures 8 and 9).

The special functionality of roman limes roads was related to dragging ships upstream. Ships were towed against the river current by human or animal power.



Figure 6: Imperial inscriptions with the road section at the Gospodin Vir site, Drawing from the 17th century (Source: *Danubius Pannonico-mysicus : observationibus geographicis, astronomicis, hydrographicis, historicis, physicis, perlustratus et in sex tomos digestus. T. 2. [Antiquitates romanae militares ad ultramque ripam Danubii]* Marsigli, Luigi Ferdinando 1726, Hagæ Comitum : Apud P. Gosse, R. Chr. Alberts, P. de Hondt ; Amstelodami : Apud Harm. Uytwerf & Franç. Changuion, <http://resolve.ubsm.bg.ac.rs/HRS/1854>, Page 183

<http://ubsm.bg.ac.rs/latinica/dokument/1854/danubius-pannonico-mysicus-observationibus-geographicis-astronomicis-hydrographicis-historicis-physicis-perlustratus-et-in-sex-tomos-digestus-t-2-antiquitates-romanae-militares-ad-ultramque-ripam-danubii>)

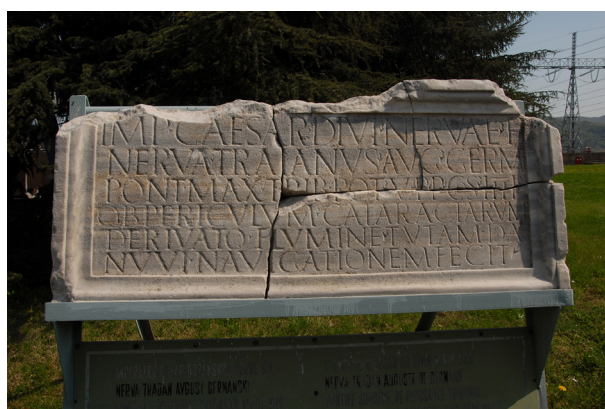


Figure 7: Tabula Traiana from Staium Cataractarum Diane dedicated to the building of the Trajan's canal at the Sip, fort at present-day Karatas, near Kladovo (Photo: N. Mrđić)

Traces of these actions remain as rope cuts in the rock cliffs, (Figures 10-12). The best example was located in the Iron Gate, but unfortunately, this site is now submerged under the water of the Danube after the building of the dam Djerdap I. Furthermore, part of the road below tower 6 was solely dedicated to this purpose and was made by the vexillation of *Legio VII Claudia* under the command of centurion Caius Rufinus during the reign of Emperor Trajan. This towing process lasted long after the fall of the Empire and was documented until the middle of the 20th century when boat engines become strong enough to overcome the force of the river current. Personal notes of Felix Kanitz from 1889 mention this towing process through the Sip canal where the boats were towed upstream by 20-40 oxen.

Danube cataracts at Sip were the major and unsolvable problem until emperor Trajan's preparations for the Dacian wars. Digging canal between Karataš and Sip



Figure 8: Tabula Traiana near Kazan, Iron Gate, present-day situation (Photo: N. Mrđić)



Figure 11: Traces of rope cuts into the rock made during towing ships upstream, located below Ram fortress. Roman inscription located above the flattened rock surface (Photo: N. Mrđić)



Figure 9: Tabula Traiana near Kazan, Iron Gate, original photo *in situ* before relocation (Photo documentation of the Institute of Archaeology, Belgrade)



Figure 12: Traces of rope cuts into the rock made during towing ships upstream, located in the Iron gates. The man in the background is sitting on the Roman road cut into the cliff (Photo documentation of the Institute of Archaeology, Belgrade)



Figure 10: Traces of rope cuts into the rock made during towing ships upstream, located below Ram fortress. Roman inscription located above the flattened rock surface (Photo: N. Mrđić)

solved this problem and imperial *Tabula* of the Traianus testified on this undertaking exhibited at the entrance of the Derdap I hydroelectric plant. Originally canal was 3225 m long/57 m wide and this marvellous achievement was celebrated by the imperial *tabula* of emperor Trajan, (Figure 7), which stood at the entrance of the canal by the Diana auxiliary fortress at Karataš (Kanic 1989: 499-500).

Groups of imperial tablets suggest the concentration of the hardest engineering works during the 1st century AD. The site of Gospodin Vir with three *tabulae* and another two on the cliff nearby clearly indicates where most of the efforts from Tiberius until Domitian were made. Unfortunately today these *tabulae* are either underwater in the Danube accumulation lake, (Figures

13-14), or destroyed (except *tabula Traiana* in Kazan and the 2 *tabulae* at the entrance to Hydroelectric power plant Djerdap I that is presented, but none of them *in situ*). Within the UNESCO *Limes* nomination process efforts are made to present these underwater sites that still exist after more than 50 years of being submerged.

According to inscriptions, four legions were the core of the engineering force for the road building in *Moesia* during the 1st and at the beginning of the 2nd century AD. As mentioned in the inscription of Tiberius (33/34 AD) *Legio V Macedonica* and *Legio IIII Scythica* did the leg work in the first decades, (Figure 15). Trajan's works were spearheaded by *Legio IIII Flavia* and *Legio VII Claudia*.

The *Tabula* of emperor Tiberius was also the oldest known imperial inscription, as well maybe the first inscription documented in central Serbia and its Danube region. Chronologically the last imperial *Tabula* of emperor Diocletian from Donje Butorke fort, (Figure 16), is also presented at the Hydroelectric power plant Djerdap I – not *in situ*. It is the only one dedicated to the fort itself and not to major infrastructural undertakings like all the other imperial *tabulae*.



Figure 15: Inscription of Emperor Tiberius 33/34 AD at Gospođin Vir site. The Roman road is fully submerged under the *tabula*. Present-day situation. (Photo: N. Mrđić)



Figure 13: Roman imperial inscription partially submerged in the Iron Gate at site Gospođin Vir. (Photo: A. Teodorović)



Figure 16: Inscription of Diocletian from Donje Butorke, presented at Hydroelectric power plant Djerdap I, present-day situation (Photo: N. Mrđić).



Figure 14: Roman imperial inscription submerged in the Iron Gate at site Gospođin Vir. (Photo: A. Teodorović)

This road remained in use until the late 1960s by the local population and border patrols of the Yugoslav People's Army. Today only a small section at Golubac fort is visible and a section that is partially submerged in Gospođin Vir is being prepared for presentation. The rest lies between five and 20 m below the waters of the Danube's Djerdap accumulation lake.

In his discussion of the problem of supplying and transporting goods for Roman troops, D. Breeze tried to answer by stating a hypothesis about four ways of a food supply (Breeze 2000: 59-64). Breeze states that possibilities that a *municipium* or a colony could collect and transport supplies with their means or engage transporters for military purposes. On the other hand, the military could collect, and transports supplies on its own or engages private transporters. Although this seems logical so far we did not find examples to confirm this collection and distribution system.

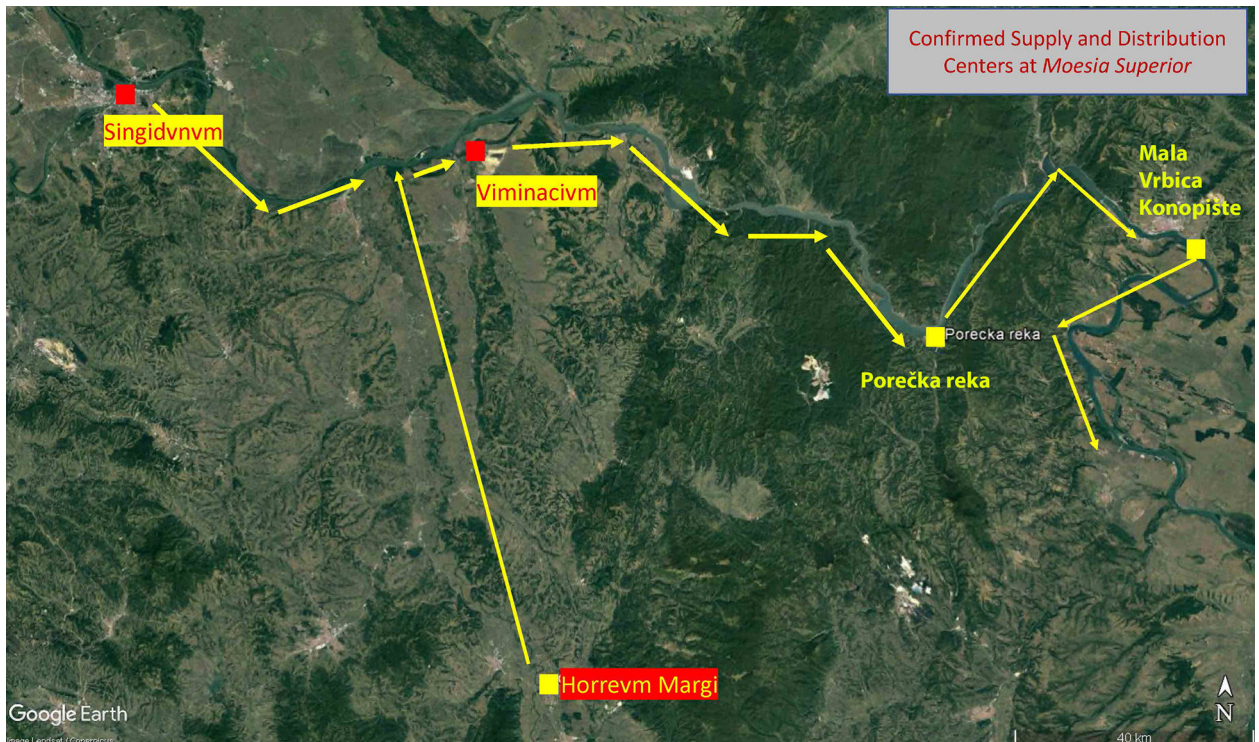


Figure 17: Basic supply scheme along the Danube *Limes* in Province Upper Moesia (*Moesia Superior*) (Basemap: Google Earth, author: N. Mrđić)

Positioning supply centres on the major crossroads was also one of the strategic requirements. Thus, placing one at the mouth of the Porečka river was of enormous importance. It could send supplies both downstream of the Danube, or over the Miroč mountain towards *Egeta* over the land route (Petrović 1981: 53-62; Petrović 1983: 285-291). The site is situated in a very convenient position, in the vicinity of one of the biggest camps of the Danubian *Limes-Taliata* (Veliki Gradac), which had soldiers stationed permanently throughout the Roman and Early Byzantine periods (Petrović 1984: 265-282).

The mouth of the Porečka river was additionally closed with a defensive wall,¹ while on the right river bank, there were two rectangular towers. The most interesting features are two broad buildings of approximately the same size. Building A was made of bricks and stones, with no inner walls, with a broad entrance facing the south, while building B was made of stone, with two pillars in its interior. The building was filled with huge amounts of debris, with bricks on which fire traces were visible. Shards of larger pottery vessels were also found, used for transporting and storing food: *pithoi* and *amphorae*.

¹ Closing mouths of Danube *tributaries* by walls was general practice in the Iron gate. With steep cliffs these water corridors were actually the only possible way inland.

The second site identified as the supply centre was located at the site Konopište, 3 km downstream from Trajan's bridge and the fort *Pontes*, foundations of irregular rectangular buildings were discovered (Popović 1996: fig. 1). Part of the site was recently excavated, but the port that was identified decades ago remains under the water of Danube. The site Kurvingrad, today under water, was located one kilometre downstream from Konopište. At the excavated area, buildings used for storing and keeping grain and other goods were discovered. Dimensions of the *horrea* could not be determined because of erosion. Few finds included *amphorae* shards, also from the end of the 1st and the beginning of the 2nd century AD (Popović 1996: 103).

It is clear that the supply strategy goes in the full direction of sending provisions downstream from one supply centre downstream until the next one. Ships would be able to go back upstream empty as heavy loads were very hard to push upstream with small crews on board. Several points where ships had to be towed upstream from the land supporting servicemen confirm this long-lasting problem in Danube navigation, (Figure 17).

The Danube and the *Limes* road were also major trade routes. We observe *limes* mostly in the light of military strategy, operations and troop movements. But during

peacetime and after the conquest of *Dacia*, the road remained in full function. Roads in *Moesia* become the backbone of the trade network.

Neither of these communication systems could function individually and this need as well as the possibility for mutual backing up is what made it reliable and functional. Efforts that made it possible to speak for themselves on the importance of making it the true lifeline of the Frontiers of the Roman Empire.

Bibliography

- Alföldi, M. R. 2001. PROVIDENTIA AUGUSTI. To the question of Limes fortifications in the 4th century, in *Gloria Romanorum: Schriften zur Spätantike*: 154-167. Stuttgart: Franz Steiner Verlag.
- Bjelajac, Lj. 1996. *Amfore gornjomezijskog Podunavlja*. Beograd: Arheološki institut.
- Bohec, Y. 2000. *The Imperial Roman Army*. London: Routledge.
- Breeze, D. 2000. Supplying the Army, in G. Alföldy, B. Dobson, W. Eck (eds) *Kaiser, Heer und Gesellschaft in der Römischen Kaiserzeit: Gedenkschrift für Eric Birley*: 59-64. Stuttgart: Steiner.
- Campbell, B. 1994. *The Roman Army 31 BC-337 AD*. London, New York: Routledge.
- Davies, R. W. 1989. *Service in the Roman Army*. Edinburgh.
- Herz, P. 2007. Finances and Cost of the Roman Army, in P. Erdkamp (ed.) *A Companion to the Roman Army*: 306-322. Malden-Oxford-Carlton: Blackwell Publishing.
- Ilić, O., Golubović, S., Mrđić, N. 2011. Supplying and Transport Along Danube Limes in the Upper *Moesia*. *Arheologija i Prirodne Nauke* 6 (2010): 61-76.
- Jones, A. H. M. 1973. *The Later Roman Empire II*. Oxford: Basil Blackwell.
- Kanitz, F. 1892. *Römische Studien in Serbien. Der Donau-Grenzwand, das Strassennetz, die Städte, Castelle, Denkmale, Thermen und Bergwerke zur Römerzeit im Königreiche Serben*. Wien: Tempsky. (Denkschriften der Kaiserlichen Akademie der Wissenschaften, Philosophisch-Historische Classe, 41, 2. Wien, 1893).
- Kanic, F. 1989. *Srbija zemlja i stanovništvo or ramskog doba do kraja XIX veka, knjiga II*. Beograd: Srpska književna zadruga.
- Kehne, P. 2007. War-and Peacetime Logistics: Supplying Imperial Armies in East and West, in P. Erdkamp (ed.) *A Companion to the Roman Army*: 323-338. Malden-Oxford-Carlton: Blackwell Publishing.
- Korać, M., S. Golubović and Mrđić N. 2009. *Itinerarium Romanum Serbiae*. Belgrade: Center for New Technologies.
- Marsigli, L. F. 1726. *Danubius Pannonico-mysicus: observationibus geographicis, astronomicis, hydrographicis, historicis, physicis, perlustratus et in sex tomos digestus*. T. 1, in tres partes digestus : geographicam, astronomicam, hydrographicam. Hague.
<http://ubsm.bg.ac.rs/engleski/dokument/1853/danubius-pannonico-mysicus-observationibus-geographicis-astronomicis-hydrographicis-historicis-physicis-perlustratus-et-in-sex-tomos-digestus-t-1-in-tres-partes-digestus-geographicam-astronomicam-hydrographicam>
- Mirković, M. 1981. Srednjobalkanski prostori u doba kasnog carstva, in S. Ćirković (ed.) *Istorija srpskog naroda I*: 89-104. Beograd: Srpska književna zadruga.
- Mirković, M. 1986. *Inscriptions de la Mésie Supérieure*, vol. II (*Viminacium et Margum*). Beograd: Centar za antičku epigrafiku i numizmatiku.
- Petrović, P. 1972. Nova Trajanova ploča u Đerdapu. *Starinar* XXXI: 31-39.
- Petrović, P. 1979. *Inscriptions de la Mésie Supérieure*, vol. IV, (*Naissus, Remesiana et Horreum Margi*). Beograd: Centar za antičku epigrafiku i numizmatiku.
- Petrović, P. 1981. O opskrbi rimskih trupa na đerdapskom limesu. *Starinar* XXXI: 53-62.
- Petrović, P. 1984. Rijeka Poreč, Sabrino središte opskrbe rimskih trupa na Đerdapu. *Starinar* XXXIII-XXXIV: 285-291.
- Petrović, P. 1991. Classis Flavia Moesica na Dunavu u Gornjoj Meziji. *Starinar* XL-XLI: 207-216.
- Petrović, V. 2004. Izleti o rimskim starinama u okolini Đerdapa u oblasti Bela de Gonda. *Balkanika* XXIV (2003): 71-95.
- Popović, M. 2006. *Beogradska tvrđava*, Beograd: Javno preduzeće „Beogradska tvrđava”.
- Popović, P. 1996. Konopište – Roman Architectural Complex, in P. Petrović (ed.) *Roman Limes on the Middle and Lower Danube*: 101-104. Belgrade: Archaeological Institute.
- Popović, V. 1984. Donji Milanovac - Veliki Gradac (Taliata), rimska i ranobizantska utvrda. *Starinar* XXXIII-XXXIV: 265-282.
- Rickman, G. 1971. *Roman Granaries and Store Buildings*. Cambridge: University Press.
- Roth, J.P. 1999. *The Logistics of The Roman Army at War (264 B.C. - A.D. 235)*. Leiden-Boston-Köln: Brill.
- Šašel, J. 1961. Rimski natpisi u Đerdapu, in M. Grbić (ed.) *Limes u Jugoslaviji I*: 156-164. Beograd: Arheološko društvo Jugoslavije.
- Thomas, R. and S. Stallibrass 2008. For starters: producing and supplying food, in R. Thomas, S. Stallibrass (eds) *Feeding the Roman Army the Archaeology of Production and Supply in NW Europe*: 1-17. Oxford: Oxbow Books.
- Vasić, M. 1984. Cezava-Castrum Novae. *Starinar* XXIII-XXXIV: 91-122.
- Vasić, M. 1990. *Horreum Margi (Ćuprija)*. Beograd: Arheološki institut.
- Zotović, Lj. 1984. Boljetin (Smorna), rimski i ranobizantski logor. *Starinar* XXIII-XXXIV: 211-225.