

ABOUT MURES - TISA - DANUBE WATERWAY

SORIN MIHĂILESCU¹, GABRIEL PRAPORGESCU²

Abstract: Some of the major roads leading to the civilization of mankind, bridges for connections and exchanges among the first civilizations were lost, some in deserts, others in limbo, but most important, the European road salt from Ocna Mures and Ocna Sibiu to Vurpar and, from here on, to Blandiana, Deva, Iliia, Arad, Carnuntum, present Isbrukul and further to Raetria and towards the Western part of Europe.

In ancient times, the Mures River (Marisus) was one of the rivers situated northern of the Danube River, the heavily used from a strategic and commercial point of view both Roman and barbarian populations in the area. The arrangement of the Mures River for boating purposes comprises extended operations on water management, especially water reservoirs that should provide appropriate levels and sluicing flows.

Keywords: waterway, boating

1. INTRODUCTION

The Mures River (Fig. 1) is 803 km long, of which 761 km are on the Romanian territory. It originates from Hasmas Mountains (Eastern Carpathians), crosses Giurgeu depression, Căliman and Gurghiu Mountains (through the 50 km long Toplita Deda gorge); from there on, it crosses the central part of the Transylvanian Plateau (passing through several cities: Reghin Targu Mures Iernut, Aiud, Alba Iulia, Deva). It reaches Arad Plain, passes through the city of Arad and, west of Nadlac town, it makes the border line between Romania and Hungary along 31 km; after that, it enters Hungary and flows into the Tisza.

Annual average flow rate of the Mures river is 184 m³/s at the outfall part. Peak flow rates can reach 2,000 m³/s (e.g. 2330 m³/s during the flood of 1975). The run of the water is smooth and deep, at a velocity of 1 m/s. The width of the Mures River ranges between 100 and 120 meters, with an average depth between 1 and 3 meters, although it can reach 4 m in some places. The river is accompanied by alluvial

¹ *Assoc.Prof.Eng. PhD, at the University of Petroșani, mihailescus@gmail.com*

² *Assoc.Prof.Eng. PhD, at the University of Petroșani, gpraporgescu@gmail.com*

deposits, floodplains or terraces, especially mud and quartz sand, and this is the reason why is rather murky. In some places, it forms sandy banks [10], [11], [12], [13], [15].

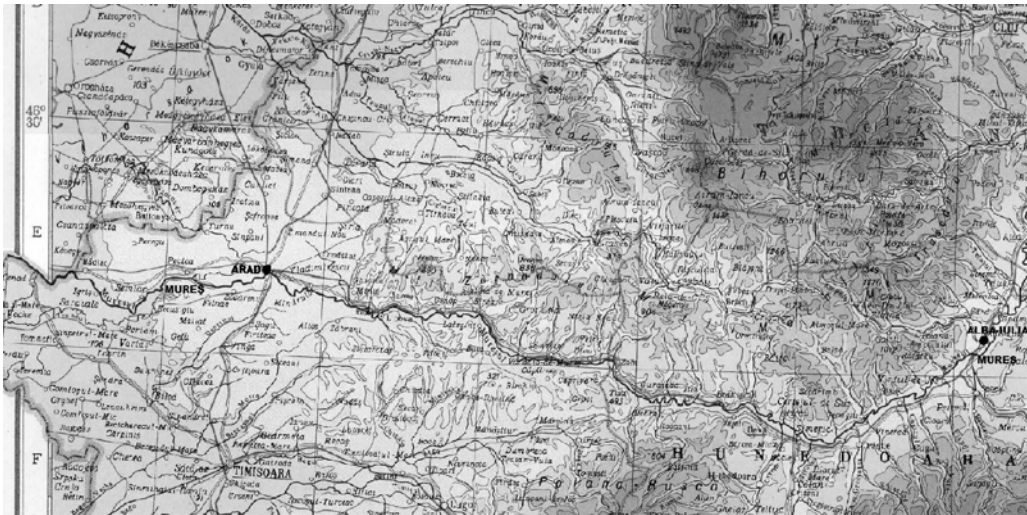


Fig. 1. Mureș river between Alba-Iulia and Ungarian border

2. THE HISTORY OF BOATING ON THE MUREȘ RIVER

Some of the major roads leading to the civilization of mankind, bridges for connections and exchanges among the first civilizations were lost, some in deserts, others in limbo: the Silk Road, crossed by Marco Polo and partly by the Romanian Nicolae Milescu - Spataru, Ulysses' and the Phoenicians' Mediterranean road following closely the line of shores, the roads of Sahara, but most important, the European road salt from Ocna Mures and Ocna Sibiu to Vurpar and, from here on, to Blandiana, Deva, Iliia, Arad, Carnuntum, present Isbrukul and further to Raetria and towards the Western part of Europe [1]. It seems that it was the oldest way European civilization road of Neolithic and Bronze Age, with populations and herds that depended Dacians' salt, on Pelasgians, and which was undoubtedly used during the migrations of Euro – Indian people towards the East, then of Hittites towards the East Anatolian area and of so many other Eurasian tribes. Salt Road brought here the civilization - spreading Hyperboreans together with their cousins, the Agathyrsi, the Celts and Scythians, the Mures River being a sacred river, with testimonies in the toponymy of Pelasgians lasting until today: Apulum, Vurpăr, Blandiana Germisara, Deva, Iliia Arad. In the midst, area crossed by the Mures River a great civilization was born with a great power of influence and a great pre - Osirian Empire, the empire of the Tartars or of Hyperboreans, of which the ancient writers spoke at their best. They gave us the clay tablets from Tartary, with iconic writing a millennium or so older than the Sumerian, Phoenician or Egyptian writing; they had the ritual bronze chariot with swan protomes found in Field of Bread (between Șibot and Orastie), they had

Sarmizegetusa and other Dacian fortresses, they had the gold Eldorado in the Western Mountains, they had the signs of Neolithic civilization at Turdas, they had our early history.

The water and land Salt Road, from Ocna Mures to Isbruk and from Isbruk with branches all over Western Europe was also the road of the ancient Orient, with boating on the Mures, Tisa, the Danube, Helespont, Asia Minor, or the Black Sea, towards the Caspian Sea and Eurasian road, later known by the name of the Silk Road.

In ancient times, the Mures River (Marisus) was one of the rivers situated northern of the Danube River, the heavily used from a strategic and commercial point of view both Roman and barbarian populations in the area. Even during the wars between the Dacians and Romans, maintaining under control over the navigable section of the Mureş was one of the key military manoeuvres, which the Roman army tried to get to have an advantage over the defence system of the Dacian Kingdom. During military operations in the beginning of the second Trajan's Dacian War, the allegations say that the vexillatio, made of troops from Lower Pannonia led by P. Aelius Hadrianus - governor of the province Pannonia at that moment, had penetrated Dacia by the Mureş Valley, probably using also the river fleet (Classis Flavia Pannonia) [4], [5].

There are interesting some scenes on Trajan's Column where, to end the conflict with the Dacians, there is a picture (Chicorius CXXXIII), near a water (it is supposed to be the Mures) with two legionaries building boats (Fig. 2) in a logs restricted area, probably a small "shipyard", established ad - hoc due to war needs.



Fig. 2. Legionaries building boats during Trajan's Dacian wars, probably on the banks of the Mures River



Fig. 3. Bas-relief image from Apulum with the face of Genius nautarum

The ships built by craftsman soldiers sculptured on the Column are pretty complex vessels from a construction point of view. One can notice that both have rounded stern, with high end lifted over the dead ship, the easily reared keel and the spurred - shaped bow. These features indicate that the waters of the Mures River saw larger ships and not mere boats (*ratis*) ever since Trajan's period. It is possible that these were *naves actuariarum*, whose presence was a certainty on major rivers in other Roman provinces. This image of inland waterway vessel has a similar representation on a marble bas-relief image with the face of *Genius nautarum* (Fig. 3), the protective deity of seafarers gathered in a professional association in the ancient Apulum. At the feet of the deity, on the left side, there is an allegory of the Mures River, depicted as a bearded male figure that stands in a boat, only outlined, but one can see well enough the end, perhaps the high rounded stern that ends under the form a snail shell. This representation comes over to suggest once more that large vessels were sailing on the Mures, ready to carry large amounts of goods towards the Tisza and the Danube.

The existence of a *collegium nautarum* at Apulum is an indication that those engaged in water transportation during the Roman times were quite numerous. The military and urban center located on the banks of the Mures River represented the gate of Dacia province to the Roman Empire. All the raw materials: gold, iron, salt, timber were exported to Rome and to other western provinces by the inland water. This fact is indicated by the presence of merchant associations at Apulum, and of other crafts schools (*coll. fabrum, dendrophorum, centonarum*), which provided solid orders to the sailors. The main office of *collegium nautarum* in Apulum was probably within the roadstead (Fig. 4), on the banks of the Mures River. There is a whole series of analogies (e.g. Intercisa, Singidunum, Drobeta Sucidava) for this architecture of the Apulian haven.

Other harbours were discovered or are alleged to be at Germisara-Cigmău, Micia-Vețel, Cladova, Cenad, Partiscum - Szeged. In these harbours or landing points for river boats there were discovered several stamped tegulas belonging to the legion XIII Gemina, mostly produced in Apulum and subsequently sailed downstream the Mures.

Even if this association "boatmen" was not simply a college for raftsmen (it is well-known the fact that they were transporting people and sometimes even military forces), it is still quite difficult to understand how they defended themselves against the "international" traffic in the lower Mures and Tisa, where Iazyges Sarmatians, boat owners, conducted pirate attacks on Roman convoys during those turbulent times. Under these conditions, it must have worked, the same as on the middle and lower Danube, an organized defensive system in the convoy, probably formed by *sagittari* units deployed on ships to keep the attackers away. In such a situation, I think any escorted vessel sailing downstream Apulum had to stop at Micia to seek soldiers (*sagittari* of Cohors II Flavia Commagenorum) ready to board to accompany the sailors and their cargoes to the nearest Roman harbour.

But, it is also possible that the legion XIII Gemina had sailor soldiers following the model of Danubian legions: leg. III Flavia Felix, leg. VII Claudia, leg. I

Italica which, by means of military craft (liburnae), provided a safe commercial traffic on the main navigable section of the Mures.

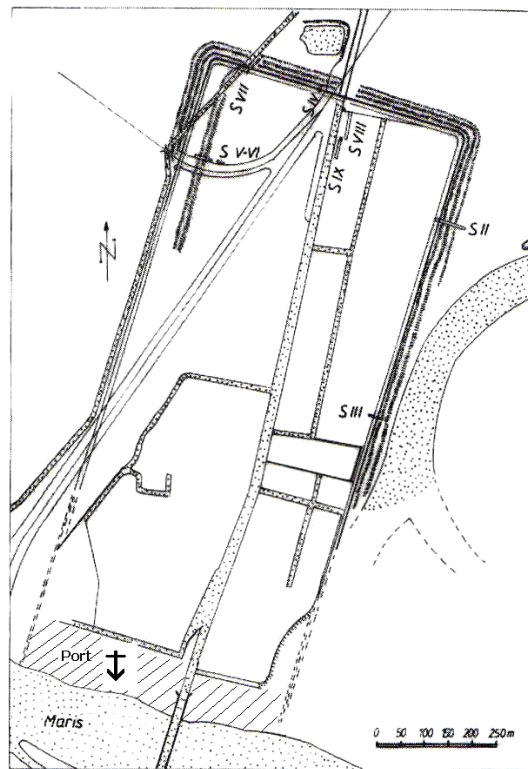


Fig. 4. The places of the ancient Apulum harbour

Even if the lack of salt in the neighbouring Roman provinces (Pannonia and two Moesias) may be a reason for the constancy of this export activity on the Mures river, it remains surprisingly why at Apulum emerged the most important civil river harbour of Roman Dacia. A strong reason could be high density civil housing (two cities), and the presence of the legion and of the governor of Dacia together with his body guard, aspect that allowed the emergence of such *collegium* on the services market of the province in intense movement monetary conditions. Another "bonus" of this perspective for Apulum was the fact that there was real highway cross of the river Mures (which connected to Partiscum by the road from Lugio) and the main imperial road province of Dacia, which crossed the major cities north of the Danube: Dierna – Tibiscum - Vlpia Traiana – Apulum – Potaissa - Napoca - Porolissum.

Aranca Channel is an old route of the Mures River, which was believed to have been navigable during Morisena ancient city, proof being the ship sunken in the riverbed of Aranca [14].

It was quite possible to navigable the Mures river from antiquity time and up to

a century ago when, with the development of railway and especially of the roads, the carrying of goods by boats was abandoned.

3. THE FUTURE OF BOATING ON THE MURES RIVER

In September 2001 the first office was opened in Lipova Regional Environmental Center. The initiative for this establishment belonged to the Hungarian party and was determined by multiplication of natural disasters that have occurred in recent years within the area of Mures-Tisa-Danube River hydrographical basin (Fig. 5). The project, funded by the European Community, aims at regulating the rivers so as to be kept more easily under control when flooding. Shortly after its start, the project has become interesting for several countries in Eastern Europe, including Romania, Ukraine, Slovakia and Yugoslavia. Regional Center is located in Szeged, Hungary [16].

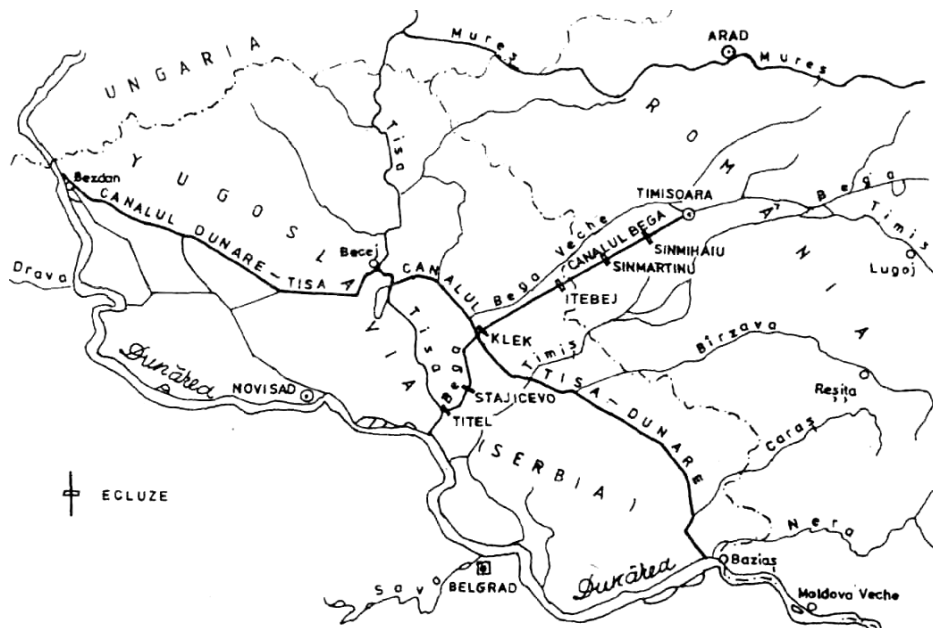


Fig. 5. Mures – Tisa - Danube waterway

The draft law for approval of the Plan for the Arrangement of the National Territory includes the Mureş River as waterway set from the border up to Alba Iulia. There are provided crossing points with the ferry and for the landing of passenger ships. There shall be carried out modernization operations, executed, new RO-RO traffic points, docks to which modernization operations shall be made, new harbors, tourist ports and landing places for passenger ships.

The aspect related to the arrangement of the Mures River as waterway had already been studied in the past, both in the Arrangement Plans drawn up during 1959 -

1962 and in the '70s, when formulating site study of Săvârșin – Batuta water reservoir. Land costs, low efficiency and especially the social and economic implications raised by Săvârșin – Batuta water reservoir have made that a new boating area on the Mures River remain at the stage of design. Currently, the Mures River is a natural flow water stream that cannot be used for boating purposes; no dredging operations are carried out along its riverbed so as to transform it into a waterway [6], [7], [8], [9].

All these operations must be achieved in terms of the integrated water management, given navigation, diminution floods risk and the use of water resources. The arrangements for boating using free currents, that for small boats, along the part of the river near the border sector, can only be done currently only by dredging, because there are several hydro - technical works to ensure the necessary flow water intake for the water supply systems.

4. CONCLUSIONS

As a trans-boundary river, its arrangement on the Romanian territory shall have also to consider the provisions for the Romanian-Hungarian Agreement for the border water management. The arrangement of the Mures River for boating purposes comprises extended operations on water management, especially water reservoirs that should provide appropriate levels and sluicing flows. The extent and value of investments for these operations shall be determined after a study and shall be in relation to the length of the Mures River that is arranged for boating.

In the coming years the Mures River is going to be used for boating purposes along the section comprised between Arad and Alba Counties. The project “The Mures River from the borders up to Alba Iulia” addressing this waterway has been forwarded by the Ministry of Transportation and approved by the Ministry of Environment and Water.

REFERENCES

- [1]. **Hașa, G.**, *Drumul Sării – Oca Mureș-Isbruk – drumul civilizator al Europei*, Dacia Magazin, Nr. 32, pg. 9, Mai 2006
- [2]. **Nicola, A.**, *Study Regarding the Reconstruction and Modernization of Transportation System in the Context of Regional Economic Development and European Integration*, Doctoral Thesis, Petroșani, 2009;
- [3]. **Nicola, A.**, Mihăilescu, S., Iliăș, N., Ungur, V., *Possibilities of Reconstruction and Modernization of Transportation Systems in Romania’s West Economic Region*, Annals of the „Constantin Brancuși” University of Târgu Jiu, Engineering Series, No. 2/2009, pg. 367-376;
- [4]. **Timoc, C.**, *Contribuții la navigația fluvială pe râul Mureș în secolele II-III p. Chr. și portul de la Apulum*;
- [5]. **Timoc, C.**, *Despre navigația fluvială pe Mureș în epoca romană*, Studii de istorie, I,
- [6]. *******, Anuarul Statistic al României, 2008, INS 2009;
- [7]. *******, Planul național de dezvoltare 2007-2013;
- [8]. *******, Planul pentru dezvoltare regională 2007-2013, Regiunea Vest, România;

- [9]. ***, Strategia Națională pentru Dezvoltare Durabilă a României Orizonturi 2013-2020-2030.
- [10]. ***, <http://www.cjarad.ro/>
- [11]. ***, <http://www.cjcs.ro/>
- [12]. ***, <http://www.cjhunedoara.ro/>
- [13]. ***, <http://www.cjtimis.ro/>
- [14]. ***, <http://www.sannicolaumare-ghid.blogspot.com/>
- [15]. ***, <http://www.soimus.ro/ro/localizare/hidrografia.htm>
- [16]. ***, <http://www.mt.ro/transparenta/Proiect%20lege%20LB.html>