

# REMARKS ON WOOD AND STONE EXPORT DURING EARLY EMPIRE PERIOD – CASE STUDY: SALONA, CROATIA

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**Abstract:** This work considers some of the archaeological and literary evidence for wood and stone export in Salona – capitol city of the Roman province of Dalmatia during the Early Empire Period. It focuses mainly on wood export outside Dalmatia and stone export from quarries near Salona into the hinterland. The work assesses some of the currently available information and suggests future areas of research which could add to better understanding of export connected with Salona.

**Keywords:** wood, stone, export, Salona, Croatia, Early Empire Period

## 1. Introduction

Salona was an ancient city that nowadays is located near Split, Croatia. City's origins can be linked with Illyrians' settlement. Salona became a significant trade emporium between 2<sup>nd</sup> and 1<sup>st</sup> centuries BC. In 119 BC Salona was mentioned for the first time in written sources and already recognized as the main port of Dalmatia<sup>1</sup>. When Romans made a first attempt to conquer Dalmatia, Salona belonged to an indigenous tribe of Dalmatae. Romans secured their claim on Dalmatia in 9 CE after the last uprising.

Under Roman rule, Dalmatia underwent significant changes regarding social life, administration and economy. Many new traders, merchants and Roman citizens from other parts of the Mediterranean region settled in Salona<sup>2</sup>. Salona was a city that used its geopolitical and economical potential and it made the whole province richer, including the hinterland<sup>3</sup>.

Roman province of Dalmatia included not only a part of Croatia but also parts of Bosnia and Herzegovina as well as Serbia and Montenegro. The hinterland was generally quite different from the coastal region taking natural conditions under consideration.

Network of roads into the hinterland was probably one of the most significant Roman builds in Dalmatia. They were one of the first to be built – right after Dalmatia became a Roman province<sup>4</sup>. Those roads were very strategic as they connected coastal areas of Mediterranean Sea with the northern borders of the Empire.

Between 16 and 20 CE Romans built several roads from Salona to the hinterland – including 3 that were connecting the capital with the borders of the province<sup>5</sup>. Those roads allowed the

<sup>1</sup> Zaninović 1977, p. 775.

<sup>2</sup> Zaninović 1977, p. 778.

<sup>3</sup> Zaninović 1977, p. 780.

<sup>4</sup> Bojanovski 1974, p. 15.

<sup>5</sup> Zaninović 1977, p. 778.

hinterland to participate in the Roman market on a large scale. Roads were built by VII and XI legion that later became responsible for keeping the peace between the most rebellious Dalmatian tribes<sup>6</sup>. One of the branched roads, 167 roman miles long, connected Salona with Servitium, Siscia and Sirmium<sup>7</sup>. Salona was also connected with Scardona and it was probably a frequently used road. The remains of a large villa were discovered on this route. Rendić-Miočević suggests that it could have been a villa urbana that served as an important stop on this road<sup>8</sup>.

Roads made it easier for traders and merchants to transport goods from the hinterland to coastal cities and back. It allowed for an extensive wood and stone trade that were one of the most important raw materials that Dalmatia exported.

## Wood

Wood was one of the most important sources from Dalmatia's hinterland. The area was arborous and often inhabited by indigenous tribes of Dalmatians and Illyrians. For them, the possibility of an extensive trade with coastal regions could have been a source of wealth and higher social status.

During the period discussed, the average temperature in The Roman Empire was similar to the temperature mid-twentieth-century<sup>9</sup>. A period from approximately 250 BC to 400 CE is sometimes described as Roman Climatic Optimum. Within this period, approximately between 100 BC and 200 CE was a time of stability called The Roman Optimum<sup>10</sup>. The level of solar activity during that time was particularly stable with low levels of volcanic activity<sup>11</sup>.

It is possible to assume that ancient Dalmatian forests consisted of similar species as nowadays. Basing on surviving to this day ancient forests in the Northern Mediterranean, the most widespread species was beech (*Fagus sylvatica*)<sup>12</sup>. This species has genetic ability to face climate changes and it is flexible enough to withstand a wide range of geographical and environmental conditions. Probably quite common was also oak (*Querusrobor*) and sessile oak (*Queruspetraea*). In some areas occurred pine – including black pine (*Pinusnigra*) and Scots pine (*Pinussylvestris*), maybe also *Pinuspeuce* and *Pinusheldreichii*. Aleppo pine (*Pinushalepensis*) and Holm oak (*Querus ilex*) were more likely to be present only in the Mediterranean area, not in the hinterland. It is possible to assume that Norway spruce, silver fir and hornbeam could have occurred as well. However, the modern distribution of those tree species may not accurately reflect its ancient distribution<sup>13</sup>.

The Roman Empire was growing rapidly and the urbanization process required a lot of products and raw materials to be done effectively and efficiently. Forests located near Rome were probably not enough to support a development of the city. Similar problem might have occurred in Egypt that lacked sufficient forests.

There was a chance for Dalmatia to enter the Roman market with quite necessary raw material. The demand for wood probably was enormous because it led to heavy deforestation in other parts of The Empire. It was a direct result of increasing population that caused extensive agriculture and seemingly unstoppable economic development.

<sup>6</sup> Zaninović 1977, p. 778.

<sup>7</sup> Zaninović 1977, p. 778.

<sup>8</sup> Rendić-Miočević 1962, p. 315–334.

<sup>9</sup> McCormick 2012, p. 180

<sup>10</sup> McCormick 2012, p. 174.

<sup>11</sup> McCormick 2012, p. 174.

<sup>12</sup> Mansourian/Magali/Vallauri 2013, p. 34, 36, 50, 54.

<sup>13</sup> Ruff 2020, p. 210.

With rapid increase in population and an enhancement of high standard of living in urbanized areas, there was a need to build many architectural objects. Wood was one of the most basic building supplies. Wood could serve as a material for roof structures, floors and scaffolding.

Large quantities of wood were destined to become a fuel– used in kilns, mines as well as being a source of heating in households, public facilities and *thermae*. It is safe to assume that the majority of wood was used for this purpose – taking into consideration how vastly populated were some areas within The Roman Empire. In the province of Dalmatia, mines were located in the hinterland where the densest forests were as well. Some wood supplies probably were never transported outside of the nearest neighboring area. Wood from other regions that were still close to Salona, might have been transported to the capital city of the province – partially for usage in place and the rest destined for trade overseas.

Provinces within The Roman Empire were connected by an extensive network of roads but also by water trade routes – including seas and rivers. It required a large number of ships and other vessels that were able to transport different types of products and materials. Those vessels were made of different types of wood – basing on the availability and characteristics of the wood itself (softwood or hardwood). Building and maintaining ships was probably not that damaging to the forests as fuel needs, however it was something that should be taken into consideration as well. Even the most carefully built ships often needed some repairs during their operational lives.

One example is the Trstenik ship found near Salona, dated between mid-1<sup>st</sup> to early-2<sup>nd</sup> centuries CE<sup>14</sup>. As David Ruff suggests, it is possible that this vessel was built in the area of modern-day Greece or Turkey<sup>15</sup> but he also suggests that this ship was built, operated and scuttled near Salona<sup>16</sup>. The Trstenik ship was made of wood that belonged to at least 17 different species of trees. The majority of the ship was built using Aleppo pine<sup>17</sup>. Many parts were also made of black pine, Scots pine and Mediterranean cypress (*Cupressus sempervirens*). All of those species were probably present in Dalmatia during the early empire period. Interestingly, beech, despite possible popularity in Dalmatia, was used to build only one element of the ship – the keel (the largest single timber in the ship). This might support Ruff's suggestion that the Trstenik ship originated from present Greece or Turkey. If the ship was built near Salona, it is possible that beech wood was destined for other purposes or it was a personal preference of the maker. This ship was repeatedly repaired during its operational life<sup>18</sup>. As David Ruff suggests, the workers might have collected pieces of planking that were stored next, regardless of species<sup>19</sup>. This would indicate the existence of different tree species loosely used in dockyards.

An inscription from Salona provides some information regarding this natural source. The inscription concerns *negotiansmateriarius* – merchant specialized in wood trade<sup>20</sup>. Aside from their other responsibilities, *negotiatores* were known for doing commerce in bulk quantities of goods. Taking it into consideration, it is not likely that the merchant from Salona was importing large amounts of wood from distant parts of The Roman Empire.

Naturally, some specific types of wood could have been imported, especially wood of species that are not native in Dalmatia. This exchange of goods was possible with a vibrant market,

<sup>14</sup> Ruff 2020, p. 207, 259.

<sup>15</sup> Ruff 2020, p. 210.

<sup>16</sup> Ruff 2020, p. 35.

<sup>17</sup> Ruff 2020, p. 209.

<sup>18</sup> Ruff 2020, p. 158.

<sup>19</sup> Ruff 2020, p. 157.

<sup>20</sup> Glicksman 2005, p. 212.

however it is more likely that it involved luxurious and expensive species. This type of wood was probably imported in retail quantities, maybe even as a one-time special order.

The merchant from Salona could have been responsible for an export of wholesale quantities of wood outside Dalmatia. There is a possibility that this merchant was a sales broker, using modern terminology. Some traders could have brought wood from a producer and then sold it to the merchant from Salona that was collecting a large amount of the raw material for transporting it overseas.

In Salona craftsmen created trade guilds (*collegia*) – they were responsible for attesting for each specific craft<sup>21</sup>. Interestingly, some inscriptions are pointing to thought-provoking distinctions. There were the woodcarves (*collegium tignariorumfavrum*<sup>22</sup>) and woodworkers (*collegium dendrophorum*<sup>23</sup>). This distinction could show some degree of specialization that is often connected with advanced and extensive production. This specialization with the existence of *collegia* is strong evidence that there was a strong market for wood in Salona.

## Stone

Even today, stone, especially limestone and marble, are one of the most famous characteristics of Croatian coastal cities. This is strongly connected with the accessibility of the raw material near settlements.

Stone export was confirmed in several written sources. Pliny the Elder in 1<sup>st</sup> century CE created a list of Dalmatian cities and distances between them. One of the cities is Tragurium, modern Trogir, located approximately 20 kilometers from Salona. Pliny the Elder called this city *marmore notum* which means a city known for its marble. The name was connected with a quarry located near Tragurium. This characterization was made in the 1<sup>st</sup> century CE which means that Tragurium was already known outside of Dalmatia for its quarries.

Marble was also noted in *Edictum de pretiis rerum venalium* from 301 CE. It was issued to save The Empire from inflations and it determined maximum prices of products and services. This Edict was issued at the beginning of the 4<sup>th</sup> century; however it is possible to assume that the relative indicators of cost of transport were not too different from those in the 2<sup>nd</sup> centuryCE<sup>24</sup>.

One of the most important places near Salona was Island of Brač, located approximately 15 kilometers in a straight line from Salona. There are no confirmed cities from Roman Period on this island<sup>25</sup>. The route from Salona to one of the quarries on Island of Brač was short enough for a fully loaded ship to sail in one day, however it also depended on favorable winds<sup>26</sup>. Large quantities of limestone and marble from the Island of Brač were used to build some buildings in Salona<sup>27</sup>.

David Ruff suggests that the Trstenik ship might have been used for transporting stone from the Island of Brač to Salona<sup>28</sup>. Transporting heavy materials was most efficient when it was conducted via sea or river and this method was used to minimize costs of transportation.

<sup>21</sup> Zaninović 1977, p. 795.

<sup>22</sup> CIL III 8841 Salona – after Zaninović 1977, p. 795.

<sup>23</sup> CIL III 8823, 8824; BD, 5, 49, 10 – after Zaninović 1977, p. 795.

<sup>24</sup> Ruff 2020, p. 55.

<sup>25</sup> Glicksman 2005, p. 219.

<sup>26</sup> Ruff 2020, p. 59.

<sup>27</sup> Stančić, *et al.* 1997.

<sup>28</sup> Ruff 2020, p. 56.

In connection with extensive transportation of stone, Rouge created “*naves lapidariae*” which indicates specialized stone carriers<sup>29</sup>. It is possible that some ships were slightly modified to strengthen their core. This would allow them to sail with heavier cargo – like stone<sup>30</sup>. One example is the ship from Sutivan on the Island of Brač. It was almost certainly used for transporting local stone from the island, and his destination was Salona<sup>31</sup>. A shipwreck from Cape Izmetište near Island of Hvar was carrying 10 stone blocks and 2500 ceramic vessels<sup>32</sup>. This ship was operational probably during the early 2<sup>nd</sup> century CE<sup>33</sup>.

Additionally, one inscription from Island of Brač might be the next evidence confirming a presence of stone from this quarry outside Dalmatia<sup>34</sup>. It suggests a purchase of column capitals for *thermae* in Sirmium (Pannonia) that were built between 308 and 314 CE and probably Emperor Caesar Valerius Licinianus Licinius Augustus commissioned this building<sup>35</sup>. It is possible that obtaining and distribution of stone from Brač or Tragurium to the hinterlands existed already in 1<sup>st</sup> or 2<sup>nd</sup> century CE. The fact that this kind of stone was used for the emperor’s building is strong evidence for a good reputation that was probably built over dozens of years – maybe starting during the Early Empire Period.

It is very likely that a stone from Salona was exported regularly to settlements located in the hinterland. Sirmium was approximately 300 kilometers from Salona and the transport into the hinterland for the emperor’s *thermae* very likely was not the first one.

## Conclusions

During the Early Roman Empire, Salona, the capital of Dalmatia, was a thriving city with well-developed trade routes that connected even the most remote parts of this province with other parts of the Empire. Dalmatia was a very strategic province, stocked with forests and quarries. Probably Salona was one of the most important harbors since it provided wood for many areas of the Empire. Salona was a “transmitter” of stone that allowed settlements located in the hinterlands to meet the architectural requirements of Roman buildings.

At that time, wood was one of the most important raw materials due to the fact that it was used in many different ways. It is not confirmed archaeologically, but it is possible that Dalmatian wood was one of the most frequently used in areas lacking forests – due to natural climate or large-scale deforestation.

The stone from quarries near Salona was well-known outside Dalmatia which could be connected with extensive export. Limestone and marble were also used for building purposes in the hinterland. It probably additionally tightens relations between the coastal part of the province with its hinterland.

Stone and wood were two of the most exported materials from Dalmatia. They possibly were known in the majority of the Empire and they made Salona even more important harbor – not only for increasing standard of living in the hinterland but also for sustaining a supply of very demanded raw material.

<sup>29</sup> Rouge 1966, p. 76.

<sup>30</sup> Beltrame, Vittorio 2009, p. 141–148.

<sup>31</sup> Ruff 2020, p. 64.

<sup>32</sup> Russel 2013, p. 332–341.

<sup>33</sup> Russel 2013, p. 332–341.

<sup>34</sup> Glicksman 2005, p. 212.

<sup>35</sup> Mirković 1971, p. 37.



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