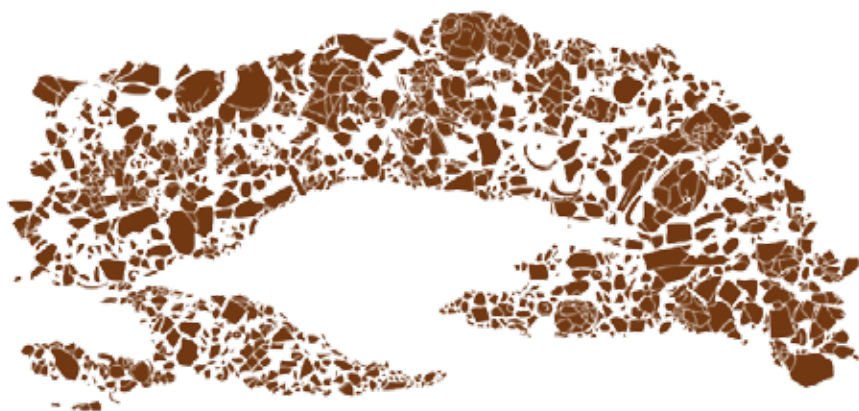


HRVATSKO ARHEOLOŠKO DRUŠTVO

OKOLICA KAŠTELANSKOG ZALJEVA U PROŠLOSTI



Izdanja Hrvatskog arheološkog društva

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**SURROUNDINGS
OF THE BAY OF KAŠTELA
IN THE PAST**

CONFERENCE

Kaštela, 2017

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„Okolica Kaštelanskog zaljeva u prošlosti” naslov je znanstvenog skupa koji je u organizaciji Hrvatskog arheološkog društva i Muzeja grada Kaštela od 2. do 6. listopada 2017. godine održan u Kaštelima.

Tema skupa vezana je uz prostor koji je nastanjen još od paleolitika, a tragovi prošlih vremena svjedoče o kontinuitetu naseljavanja. Okolica Kaštelanskog zaljeva i danas je gusto naseljena, a ostaci prošlosti vidljivi su na svakom koraku. Neka od arheoloških nalazišta ovog prostora poznata su i u širim okvirima te čine nezaobilazan korpus nacionalne kulturne baštine.

Kroz nekoliko sekcija, tematski vezano uz povijesni slijed, održano je ukupno 36 predavanja i predstavljeno 5 postera. Za objavu u *Izdanjima Hrvatskog arheološkog društva* predan je ukupno 21 rad. Organizatori skupa ovim odazivom autora mogu biti zadovoljni, ali je velika šteta što za objavu nije ponuđeno više radova vezanih uz srednjevjekovnu tematiku, kojom ovaj prostor također obiluje.

Osim samih predavanja skup je imao i svoj, tradicionalni, izlet kojim se zaokružio prostor oko Kaštelanskog zaljeva trabakulom „Rižana”, starim 150 godina, a koji je i sam spomenik kulture. Izlet je započeo vožnjom

brodom iz Kaštel Lukšića prema Kaštel Sućurcu, gdje su ravnatelj Muzeja grada Kaštela Ivan Šuta i ravnatelj Arheološkog muzeja u Zagrebu Sanjin Mihelić svečano otvorili izložbu „Tekuća arheološka istraživanja u Hrvatskoj”. Za sudionike skupa bila je to iznimna prilika da se u kratkom roku upoznaju ne samo s arheološkim novostima u okolici Kaštelanskog zaljeva nego i s arheološkim novostima u drugim dijelovima Hrvatske. Izlet brodom nastavljen je u Vranjic, Trogir te Resnik (Sikuli), nakon čega su sudionici skupa autobusom stigli u planinarski dom „Malačka”, gdje je organizirana zajednička večera.

Ovom prilikom htjeli bi se zahvaliti Gradu Kaštela i Turističkoj zajednici grada Kaštela koji su obilato potpomogli kako samu organizaciju skupa tako i objavu 33. broja *Izdanja HAD-a*.

Sa zbornikom radova pod naslovom „Okolica Kaštelanskog zaljeva u prošlosti” zaključujemo istoimeni skup u nadi da će oni pridonijeti nastavku istraživanja ovog prostora i objavljivanja rezultata tih istraživanja.

Ivanka Kamenjarin

Domagoj Tončinić

IRENA RADIĆ ROSSI, DAVE RUFF
 ROMAN SHIP IN THE AGER OF ANCIENT SALONA: PRELIMINARY RESULTS

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Irena Radić Rossi
 University of Zadar
 Department of Archaeology
 Obala kralja Petra Krešimira IV. 2
 HR – 23000 Zadar
 irradic@unizd.hr

Dave Ruff
 PhD Candidate
 Nautical Archaeology Program
 Texas A&M University
 Mail Stop 4352
 College Station TX 77843-4352
 daveruff@tamu.edu

The Gulf of Kaštela is a well-defined geographical area between ancient Tragurium and Salona, the capital of the Roman Dalmatia. It is situated north-west of Split on the Eastern Adriatic coast, and holds evidence of a dynamic past. It was densely populated in Roman times, and exploited by a number of economic estates (villae rusticae).

One of them occupied the present-day Trstenik in the Ager Salonitanus, just outside the city walls. Some chance finds in 2002 pointed to the existence of a partly submerged archaeological site, endangered by industrial progress in the gulf. The wooden structures made of poles and planks, a large perforated dolium, and groups of globular amphorae of the Dressel 20 type are what remains of the operative coastal installations of the Roman villa.

A survey in 2006 revealed the presence of a well-preserved ship, filled with rocks and intentionally sunk adjacent to the wooden waterfront, acting probably as a caisson for its reinforcement. The overall length of the preserved part of the hull is about 11m, and the estimated original width about 4m. The original position of the vessel against the wooden wall contributed to the preservation of the ship's lines on the northern half of the hull. On that side, the ship is preserved up to the wale.

Excavation of the ship continued in spring 2015. The paper presents the preliminary results of the underwater excavation, photogrammetric documentation and interpretation of the find.

Keywords: Salona, Dalmatia, Gulf of Kaštela, Trstenik, villa rustica, scuttled ship, waterfront, wooden structures

1. Introduction

The Gulf of Kaštela, situated in Central Dalmatia on the Eastern Adriatic coast, is a sheltered area between the city of Trogir (Roman Tragurium) to the west, and the cities of Solin (Roman Salona) and Split (Roman Spalatum) to the east (Fig. 1). Its shallow western part until re-

cently preserved the evidence of probable ancient large-scale salt production.¹ At the eastern end flourished the city of Salona, the capital of the Roman province of Dalmatia. Although little is known about the extension and

¹ Radić Rossi 2008, p. 294; 2009: pp. 494, 496.

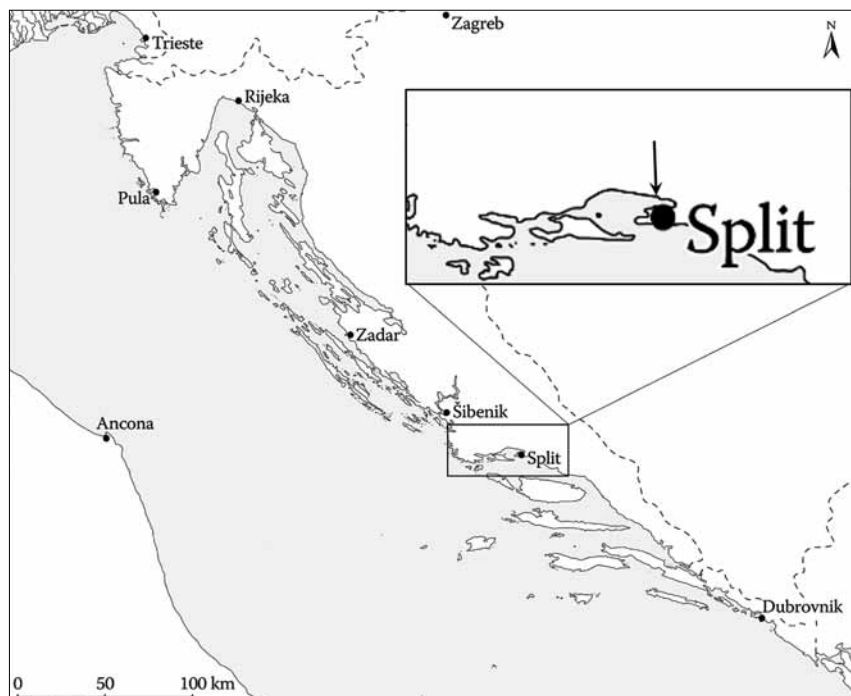


Figure 1. The location of the Gulf of Kaštela, and the site of Trstenik.

organization of *Portus Salonitanus*, it probably occupied large portion of the eastern part of the gulf, between the islet of Barbarinac and the peninsula of Vranjic.²

The ancient inhabitants of the area exploited its marine resources, and the two fertile fields of Kaštela and Trogir. In Roman times a number of *villae rusticae* occupied its northern coast, and were situated along the road connecting *Salona* and *Tragurium*.³

In medieval times, the seven fortifications (Ital. *castelli*) gave the origin to the present-day towns of Kaštela⁴, of which Kaštel Sućurac is at the eastern-most end. The site of Trstenik lies in its eastern part, in *Ager Salonitanus*, in the immediate vicinity of the city walls of the ancient capital. Trstenik exhibits traces of economic activity that likely supported the inhabitants of Salona.

² The current knowledge on the port of ancient Salona was recently summarized by B. Kirigin (2012).

³ Babić 1991.

⁴ Marasović 2003.

2. The site

The underwater part of the site at Trstenik was officially discovered in 2002,⁵ through the detection and excavation of a large perforated dolium, protruding from the muddy sea bottom about 50 m distant from the present-day coast (Fig. 2). As in many other cases, it was soon determined that the local inhabitants knew about the existence of ‘the big jars buried in the mud’, which had even been mentioned in a modest local journal.⁶

The first rescue campaign, organized that same year, revealed that the dolium was entirely preserved. Initially

⁵ The chance land finds from the same location already pointed to the existence of a Roman villa, but the site was never researched (Cambi 1992). The complex situation in the Gulf of Kaštela, modern industrial development, and ongoing construction activities led to the destruction of many sites in the coastal area. Besides the chance finds, some information can be gathered from recent rescue archaeological campaigns (Šuta 2011; Kamenjarin 2012).

⁶ Radić Rossi 2009, p. 490.

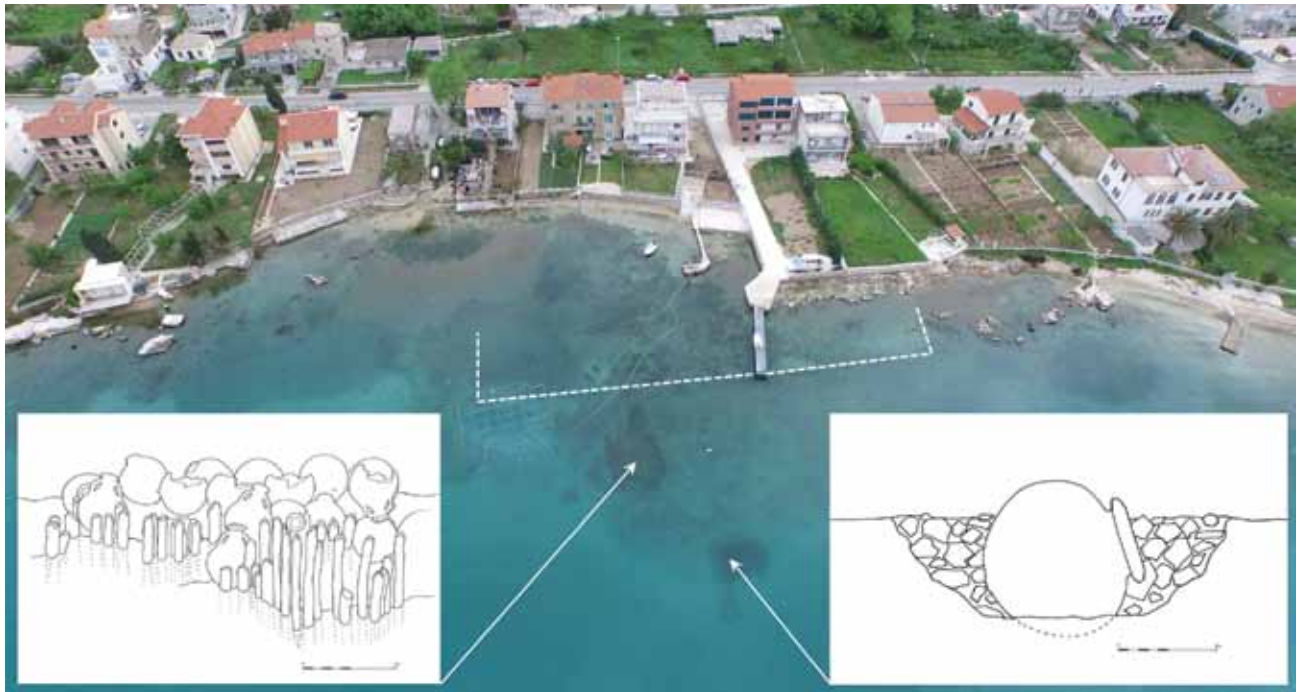


Figure 2. Trstenik site, looking to the north (photo: E. Šilić). Inserts indicate the relative positions of the perforated dolium (right), and the Dressel 20 amphorae trapped by wooden poles. The dotted white line indicates the general orientation of the linear wooden structure. Position of the scuttled ship is marked by the position of the excavation grid.

constructed to store wine,⁷ it was later perforated with a series of small irregularly shaped rectangular holes, and its function obviously changed. Based on the other finds in the trench, and in the surface layer of the site, it was possible to conclude that the site once contained at least three such dolia, all of them already repurposed in Roman times (Radić Rossi 2006, 87–89).⁸

What immediately attracted additional attention to the site was the discovery of two groups of globular amphorae of Dressel 20 type, of certain Hispanic origin (Radić Rossi 2008a, pp. 286, 288, 291–292; 2009: pp. 491–492). Although evidence of the maritime transport of such amphorae in the Eastern Adriatic is quite scarce, a similar deposit of Dressel 20 amphorae has been

documented at the nearby site of Spinut, just across the Gulf of Kaštela near the northern extent of Split (Cambi 1976; Radić Rossi 2008c).

During several following short-term research campaigns,⁹ performed from 2003 to 2006, these Dressel 20 amphorae were studied. The first group of amphorae was quite close to shore, and contained six damaged containers, all of which were excavated and removed for conservation. The second group of amphorae, located near the perforated dolium, included at least 40 vessels, some broken but some entirely preserved, which had accumulated in three layers to an overall height of about 2m. The amphorae were trapped within an ancient wooden piling, consisting of about 45 poles per side (eastern and western), (Fig. 2), while another line of irregularly spaced poles led to a linear wooden structure,

⁷ The original use of the perforated dolium found at Trstenik as a container for wine was deduced from the thick layer of pitch in the interior of the container. It is obvious that the pitch was removed from the areas where holes were drilled to support repurposing, likely as a fish or shellfish live well (see Radić Rossi 2006, fig. 16).

⁸ On the overview of the sites, and the interpretation of the perforated dolia finds in Dalmatia see Radić Rossi 2008b.

⁹ Due to ongoing construction activities, and the dynamic exploitation of the coastal areas of the Gulf, excavation of shallow water sites remains the best way to preserve them for the future. A couple of recent unpleasant examples have demonstrated that known sites are at risk; once a site is destroyed, information is lost forever.



Figure 3 Aerial view of the excavation area. The grid consisted in 25 squares, arranged in a rectangle formed by 6 x 4 squares, with additional square added in the direction of the eastern extremity of the ship (photo: E. Šilić).

constructed parallel to the shore. Ancient planks found in the vicinity suggested the possibility of the existence of a small wooden pier above the operative platform, stabilized and reinforced by the three layers of amphorae. After recovering several amphorae, the remaining finds were left *in situ*, temporarily protected by geotextile, sediment, and an iron mesh.

The preserved part of the linear structure parallel to the shore (Fig. 2) is composed of two layers of longitudinally laid planks, kept in the upright position by wooden poles positioned from both sides. It extends about 50 m, and at the western end changes direction towards the coast. Although the layout of the linear structure strongly resembles the Roman method of constructing saltpan basins, it could also be perceived as the delineation of the waterfront of the Roman villa. The idea of the waterfront is also supported by the discovery of a scuttled ship, which obviously bolstered the integral part of the structure (Radić Rossi 2007).

Based on the performed ^{14}C analysis of the wooden remains, the typology of amphorae, and the recovered finds, it appears that the site was in use from the late 1st c. BC, to the early 3rd c. AD. The future systematic study of the entire repertory of finds will enhance this chronological determination.

3. The ship

The initial recording of the exposed surface remains at the Trstenik site, performed during the 2002 rescue campaign, highlighted the existence of some elements in the north-western part of the site, adjacent to the linear coastal structure (Fig. 2), which had a markedly different appearance from nearby components. Four years later, systematic survey of the same area confirmed the hypothesis of the presence of the hull of a sunken ship.

3.1. Discovery and research

The discovery of the ship in 2006 resulted in the sketch of its outline, visible after the removal of a thin surface layer of fine sediment. The whole northern side of the mortise-and-tenon joined hull, both endposts, the western part of the southern side of the vessel as indicated by the extremities of the frames, and the topmost preserved strakes all combined to indicate a well-preserved ship conserved to a length of about 11 m.

The brief 2007 test campaign was designed to estimate the state of preservation of the hull, and to develop a rough order of magnitude for the time and effort needed to systematically research the vessel. It revealed the wooden remains of a vessel with an extremely dense framing pattern, which was filled with large irregular rocks, and intentionally scuttled at the edge of the presumed waterfront (Radić Rossi 2008).

Figure 4. The 2012 excavation campaign. Filling of rocks above the eastern part of the hull (photo: S. Govorčin).



The first three-week research campaign, executed in 2012, uncovered the western part of the wreck. The uncovered section was documented, and then re-covered with geotextile for temporary preservation *in situ*. The ship was found to be in an outstanding state of preservation, attributed to the weight of stones pressing the wooden remains into the seabed. This trapped the fine sediment, which cut off oxygen, sealing the ship from organic decay. A return to Trstenik to complete the excavation became a high priority for future fieldwork.

Due to funding constraints, the next opportunity to return to the site occurred in 2015, through the partnership of the University of Zadar and Texas A&M University. With the support of 2015 Claude Duthuit Grant awarded by the Institute of Nautical Archaeology, the excavation was successfully conducted from April 13th through May 10th 2015.¹⁰ The ship was excavated, sampled,¹¹ documented, photographed and re-covered for *in situ* preservation. The 2015 work uncovered the

¹⁰ Additional support was provided by the University of Zadar and the Center for Maritime Archaeology and Conservation of the Texas A&M University. The study of the ship is continuing under the framework of the AdriaS Project (Archaeology of Adriatic Shipbuilding and Seafaring, IP-2014-09-8211), supported by the Croatian Science Foundation.

¹¹ Four hundred wood samples were taken during the excavation; analysis of the wood species used to build and repair the ship is in progress; great thanks to Nili Lipshitz of the University of Haifa for performing these analyses.

previously excavated section, and completed excavation of the rest of the ship. Although the main portion of the hull was fully researched, it is possible that additional broken ship fragments could still be located to the south of the hull, a site area which was not excavated. As the exact function of the scuttled ship in relation to the wooden coastal structure is not clear, additional research at the site would be appropriate.

The 2015 excavation began by removal of the sand bags and geotextile covering the section of the ship excavated in 2012, followed by the installation of an aluminum grid system of 2 x 2m squares over the entire site (Fig. 3). The grid at Trstenik provided a useful reference system, but its most important function was to afford a level, stable surface above the wreck site to facilitate the removal of heavy rocks loaded on the ship before scuttling (Fig. 4), and the employment of water dredges. Divers were able to weigh themselves down with extra weight on land, walk to the wreck site from shore, and work on top of the aluminum grid without concern for maintenance of depth control. When photogrammetry was scheduled, the entire grid could be lifted above the site by four divers, who walked the fully assembled grid away from the ship so that photographs could be made without visual interference from the grid.

At the completion of the excavation, the ship was re-covered with geotextile, sand bags and fine sediment, and may be revisited in the future for additional research.



Figure 5. Observations on the hull (photo: B. Vukičević).

A significant constraint was the fact that the ship was not actually disassembled and excavated for detailed study. Thus, numerous diagnostic studies (for example, mapping of the external surface of the hull, a detailed examination of strake joinery, complete 3-dimensional measurement of the keel along its entire length, etc.) were not performed. However, a significant amount of information was extracted through uncovering a wreck, performing observations (Fig. 5), a detailed photogrammetric study of visible components, collecting selected artifacts, and recovering the site to conserve it for future study after analysis of the initial results.

3.2. The hull

The ship rests on its keel, and was scuttled in an east-west orientation, which was very fortuitous for future reconstruction. Based on a significantly sharper endpost curvature at one end, and the location of several discovered artifacts, the ship was interpreted as bow-east; however, the most diagnostic tool for orientation, the mast step, was missing from this ship, apparently salvaged for reuse prior to the ship being scuttled. The port side, which was against the sea wall to the north, was perfectly preserved to the turn of the bilge and to the depth of the ship to the first wale. The starboard side cracked twice

due to the weight of the rocks in the ship, which allowed a greater number of strakes to be preserved under the rocks. For this preliminary analysis, the labeling done during the excavation will be utilized to describe the ship components.

3.2.1 The keel and endposts

The preserved structure consists of keel, a sternpost scarfed to the keel under frame 17, and a stem scarfed to the keel between frames 75 and 76.¹² The keel is composed of a single piece of beech (*Fagus sylvatica*), 10–11 cm wide as measured across the inboard dimension for the entire length of the hull. It is 8.7 m long; examination of one section indicated that the garboard strake was rabbeted to the keel, but since the ship was not disassembled, the full extent of joinery of the garboard strake to the keel was not observed.

The preserved portion of the stern post is composed of a single piece of European ash (*Fraxinus excelsior*), 10 cm wide and 1.9 m in length. It is scarfed to the keel below the small center section of frame 17, which is only 25 cm in width, just sufficient to cover the scarf, and the star-

¹² The preserved frame stations were marked with progressive numbers from 11 to 79, starting from the west (stern) side of the hull.

Figure 6. Example of frame notches cut to support mounting a keelson/mast step; note the different frame thicknesses (photo: R. Mosković).



board garboard strake. The scarf was not disassembled for detailed analysis during the excavation.

The preserved portion of the stem is composed of a single piece of field elm (*Ulmus campestris*), 10 cm wide and 1.4 m long. It is scarfed to the keel between frames 75 and 76. It is possible that a small piece of frame 75 did not survive; the gap over the stem-keel scarf between the two pieces of frame 75 is 25 cm wide, very similar to the stern post-keel scarf measurement of the center section of frame 17. This scarf was also not disassembled during the excavation. The stem, while shorter than the sternpost, has significantly sharper curvature, bending almost 30 degrees above the horizontal scarf over its length.

3.2.2 The strakes and wales

There are 11 strakes between the keel and the first wale on each side of the ship. Repairs in the strakes performed using patch tenons were noted throughout the structure, confirming the hypothesis that the ship was scuttled at the end of a longer life at sea. As many portions of the internal hull were thickly coated with pitch, additional repairs may well be detected during a future excavation. Full analysis of the wood used for the strakes is in progress; trees used for strakes include Mediterranean cypress (*Cupressus sempervirens*), Aleppo pine (*Pinus*

halepensis), and black pine (*Pinus nigra*). Strake widths varied from 15–22 cm, with many variations from scarfs and repairs. Several strakes appear to extend in one piece for the entire 11 m length of the ship, but most strakes are scarfed at some point, which could have occurred at original construction, or during repair. Measurement of exposed plank thicknesses varied from 2.5–3 cm.

A portion of one wale survived to port, approximately 10 cm wide. Three wales survive to starboard, each approximately 10 cm wide, separated by one 22 cm wide strake. All the wales were constructed from stone pine (*Pinus pinea*).

3.2.3 The framing

The framing pattern for this ship is quite complex. The ship has 69 frames (see note 10) spread across only 11 m of length. Additionally, the framing density of the central part of the ship (frames 21 to 67) is twice the density of the two extremities of the ship (frames 11 to 20 at the stern, and frames 68 to 79 at the bow). At some locations in the central part of the ship, the frames were only 5 cm apart, quite a challenge for excavation and documentation. The framing pattern is not the regular alternation of floor timbers and half-floors, but rather appears to be a jumble of various elements, some of which



Figure 7. The entirely preserved lamp of Loeschcke X / Iványi XVII type (photo: S. Govorčin)

could possibly have been installed at various times over the ship's life. With very few exceptions, each bottom part of the frame extended over the keel; no frames were determined to be actually attached to the keel, but were pegged to the planking after the shell was constructed. Traces of destroyed metal fastenings, used for fixing the stringers to the frames, were also documented, as well as some nails, found out of their original position.

The material used to build the frames varied widely; the most common frame material was Aleppo pine (*Pinus halepensis*), but many other woods were used for frame manufacture, including European ash (*Fraxinus excelsior*), sycamore (*Acer pseudoplatanus*), chestnut (*Castanea sativa*), Turkey oak (*Quercus cerris*), Mediterranean cypress (*Cupressus sempervirens*), field elm (*Ulmus campestris*), and sessile oak (*Quercus petraea*); additionally, two uses of birch (*Betula pendula*), and one use each of walnut (*Juglans regia*), Turkish pine (*Pinus brutia*) and stone pine (*Pinus pinea*) were noted. Analysis of the patterns of framing, wood, and potential repairs over the life of the ship is ongoing.

Virtually all of the frames had a single semicircular limber hole cut over the top of the keel, radius of 2–3 cm. The exceptions include frames at the bow and stern, and several frames which were half-floors and did not extend over the keel (frames 37, 37, and 39). Nine of the frames

had some type of notching on top (Fig. 6). These notches varied in thickness and depth; some are likely associated with the (now missing) mast step, but others may have a different purpose. One possibility is that the mast step was replaced or relocated on the ship during its life, or that some of the framing is not original to the ship. Analysis of the notches in relation to the wood species, notch similarities, and other factors is in progress.

3.2.4 The stringers

Parts of five stringers per ship's side survived, some running the length of the ship, but most pieces were fragmented by the scuttling stones and were located throughout the ship. After documenting their position *in situ*, the stringers were removed in order to allow the detailed observation of the framing.

Wood used for stringer construction included Mediterranean cypress (*Cupressus sempervirens*), Aleppo pine (*Pinus halepensis*), and black pine (*Pinus nigra*), the same three tree species that were found in the planking of the ship.

3.3 Artefacts

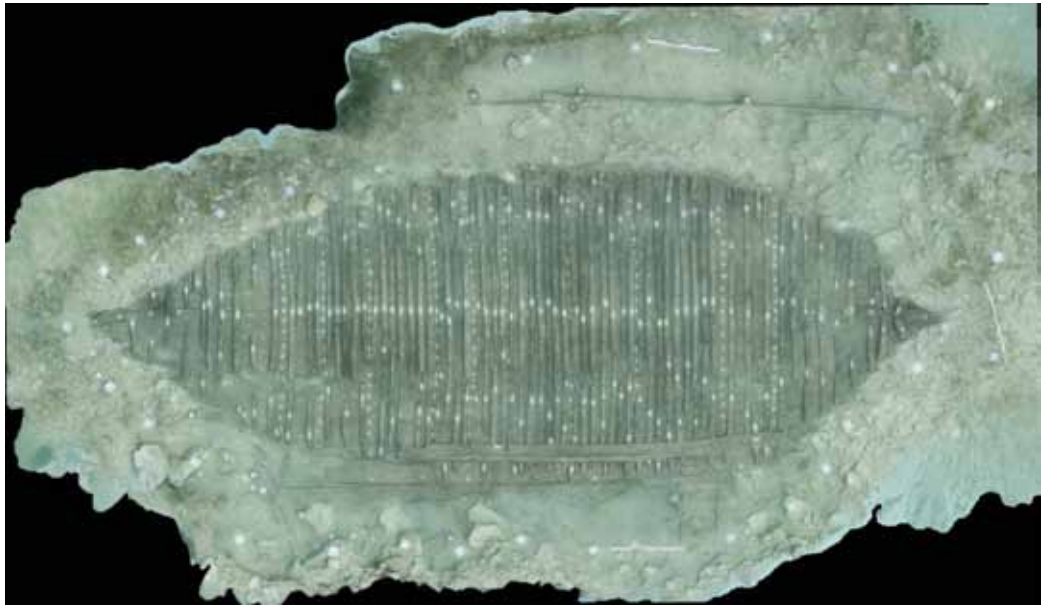
Because the ship was scuttled, there were not high expectations for artifact recovery. However, an oil lamp in perfect condition was found between two frames, and two coins were also recovered from the ship, with exact identification pending conservation. As the most sensitive find from the chronological point of view, the entirely preserved lamp of Loeschcke X / Iványi XVII type (Loeschcke 1919; Iványi 1935), can be dated to the 1st c. AD, and more precisely in its first half (Fig. 7). Its position in the ship's hold, underneath the heavy stone fill, suggest it is closely tied to the scuttling date of the hull.

Numerous pieces of broken ceramics were recovered, along with animal bone, nutshells, and glass fragments. In total, over 230 artefacts were cataloged and photographed. The study of the recovered material is in progress.

4. Conclusion

Built shell first, with mortise and tenon plank joinery and frames attached to the shell by wooden trenails

Figure 8. Photogrammetric orthomosaic performed after removal of stringers. North is to the top. The white tags are over the keel, illustrating the additional hull planking preserved to starboard. The sea wall, with wooden support posts, is visible to the north of the ship (K. Yamafune, S. Govorčin).



driven from outside-in, the ship was clearly well-used before it was scuttled. The dense framing pattern and the flat bottom tend to indicate that it was originally a cargo ship (Fig. 8), conceived for transporting heavy cargoes in the shallow coastal areas of the Gulf. Although there is no firm evidence of its original purpose, the intense Roman quarrying activity on the nearby island of Brač, and the ongoing construction activity in the region of *Salona* and *Spalatum* during the presumed lifetime of the ship, indicate that hauling stone is one possible solution. On the other hand, transport of salt, fish-based products, oil and wine could have required equally strong ships, able to load and unload heavy cargo in very shallow environments.

According to the results of the radiocarbon analysis, supported by the date of the completely preserved oil lamp (Fig. 7), the ship sailed at the end of the old, and the beginning of the new era. At the end of its useful life at sea, it was then reused to support the harbor structures of a *villa rustica* at the height of the Roman early Imperial economic boom of the province of Dalmatia, during the first decades of the *Pax Romana*. This ship's ultimate fate mirrors a similar situation found in the bay of Caska

on the island of Pag (Boetto, Radić Rossi 2017), where systematic research to date has revealed the presence of at least three scuttled ships, also repurposed to bolster wooden pier structures.

The detailed study and the reconstruction of the Trstenik hull is currently in progress, and will be published as a doctoral dissertation and in other fora.¹³ The Trstenik site holds great potential to provide information on the maritime complex that supported Salona and exploited the abundant natural resources of the Gulf of Kaštela during the Early Roman Empire. Future systematic site excavations are crucial to provide additional accurate information on the purpose and organization of the maritime part of this economic complex, and the exact purpose and employment of the scuttled ship.

¹³ The Ministry of Culture of the Republic of Croatia, the Municipality and the Museum of Kaštela supported the underwater archaeological research realized in 2002 – 2007, and 2012. The study of the hull found at Trstenik is realized in the framework of the AdriaS (Archaeology of Adriatic Shipbuilding and Seafaring) Project, supported by the Croatian Science Foundation, under the number IP-2014-09-8211.

IRENA RADIĆ ROSSI, DAVE RUFF
RIMSKI BROD U AGERU ANTIČKE SALONE:
PRELIMINARNI REZULTATI

(Sažetak)

Podmorsko nalazište na Trsteniku, na istočnom kraju Kaštel Sućurca, uvedeno je u službenu evidenciju kulturnih dobara tek 2002. godine, iako je već mnogo ranije bilo poznato lokalnom stanovništvu.

Riječ je o ostatcima rimskog gospodarskog kompleksa, okvirno datiranoga u 1. st. pr. Kr. – 3. st. po Kr., koji se nalazio u Salonitanskom ageru, u blizini zapadnih gradskih bedema. Kopneni dio nalazišta oštećen je suvremenom izgradnjom, ali su se u podmorju očuvali zanimljivi tragovi priobalnih struktura izrađenih od različitih materijala.

Među ostalim zanimljivim nalazima ističu se ostatci broda koji je vjerojatno bio izgrađen i korišten u 1. st. po Kr., a potom je namjerno potopljen za potrebe učvršćenja konstrukcije operativne obale. Brod je otkriven 2006., preliminarno dokumentiran 2007. i 2012., a istražen 2015. godine. Brod je legao na morsko dno u uspravnom položaju, u cijelosti ispunjen velikim komadima lomljenog kamena namijenjenog učvršćenju operativne obale.

Do današnjih se dana očuvao u dužini od oko 12 i širini od oko 4,5 m, a od elemenata brodske konstrukcije očuvala se kobilica s početnim dijelovima pramčane i krmene statve, dio oplata do treće bokoštitnice, rebra sastavljena od rebrenica ili polurebrenica i rebrenih nastavaka te pet proveza sa svake strane broda.

Prijevod na hrvatski jezik: Irena Radić Rossi

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