



PROBNO PODMORSKO ARHEOLOŠKO ISTRAŽIVANJE U VRANJICU KOD SOLINA

Underwater archaeological trial survey in Vranjic near Solin

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Niz antičkih spolija ugrađenih u vranjičke kuće, brojni slučajni nalazi otkriveni tijekom građevinskih zahvata na kopnu i u moru koje u svojim tekstovima spominje don Frane Bulić, poznati vranjički potopljeni sarkofazi te nalazi iz opsežnijih građevinskih iskopa za potrebe izgradnje infrastrukture početkom 21. stoljeća upućivali su na činjenicu kako je riječ o prostoru koji obiluje arheološkom baštinom.

Tijekom građevinskog iskopa duž sjeverne obale Vranjica, provedenog u okviru projekta Eko-Kaštelański zaljev, pronađene su dvije kamene skulpture iz rimskog doba.

Tijekom nastavka građevinskog iskopa duž južne i zapadne obale, provedenog 2005. i 2006. godine, radovi su zaustavljeni u devet navrata, kako bi se na mjestima veće koncentracije nalaza provelo zaštitno podmorsko arheološko istraživanje (Radić Rossi 2008).

Neprocjenjiva vrijednost nalazišta u Vranjicu, u kojemu na području poluotoka ne postoji mogućnost kopnenih istraživanja, bila je u izrazitoj

Rich archaeological heritage of the area of Vranjic is evidenced in ancient spolia incorporated into houses in Vranjic, numerous accidental finds uncovered during construction activities both on land and underwater, references in the writings of Don Frane Bulić, the well-known sunken sarcophagi of Vranjic, and discoveries made during large-scale infrastructure excavations in the early 21st century.

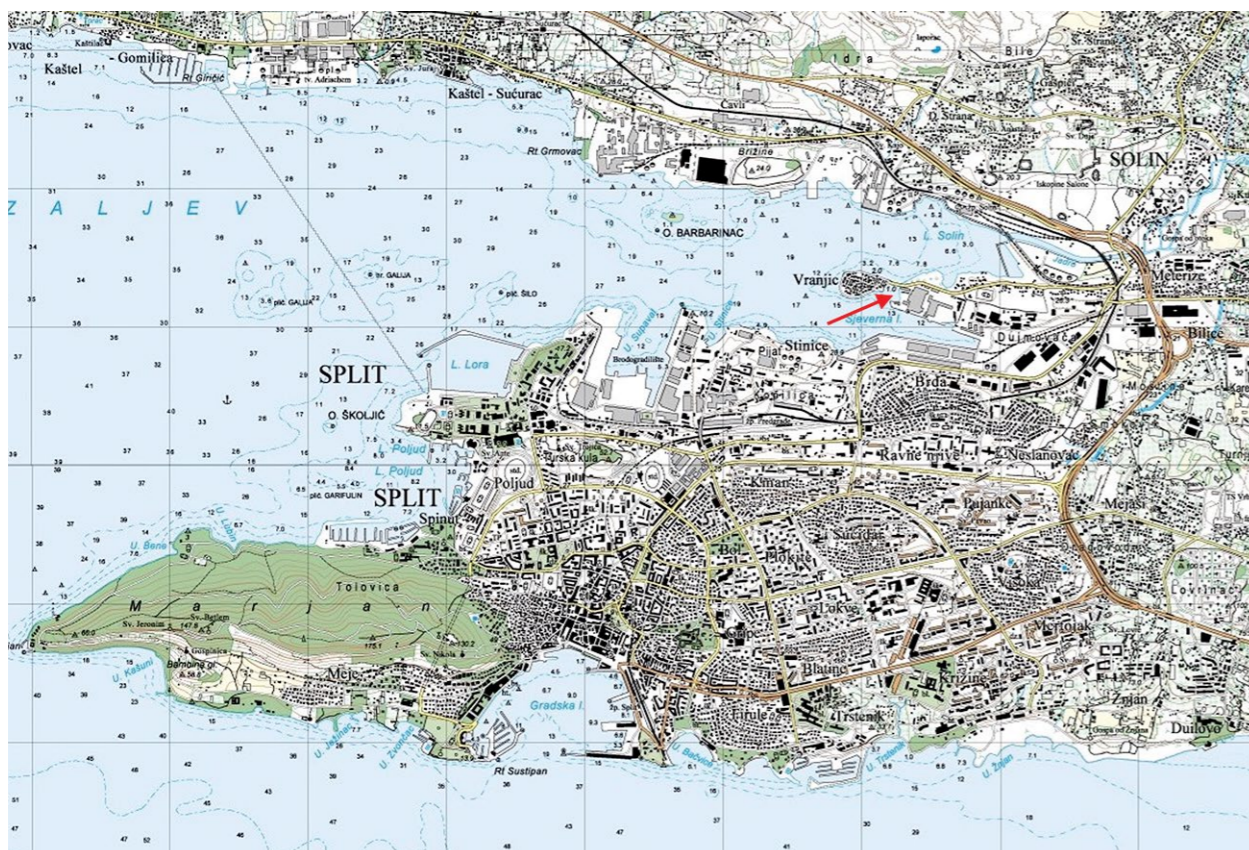
Two stone sculptures from the Roman period were discovered during construction excavations along the northern coast of Vranjic as part of the Eco-Kaštela Bay project. Further excavations along the southern and western coasts, conducted in 2005 and 2006, led to construction being halted on nine occasions to allow for rescue underwater archaeological investigations in areas with a high concentration of finds (Radić Rossi 2008).

The invaluable significance of the Vranjic site, where land-based research on the peninsula is not possible, stood in stark contrast to the challenging conditions under which the work was conducted. Preventive underwater archaeological excavations



Irena RADIĆ ROSSI

irradic@unizd.hr



Položaj nalazišta na istočnom kraju Kaštelanskog zaljeva
Location of the site at the eastern end of the Gulf of Kaštela

suprotnosti s uvjetima i mogućnostima rada. Zaštitno podmorsko arheološko istraživanje odvijalo se usporedno s građevinskim iskopom, što je znatno ograničavalo pristup kulturnim slojevima, smanjivalo vidljivost i otežavalo dokumentiranje i vađenje arheoloških nalaza. Takva je situacija, nažalost, bitno ograničila količinu dobivenih podataka, ali je zaštitno istraživanje u svakom slučaju omogućilo brojne nove spoznaje o postanku i razvoju kraja o kojemu se donedavno vrlo malo znalo. Naselje u Vranjicu svoj je život započelo tijekom brončanog doba (Arena et al. 2020), a u vrijeme antike taj je prostor igrao važnu ulogu u organizaciji salonitanske luke.

Nakon što je YACHT CLUB VRANJIC d. o. o. dobio od Vlade Republike Hrvatske ovlaštenje za izgradnju i gospodarsko korištenje luke posebne namjene – brodogradilišta na dijelu k. o. Solin, predio Brodoremontno brodogradilište Vranjic, pokrenut je projekt rekonstrukcije njezina obalnog dijela i dijela kopnenih površina. Konzervatorski odjel Ministarstva kulture i medija u Splitu izdao je posebne uvjete zaštite kulturnog dobra, koje je bilo potrebno poštovati kako bi se nastavio postupak ishođenja potrebnih dopuštenja.

were carried out simultaneously with construction work, which severely limited access to cultural layers, reduced visibility, and hindered the documentation and recovery of archaeological finds.

Unfortunately, these circumstances significantly restricted the amount of data collected. Nevertheless, the rescue excavations yielded many new insights into the origins and development of the area, about which very little had been known until recently. The settlement in Vranjic dates back to the Bronze Age (Arena et al. 2020), and during antiquity, the area played an important role in the organization of the port of Salona.

After YACHT CLUB VRANJIC LTD received authorization from the Government of the Republic of Croatia for the construction and economic use of a special-purpose port, a shipyard located within part of the cadastral municipality of Solin in the area of the Vranjic Shipyard, a project was initiated to reconstruct the coastal section and a portion of the adjacent land area. The Conservation Department of the Ministry of Culture and Media in Split issued specific conditions for the protection of cultural heritage, which had to be met in order to proceed with the permitting process.

Work commenced on April 15, 2024, with the assembly of a diving team and the preparation of

Radovi su započeli 15. travnja 2024. godine okupljanjem ronilačke ekipe i pripremom opreme za ronjenje i podmorsko istraživanje.¹ Sljedećeg je dana površinski pregledan čitav prostor predviđen za građevinske zahvate. Osim velike količine recentnog otpada na muljevitome morskom dnu, u središnjoj je zoni, na dubini od 2,5 do 3,5 m, uočena skupina drvenih pilona.

Po završetku podmorskog pregleda, narančastim su bovama označeni položaji arheoloških sonde. Sonde 2–5 pokazale su se arheološki sterilnima, a osim mulja i kamenja, u njima nije bilo nikakvoga drugog materijala. U Sondi 1, međutim, ispod oko 20 do 30 cm sterilnoga muljevitog sloja pojavila se velika količina drvenih pilona. U sondi sastavljenoj od dva kvadrata, sveukupnih dimezija 2 x 4 m, uočeno je sveukupno 76 pilona, koji su označeni žutim oznakama. S predstavnikom Konzervatorskog odjela u Splitu, Sašom Denegrijem, dogovoreno je da se iskop provede do zdravice, a svi piloni izvade i dokumentiraju. Duljina najkraćih pilona iznosila je svega 11 cm, dok je duljina najdužih dosegla 152,5 cm. U

equipment for underwater exploration.¹ The following day, a surface inspection of the entire area designated for construction was carried out. In addition to a large quantity of modern waste on the muddy seabed, a cluster of wooden poles was observed in the central zone, at a depth of 2.5 to 3.5 meters.

After the underwater survey was completed, the positions of the archaeological probes were marked with orange buoys. Probes 2–5 proved to be archaeologically sterile, and apart from mud and stones, there was no other material in them. In Probe 1, however, a large quantity of wooden poles appeared under about 20 to 30 cm of sterile mud layer. In the probe consisting of two squares, with a total dimension of 2 x 4 m, a total of 76 poles were observed, which were marked with yellow tags. It was agreed with the representative of the Conservation Department in Split, Saša Denegri, that the excavation would be carried out to the bedrock, and all poles would be removed and documented. The length of the shortest pole was only 11 cm, while the length of the longest reached 152.5 cm. In the excavation in Probe 1, in addition to the poles, a small number of amphora belly



Pogled na koncentraciju drvenih pilona u površinskom sloju nalazišta (foto: M. Lete)
View of the concentration of wooden poles in the surface layer of the site (photo: M. Lete)

¹ Uz voditeljicu akcije Irenu Radić Rossi i zamjenika voditelja Matu Paricu, u istraživanju su sudjelovali studenti arheologije Mislav Popović i Deni Demetlika te profesionalni ronionci Marko Lete i Slavko Rogić.

¹ Along with the research director Irena Radić Rossi and the deputy director Mate Parica, archaeology students Mislav Popović and Deni Demetlika and professional divers Marko Lete and Slavko Rogić participated in the research.



iskopu u Sondi 1, osim pilona, uočena je i manja količina ulomaka trbuha amfora kojima je, zbog fragmentiranosti, bilo teško odrediti tipološku i kronološku pripadnost. Usporedno s iskopom u Sondi 1 teklo je i označavanje pilona uočenih na površini morskog dna.

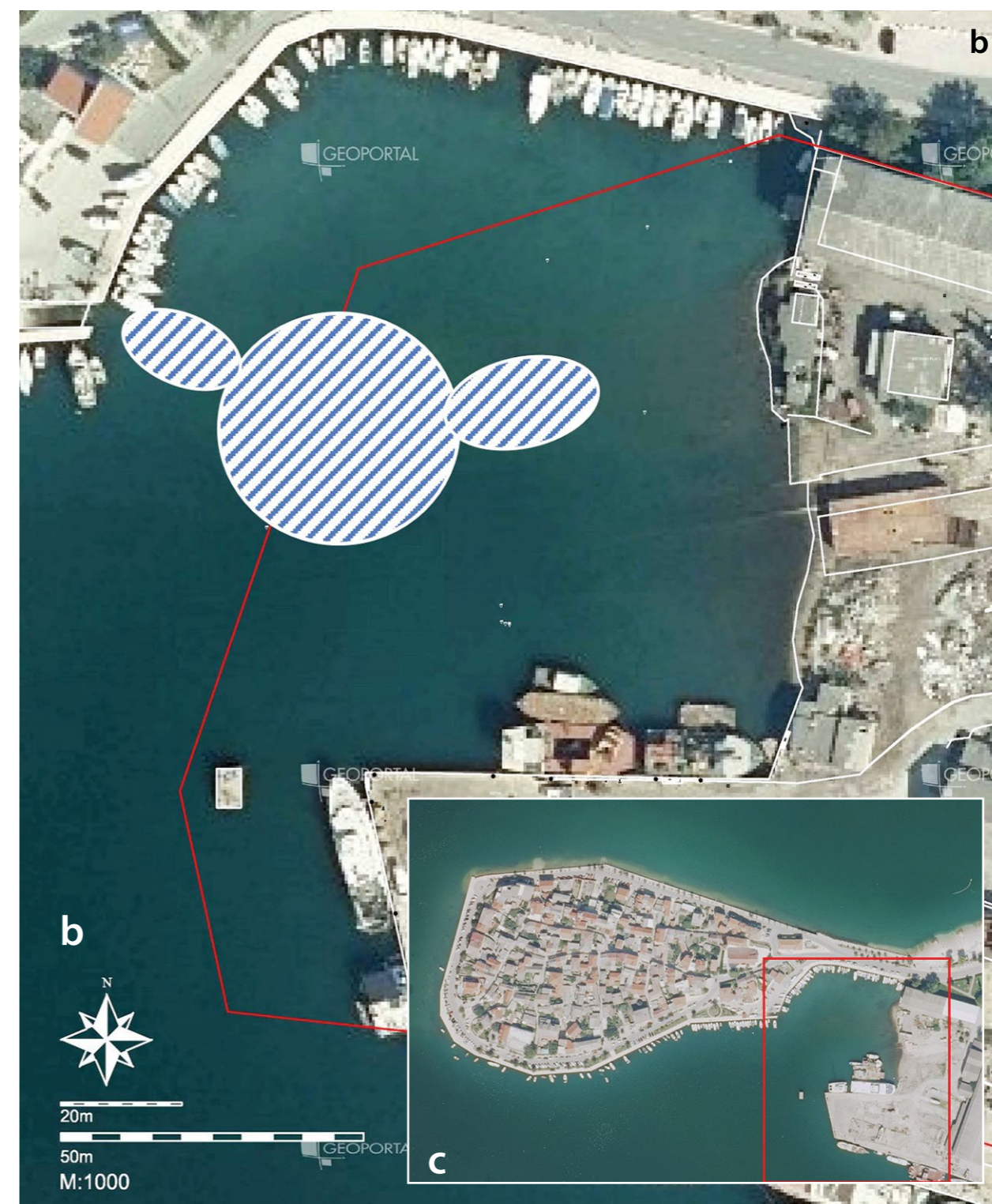
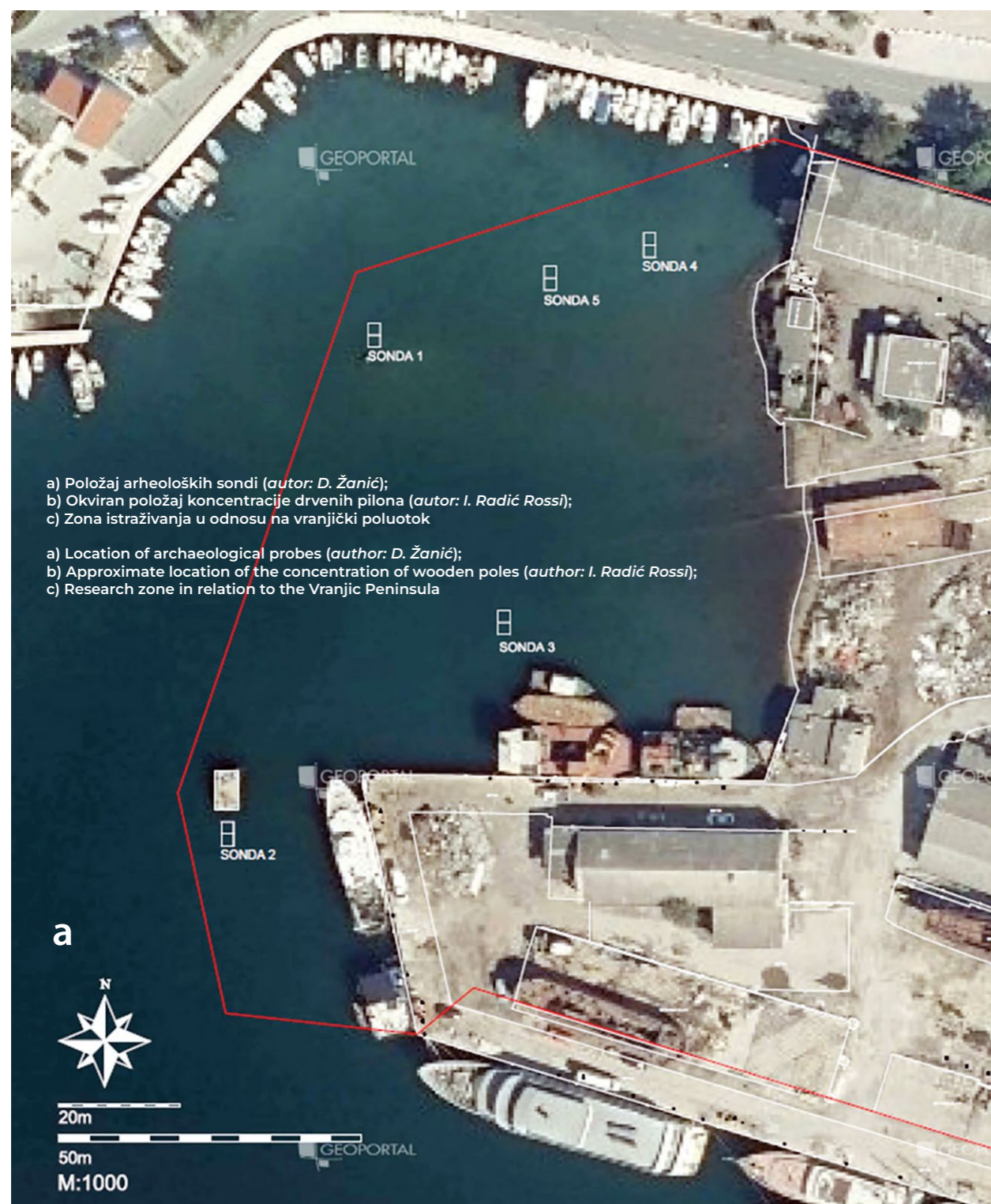
S obzirom na situaciju, dogovoreno je da se broj sondi zaustavi na pet, a da se ostatak vremena iskoristi za površinsko čišćenje i pokušaj

fragments were also observed, the typological and chronological affiliation of which, due to their fragmentation, was difficult to determine. The marking of poles observed on the surface of the seabed was also carried out in parallel with the excavation in Probe 1.

Given the situation, it was agreed that the number of probes would be limited to five, and that the remaining time would be used for surface cleaning and an attempt to determine the extent of the

utvrđivanja granice rasprostranjenosti pilona. Posao je obavljen bez većih poteškoća, a potrajao je deset radnih dana. Kroz glavnu koncentraciju pilona provučen je konop od linije zone obuhvata projekta na zapadu, u smjeru obale na istoku. Čišćenje površinskog sloja mulja započelo je od konopa u smjeru juga, kako bi se utvrdilo do koje su granice piloni iskorišteni za drenažu terena. Kako je iskopom utvrđeno da ih u Sondi 3 više nema,

poles' distribution. The work was carried out without major difficulties and took ten working days. A rope was pulled through the main concentration of poles from the line of the project area in the west, towards the coast in the east. The cleaning of the surface layer of silt began from the rope in a southerly direction, in order to determine the extent to which the poles had been used for drainage of the terrain. Since the excavation determined that there





moglo se očekivati da će se granica njihova rasprostiranja pojaviti nešto sjevernije. Malo istočnije od granične linije obuhvata projekta širina prostora na kojemu su zabilježeni piloni iznosi oko 23,5 m, a malo zapadnije oko 24,5 m. Piloni se protežu u duljini od oko 83,5 m, od najistočnijeg do najzapadnijeg izmjenog primjerka. Najzapadniji pilon nalazi se u blizini južne vranjičke obale, daleko izvan zone u kojoj se predviđaju građevinski zahvati.

Dominik Žanić iz Muzeja grada Kaštela u dva je navrata geodetski snimio situaciju u zoni iskopa. Prvo je snimanje obuhvatilo Sonde 1–4, karakteristične pilone u Sondi 1 te određeni broj odabranih pilona u skupini označenoj na površini morskog dna. Drugo je snimanje pozicioniralo Sondu 5 i karakteristične pilone koji su u međuvremenu otkriveni površinskim iskopom.

Među pilonima uočeno je nekoliko grla amfora, od kojih jedno zasigurno pripada amfori tipa Dressel 20 iz 1. do 3. st. po Kr., a druga dva mogu se pripisati kasnoantičkom razdoblju i tipološki odrediti kao Late Roman I i Late Roman IV. Takve amfore proizvodile su se do 7. st. po Kr. Osim grla, pronađeni su i ulomci trbuha amfora, od kojih se neki, zbog narebrenosti, mogu datirati u kasno-

were no more poles in Probe 3, it was expected that the extent of their distribution would appear somewhat further north. Just east of the project boundary line, the width of the area where poles were recorded measures approximately 23.5 meters, while just west of the line it spans about 24.5 meters. The poles extend over a length of roughly 83.5 meters, from the easternmost to the westernmost recorded example. The westernmost pole is located near the southern coast of Vranjic, well beyond the zone designated for construction activities.

Dominik Žanić, from the Kaštela City Museum, conducted two geodetic surveys of the excavation area. The first survey included Probes 1–4, characteristic poles within Probe 1, and a selection of marked poles on the seabed surface. The second survey recorded the location of Probe 5 and additional characteristic poles that were uncovered during surface excavation in the meantime.

Among the poles, several amphora necks were discovered, one of which was confidently identified as a Dressel 20 type amphora, dating from the 1st to 3rd century AD. The other two necks can be attributed to the period of Late Antiquity and are typologically classified as Late Roman I and Late Roman IV types, which were in production up to the 7th century AD.



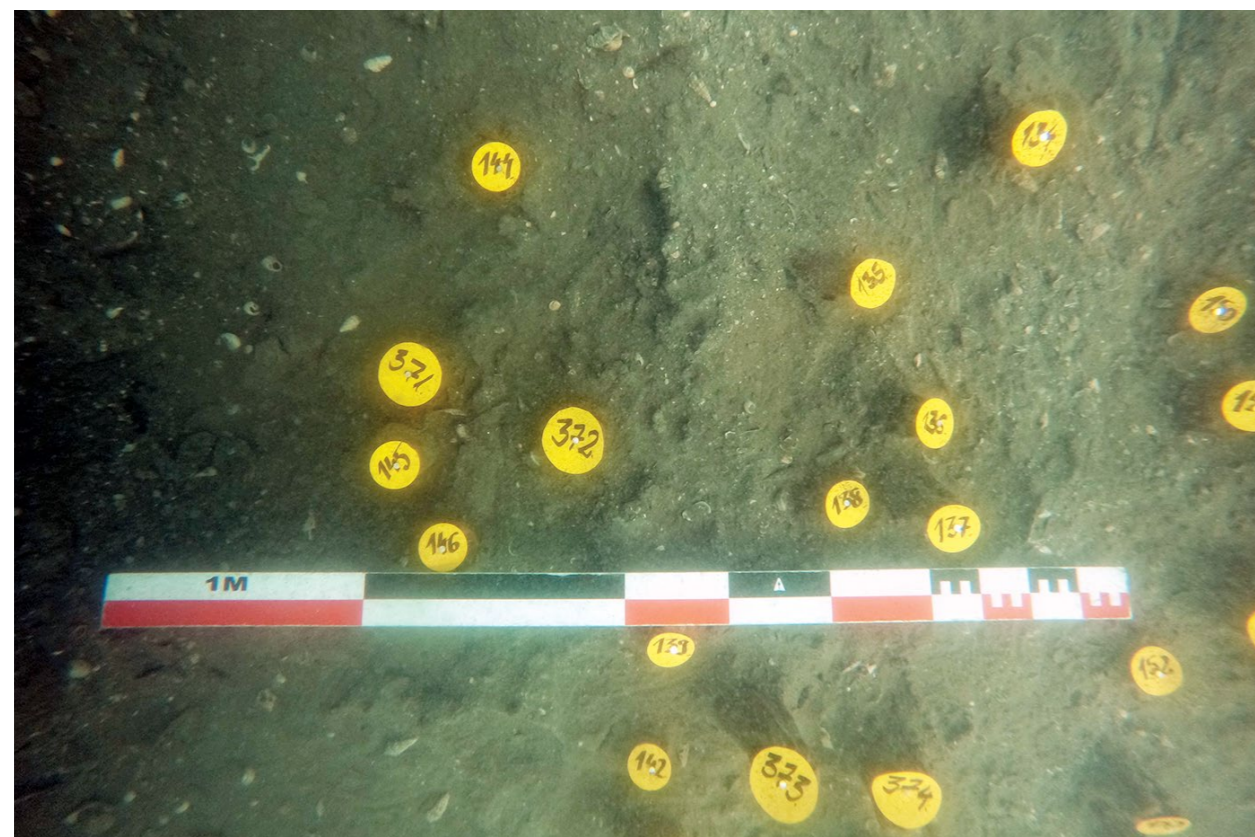
Drveni pilon 367 iz Sonde 1 (foto: M. Popović)
Wooden pole 367 from Probe 1 (photo: M. Popović)

antičko doba.

Uzorci pilona, predviđeni za radiokarbonsko datiranje, poslani su u institut Beta Analytic Testing Laboratory na Floridi. Analiza pilona br. 327 pokazala je da se on može datirati u vrijeme od polovice 1. st. pr. Kr. do kraja 1. st. po Kr. (50 cal BC–84 cal AD). Analiza pilona br. 152 uputila je na nešto kasnije vrijeme, tj. na početak 2. do polovice 3. st. po Kr. (116–239 cal AD). Time je definitivno potvrđeno da piloni pripadaju antičkom dobu, preciznije početnim stoljećima Rimskog Carstva, kad je Salona, u funkciji prijestolnice rimske pro-

In addition to the necks, fragments of amphora bodies were also found; some of these feature ribbing, which allows dating to the Late Roman period.

Wood samples from the poles were sent for radiocarbon dating to Beta Analytic Testing Laboratory in Florida. Analysis of pole no. 327 dated it to a period between the mid-1st century BC and the late 1st century AD (50 cal BC–84 cal AD). Pole no. 152 yielded a slightly later date, ranging from the early 2nd to the mid-3rd century AD (116–239 cal AD). These results conclusively place the poles within the ancient period, specifically, the early centuries of the Roman



Drveni piloni u Sondi 1 (foto: M. Lete)
Wooden poles in Probe 1 (photo: M. Lete)

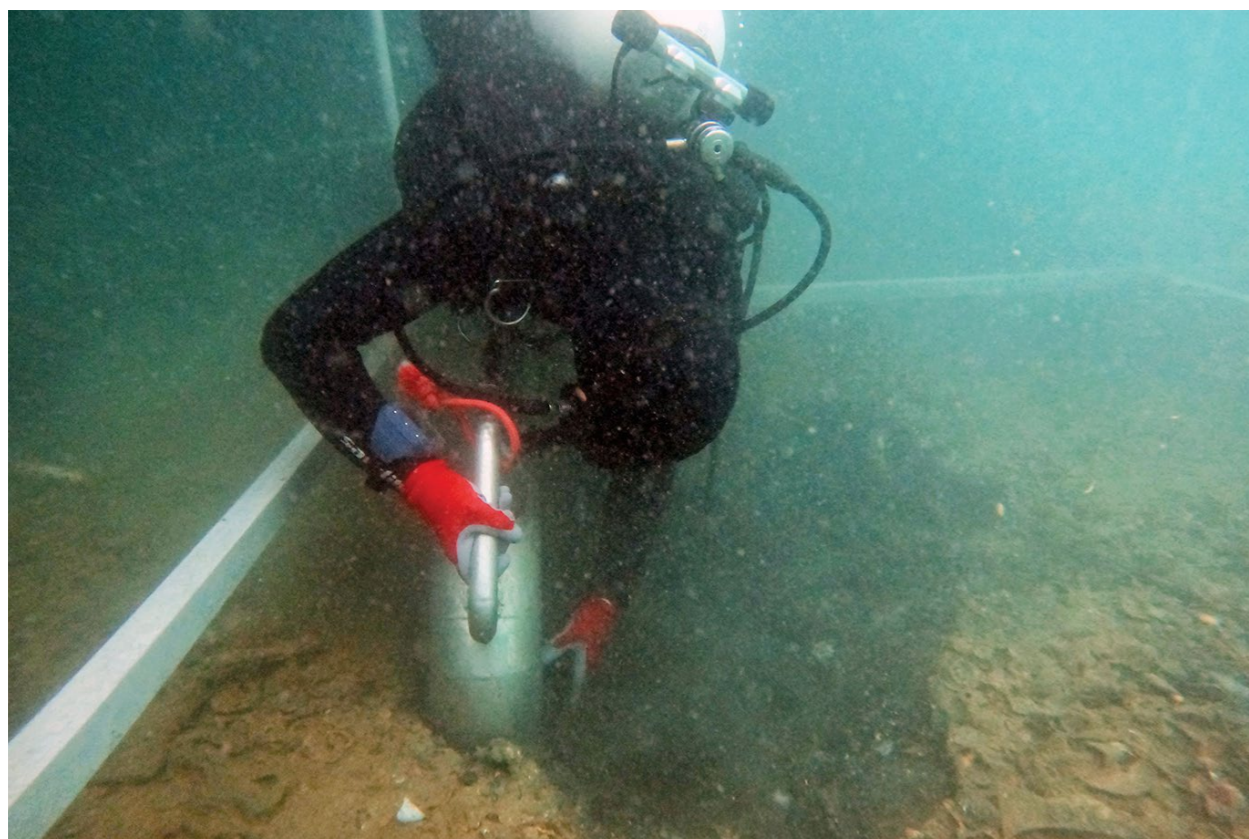


a) Geodetska snimka prostora na kojem se pronalaze drveni piloni, s označenim dimenzijama (autor: D. Žanić); b) Geodetsko snimanje (foto: I. Radić Rossi)
a) Geodetic survey of the area where the wooden poles were found, with marked dimensions (author: D. Žanić); b) Geodetic survey (photo: I. Radić Rossi)





Ulomak grla amfore tipa Dressel 20 među drvenim pilonima u površinskom sloju nalazišta (foto: M. Lete)
Fragment of the neck of a Dressel 20-type amphora among wooden poles in the surface layer of the site (photo: M. Lete)



Iskop u Sondi 2 (foto: I. Radić Rossi)
Excavation in Probe 2 (photo: M. Lete)

vincije Dalmacije, bila na vrhuncu svojega urbanog razvoja.

Visoka koncentracija drvenih pilona u zoni južno od današnjeg spoja otočića Vranjica s kopnom navodi na pomisao da se nekadašnji spoj s obalom nalazio upravo na tom mjestu, a ne na mjestu današnje prevlake. Položaj pilona na prosječnoj dubini od oko 2,5 m i njihovo protezanje od zapadne obale brodogradilišta prema istočnom kraju južne vranjičke obale idu u prilog navedenoj pretpostavci.

Kako se na čitavome lučkom prostoru predviđa produbljenje morskog dna od -2 do -5,7 m, iskopom će se izravno ugroziti površina zahvaćena drvenim pilonima. Stoga je predloženo da se na prostoru sjeverno od bazena dizalice za brodove odustane od produbljivanja morskog dna kako se ne bi ugrozili postojeći arheološki nalazi. Preostali dio projekta mogao bi se izvesti prema predviđenom planu.

Empire, when Salona, as the capital of the Roman province of Dalmatia, was experiencing the height of its urban and infrastructural development.

The high concentration of wooden poles south of the current isthmus connecting the Vranjic islet to the mainland suggests that the original connection to the coast was located at this site, rather than at the location of the present-day isthmus. The positioning of the poles, at an average depth of approximately 2.5 meters, and their extension from the western shore of the shipyard toward the eastern end of the southern Vranjic coast, further supports this hypothesis.

As the current project plans include deepening the seabed to between -2 and -5.7 meters across the port area, such activity would directly threaten the area where the wooden poles are located. Consequently, it has been proposed that seabed deepening north of the travel lift basin be omitted, in order to preserve the existing archaeological features. The rest of the project may proceed in accordance with the original construction plan.

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