



NASTAVAK SUSTAVNOG ISTRAŽIVANJA OSTATAKA ANTIČKOG BRODOLOMA IZ 2. ST. PO KR. KOD OTOKA ILOVIKA

Continuation of the systematic
research of a 2nd-century
Roman shipwreck off the
island of Ilovik

UVOD

Brodolom kod otoka Ilovika zaštitno je istražen u vremenu od 1978. do 1980. godine (Orlić 1986; Radić Rossi, Buxton 2023). S obzirom na zaštitni karakter ranijih istraživanja i moguću povezanost tog nalazišta s brončanom statuom mladog atleta (Radić Rossi, Buxton 2022), pronađenom u podmorju otoka Velih Orjula 1999. godine, započelo je sustavno istraživanje čiji je cilj proučiti drvene ostatke broda te izvaditi preostale nalaze.

INTRODUCTION

Rescue research of the shipwreck off the island of Ilovik was conducted from 1978 to 1980 (Orlić 1986; Radić Rossi, Buxton 2023). Considering the rescue character of the earlier research and the possible connection of that site with the bronze statue of a young athlete (Radić Rossi, Buxton 2022), found on the seabed near the island of Vele Orjule in 1999, systematic research was initiated, with the aim of studying the wooden remains of the ship and collecting the remaining finds.



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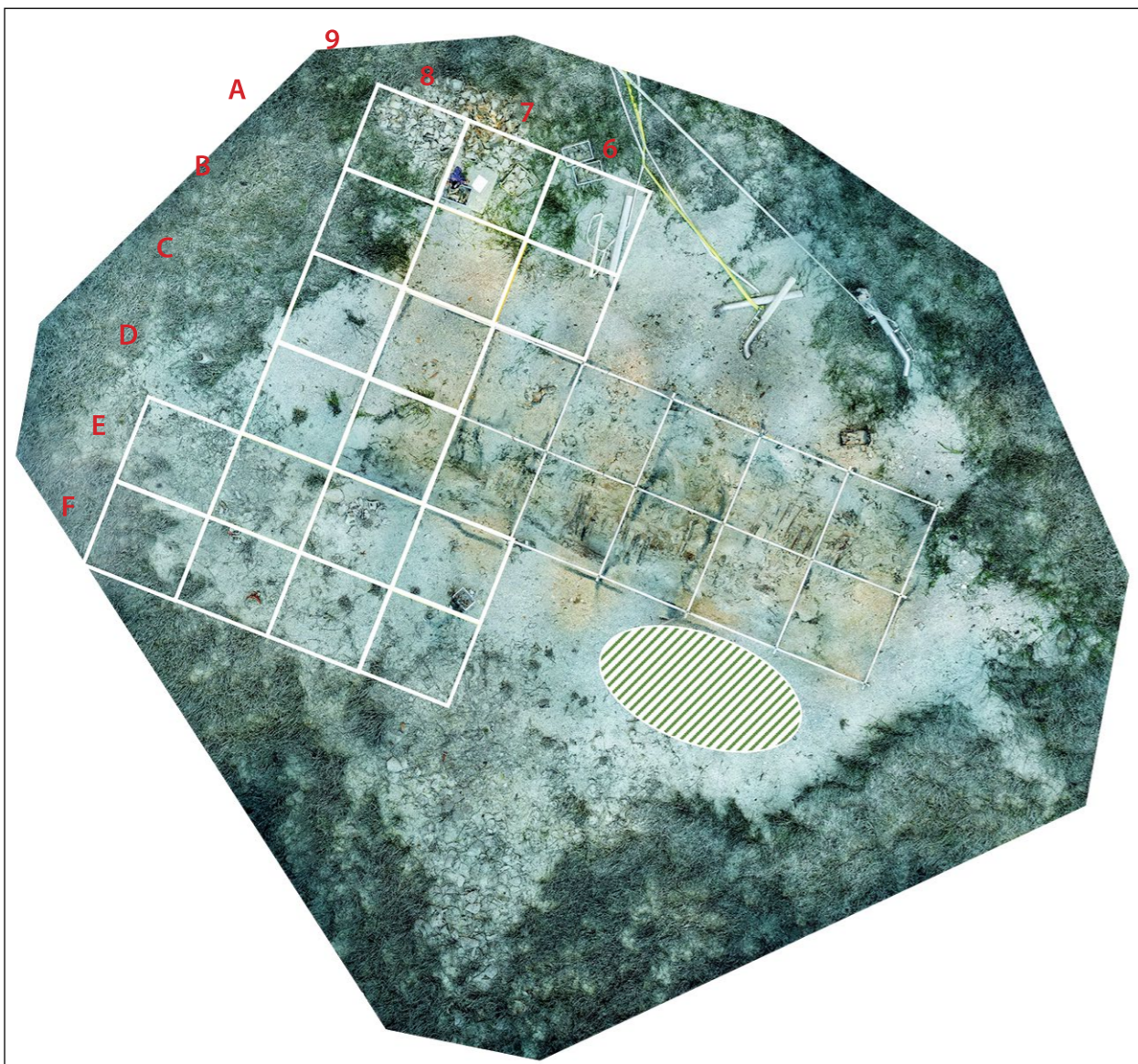
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Početni izgled pomoćnog metalnog mrežišta: nad matičnom stijenom u kvadratu D7 akumulirani su nedijagnostički, a u kvadratu D8 dijagnostički ulomci amfora (foto: M. Brzac)
The initial appearance of the auxiliary metal grid: non-diagnostic amphora fragments were stacked above the bedrock in square D7, and diagnostic fragments in square D8 (photo: M. Brzac)





Ortogonalni prikaz situacije na nalazištu s označenim kvadratima pomoćnog metalnog mrežišta 2023. i zonom u kojoj je pronađen novac (podloga: K. Yamafune)
 Orthogonal view of the situation at the site with the marked squares of the auxiliary metal grid in 2023 and the zone where the coins were found (background: K. Yamafune)

Tijekom istraživanja 2022. godine s nalazišta je izvađeno četrnaest cjelovitih ili lakše oštećenih amfora, a iz repertoara manjih predmeta izdvaja se nalaz rimskog novca. S obzirom na dostupna financijska sredstva iz privatne donacije američkog poduzetnika Alfreda Hagen, istraživanje je nastavljeno 2023. godine.¹

During the research in 2022, fourteen complete or slightly damaged amphorae recovered, and a Roman coin stands out among the small finds. The research was continued in 2023 funded by the private donation of the American entrepreneur Alfred Hagen.¹

TIJEK I REZULTATI ISTRAŽIVANJA 2023.

Istraživanje je provedeno u vremenu od 8. do 18. listopada 2023., u organizaciji Odjela za arheologiju

THE COURSE AND RESULTS OF THE 2023 RESEARCH

The research was conducted between October 8 and 18, 2023, organized by the Department of

¹ U istraživanju su sudjelovali arheolozi, studenti arheologije i profesionalni ronionici iz Hrvatske, Sjedinjenih Američkih Država, Australije i Malte.

¹ Archaeologists, archaeology students and professional divers from Croatia, the United States of America, Australia and Malta participated in the research.



Iskop čitavih amfora u kvadratu B7 (foto: M. Brzac)
 Excavation of complete amphorae in square B7 (photo: M. Brzac)



Sveučilišta u Zadru, pod vodstvom autorica teksta. Prvog dana postavljena je oznaka na nalazište, a potom su postavljeni i privezi na sidrene blokove. Nakon toga, nalazište je podizanjem geotkstila pripremljeno za nastavak istraživanja. Na morsko dno postavljeno je pomoćno metalno mrežište koje se u prvom trenu sastojalo od kvadrata D7 – G7 i D8 – G8, ali je ubrzo promijenjen njegov izgled. Kvadrati G uklonjeni su, a umjesto njih dodani su kvadrati A6 – B6, A7 – C7, A8 – C8 i E9 – F9.

Iskop u kvadratima odvijao se do matične stijene, koja je ubrzo dosegnuta u kvadratima C i D. U kva-

Archaeology of the University of Zadar, under the leadership of authors of this text. On the first day, a marker was placed on the site, and then moorings were placed on the anchor blocks. After that, the site was prepared for continuation of the research by raising geotextile. An auxiliary metal grid was placed on the seabed, which initially consisted of squares D7 - G7 and D8 - G8, but its appearance was soon changed. Squares G were removed, and instead squares A6 – B6, A7 – C7, A8 – C8 and E9 – F9 were added.

Excavation in the squares continued to the bed-

dratu F8 otkrivene su četiri cjelovite amfore, dok je jedna otkrivena u kvadratu F7. U tom su kvadratu, kao i kvadratu E7 otkrivene i tri amfore slomljene u veće komade. U kvadratima A7, B7 i A8 otkrivena je skupina od osam cjelovitih ili lakše oštećenih amfora te jedna amfora kojoj nedostaje grlo s ručkama. Riječ je o jadranskim amforama ravnog dna, u stručnoj literaturi poznatima kao tip Forlimpopoli. Kvadrati A i B postavljeni su na mjesto na kojem se nalazio blok s privezanim bovom za oznaku nalazišta, koji je u međuvremenu izmješten nad matičnu stijenu u kvadratu C7.

rock, which was soon reached in squares C and D. Four complete amphorae were discovered in square F8, while one was found in square F7. In that square, as well as in square E7, three amphorae broken into larger pieces were recorded. Squares A7, B7 and A8 yielded a group of eight complete or slightly damaged amphorae and one amphora missing the neck with handles. These are Adriatic flat-bottomed amphorae, known in the professional literature as the Forlimpopoli type. Squares A and B were placed where the block with the marking bouy was located, which in the meantime was moved over the bedrock in square C7.

A metal detector was used to inspect the area around the auxiliary metal grid in search of further finds of amphorae, as it also signals the presence of ceramic material. On that occasion, four Roman coins were found in the area southeast of the investigated part of the site, which were taken to the Archaeological Museum in Zagreb for conservation treatment. Although they were found in a rather poor condition, for now it seems that three specimens could be attributed to Hadrian and the fourth to Vespasian, however, the exact determination depends on the conservation results.

Small finds include objects made of ceramics, metal and glass. Particularly interesting ceramic objects include a neck of a Dressel 2-4 amphora, simple discoid amphora stoppers, and profiled amphora stoppers with a small handle. Metal objects mainly refer to various nails from the ship structure and parts of objects for currently unknown purposes. One rim of a square glass bottle with a part of the handle, along with three glass fragments found during the previous research campaign, confirms that there was other glassware on the ship in addition to the two completely preserved glass bottles.

During the work at the site, the documentation of diagnostic fragments continued, of which 603 were entered into the inventory. All of them, after documentation, were placed over the bedrock in square D8. Non-diagnostic sherds were collected above the bedrock in square D7. About thirty necks and several fragments of the belly and base of the amphorae were preserved for the purposes of archaeometric analysis of the ceramic material.

Skupina čitavih ili lakše oštećenih amfora u kvadratima A8, A7 i B7 (foto: M. Brzac)
Group of whole or slightly damaged amphorae in squares A8, A7 and B7 (photo: M. Brzac)





Ulomci prapovijesnog keramičkog posuđa izvađeni pred brodskim pristaništem u Iloviku (foto: I. Radić Rossi)
Prehistoric pottery sherds taken out in front of the pier in Ilovik (photo: I. Radić Rossi)

Za pretraživanje prostora oko pomoćnog metalnog mrežišta u potrazi za daljnjim nalazima amfora iskorišten je detektor metala koji signalizira i postojanje keramičkog materijala. U zoni jugoistočno od istraživanog dijela nalazišta tom su prilikom pronađena četiri komada rimskog novca koji su predani na konzervatorsku obradu u Arheološki muzej u Zagrebu. Iako su pronađeni u prilično lošem stanju, za sada se čini da bi se tri primjerka mogla pripisati Hadrijanu, a četvrti Vespazijanu, a točna determinacija ovisit će o rezultatima konzervacije.

Pokretni nalazi manjih dimenzija uključuju predmete od keramike, metala i stakla. Među keramičkim predmetima ističu se jedno grlo amfore tipa Dressel 2-4, jednostavni diskoidni čepovi amfora, te profilirani čepovi amfora s malom drškom. Metalni predmeti uglavnom su različiti čavli iz brodske konstrukcije te dijelovi predmeta za sada nepoznate namjene. Jedan obod četvrtaste staklene boce s dijelom ručke, uz tri staklena ulomka pronađena tijekom prethodne istraživačke kampanje, potvrđuje da je osim dviju u cijelosti očuvanih staklenih boca na brodu postojalo još staklenog posuđa.

Tijekom rada na nalazištu nastavilo se dokumentiranje dijagnostičkih ulomaka, kojih je u inventar uneseno 603. Svi su oni, nakon dokumentiranja,

Considering that the weather conditions did not allow reaching the site during one of the working days, part of the team dove in the channel between the islands of Ilovik and Sv. Petar. Apart from a small quantity of pottery dating to Classical Antiquity, prehistoric pottery sherds, probably from the Neolithic period, were observed in the surface layer of the seabed, at a distance of about ten to fifteen meters from the pier in Ilovik, at a depth of about 5 m. Among the fragments collected, we can single out the rims of pots and plates, decorated with carvings and simple appliqués, and a fragment that could be interpreted as the foot of a rhyton. In that area, the composition of the seabed differs from the surrounding area, it is hard, reddish and resembles clay. Taking into account the depth of the site, these are probably the traces of a Neolithic settlement that was once located near the sea shore, the remains of which are presently in a rather bad condition.

PROCESSING OF THE 2022 RESEARCH RESULTS

Among the recovered complete amphorae, which have undergone the desalination process,

položeni nad matičnu stijenu u kvadratu D8. Ne-dijagnostički ulomci prikupljeni su nad matičnu stijenu u kvadratu D7. Za potrebe arheometrijskih analiza keramičkog materijala zadržano je tridesetak grla te nekoliko ulomaka trbuha i dna amfora.

S obzirom na to da vremenske prilike nisu dopustile odlazak na nalazište tijekom jednog od radnih dana, dio ekipe zaronio je u kanal između otoka Ilovika i Sv. Petra. Osim manje količine antičkog keramičkog materijala, na udaljenosti od oko deset do petnaest metara od brodskog pristaništa u Iloviku, na dubini od oko 5 m, u površinskom su sloju morskog dna uočeni ulomci prapovijesnog keramičkog posuđa, koji vjerojatno pripadaju neolitičkom dobu. Među prikupljenim ulomcima ističu se obodi lonaca i plitica, ukrašeni urezima i jednostavnim aplikacijama, te ulomak koji bi mogao pripadati nozi ritona. Na tom se prostoru morsko dno sastavom razlikuje od okolnog dna, tvrdo je, crvenkasto i nalikuje na glinu. Uzimajući u obzir dubinu nalazišta, vjerojatno je riječ o tragovima neolitičkog naselja koje se nekada nalazilo u blizini morske obale, čiji su ostatci danas u prilično lošem stanju.

OBRADA REZULTATA ISTRAŽIVANJA 2022.

Među pronađenim cjelovitim amforama, koje su prošle postupak desalinizacije, za sada se izdvajaju četiri varijante koje se međusobno razlikuju po dimenzijama i obliku oboda, vrata i dna te po izgledu ručki. Kod jedne je varijante, osim toga, tijelo prekriveno plitkim kanelurama. Je li riječ samo o različitim majstorima ili i o različitim radionicama, pokazat će rezultati arheometrijskih analiza.

Analize drvene građe od koje su bili izrađeni dijelovi brodske konstrukcije pokazale su da je kobilica broda bila izrađena od bijelog bora (*Pinus t. Sylvestris*), kao i pedeset i jedna platica.² Tri su platice, međutim, bile izrađene od jele (*Abies* sp.). Od četrdeset i jednog analiziranog rebra, trideset i šest ih je bilo izrađeno od brijesta (*Ulmus* sp.), a pet od bijelog bora. Od četrnaest analiziranih jezičaca, trinaest ih je bilo izrađeno od hrasta crnike (*Quercus ilex* L.), a samo jedan od bijelog bora. Analize dvadeset i jednog drvenog čavla kojima su rebra bila pričvr-

² Analize je provela Alba Ferreira Dominguez iz francuske organizacije IPSO FACTO.



Novac cara Hadrijana, pronađen 2002. (foto: I. Krajcar, Arheološki muzej Zagreb)
Emperor Hadrian's coin, found in 2002 (photo: I. Krajcar, Archaeological Museum Zagreb)

four variants can be distinguished for now, which differ in the dimensions and shape of the rim, neck and base, as well as in the appearance of the handles. In one variant, the body is covered with shallow grooves. The results of the archaeometric analyses will show whether these differences suggest different master potters or also different workshops.

Analyses of the wood used for making parts of the ship structure showed that the keel was made of Scots pine (*Pinus t. sylvestris*), as well as fifty-one planks.² Three planks, however, were made of fir (*Abies* sp.). Of the forty-one analyzed frames, thirty-six were made of elm (*Ulmus* sp.), and five of Scots pine. Of the fourteen tenons analyzed, thirteen were made of holm oak (*Quercus ilex* L.), and only one of Scots pine. Analyses of twenty-one wooden trenails used for attaching the frames to the planks and one wooden nail with which the tenon was fixed showed that olive wood (*Olea europaea* L.) was used for their manufacture. The results of the analysis were expected, because soft-

² The analyses were carried out by Alba Ferreira Dominguez from the French organization IPSO FACTO.





Preprava čitavih amfora za vađenje (foto: J. Misfud)
Preparation of completely preserved amphorae for raising (photo: J. Misfud)

ščena za platice i jednog drvenog čavlića kojim je bio učvršćen jezičac pokazale su da je za njihovu izradu iskorišteno drvo masline (*Olea europaea* L.). Rezultati analiza pokazali su se očekivanima jer je za izradu elemenata koje je trebalo međusobno spajati sistemom utora i jezičaca, poput kobilice i platica, iskorišteno meko drvo, dok su poprečni elementi čvrstoće, poput rebara, i spojni elementi, poput jezičaca i drvenih čavala i čavlića, bili izrađeni od tvrdog drva.

Novac pronađen 2022. godine preliminarno je datiran u vrijeme Hadrijana, što je i potvrđeno nakon konzervatorske obrade.³ Riječ je o sesterciju kovanom u Rimu tijekom 119. i početkom 120. godine, koji na aversu nosi natpis IMP CAESAR TRAIANVS HADRIANVS AVG, a na reversu PONT MAX TR POT COS III S – C. S obzirom na to da je na osnovi dosadašnjeg nalaza Trajanova novca Marijan Orlić odredio *terminus post quem* za datiranje brodoloma kod otoka Ilovika, ovaj nalaz pomiče Orlićevu pretpostavku za nekoliko godina unaprijed.

³ RIC II.3 br. 243. Na determinaciji novca zahvaljujemo Tomislavu Biliću iz Arheološkog muzeja u Zagrebu.

wood was used for the production of elements that had to be connected to each other with a system of mortise-and-tenon joints, such as keel and planks, while elements of the ship's transverse stiffness, such as frames, and connecting elements, such as tenons, wooden nails and studs, were made of hardwood.

The coin found in 2022 was preliminarily dated to the period of Hadrian, which was confirmed after conservation treatment.³ It is a sestertius minted in Rome during the years 119 and early 120, which bears the inscription IMP CAESAR TRAIANVS HADRIANVS AVG on the obverse, and PONT MAX TR POT COS III S – C on the reverse. Considering that based on the previous find of Trajan's coin Marijan Orlić determined the *terminus post quem* for dating of the shipwreck off the island of Ilovik, this finding moves Orlić's assumed dating several years forward.

³ RIC II.3 no. 243. We would like to thank Tomislav Bilić from the Archaeological Museum in Zagreb for identifying the coins.



Četiri varijante jadranskih amfora ravnog dna, i amfora s kružnim otvorom na ramenu, izvađene 2022. (foto: I. Radić Rossi)
Four variants of Adriatic flat-bottomed amphorae, and an amphora with a circular opening on the shoulder, taken out in 2022 (photo: I. Radić Rossi)

ZAKLJUČAK

Brodolom kod otoka Ilovika privukao je pozornost arheologa krajem šezdesetih i početkom sedamdesetih godina prošlog stoljeća, ali je do njegova istraživanja došlo tek nakon temeljite devastacije većeg dijela nalazišta. Obnovljeno istraživanje omogućilo je da se u cijelosti prouče ostatci brodske konstrukcije te da se izvade nalazi koji su preostali na morskom dnu. Među njima se ističu cjelovite amfore, diskoidni čepovi amfora, ulomci staklenog posuđa, pet komada rimskog novca i veliki korodirani predmet koji vjerojatno pripada željeznom sidru. Iako se istraživanje još ne može smatrati u potpunosti završenim, nastavak radova ovisit će o dostupnim financijskim sredstvima.

CONCLUSION

The shipwreck off the island of Ilovik attracted the attention of archaeologists in the late 1960s and early 1970s, but its research commenced only after thorough devastation of a large part of the site. The renewed research made it possible to thoroughly study the remains of the ship structure and to collect the finds that remained on the seabed including complete amphorae, discoid amphora stoppers, fragments of glassware, five pieces of Roman coins and a large corroded object that probably belonged to an iron anchor. Although the research cannot be considered completely finished yet, the continuation of the work will depend on the available financial resources.

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