



GODIŠNJAK ODJELA ZA ARHEOLOGIJU
SVEUČILIŠTA U ZADRU

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Noć muzeja, 27. siječnja 2023.

Posljednji petak u siječnju već je godinama rezerviran za Noć muzeja, manifestaciju koja je ove godine održana 18. put. Odjel za arheologiju sudjeluje posljednje četiri godine, a ove nam se godine pridružio i Odjel za klasičnu filologiju. Otvorenje ovogodišnje Noći muzeja upriličili su studenti arheologije, koji su nas predstavom Okovi od zlata vratili u prošlost prikazom ceremonije vjenčanja bogatih rimskih građana. Nakon ceremonije posjetitelji su sudjelovali u svadbenom slavlju sa starorimskim specijalitetima, koje je priredila doc. dr. sc. Ankica Bralić s Odjela za klasičnu filologiju.

Tijekom cijele večeri posjetitelji su mogli razgledati **izložbu Odjela za arheologiju**, koja je prvi put službeno otvorena upravo na Noć muzeja 2020. godine, a posebno za ovu priliku u koautorstvu Filipa Jurković Pešić s Odjela za arheologiju Sveučilišta u Zadru i Roberta Maršića iz Arheološkog muzeja u Zadru, postavljena je i **izložba fotografija – Muzej između Donata i Foruma**. Tema ovogodišnje Noći muzeja bila je *Muzeji su važni*, a ova izložba upravo prikazuje jedan dio duge povijesti Arheološkog muzeja u Zadru, točnije, vrijeme između 1954. i 1974. godine kada je Arheološki muzej djelovao u zgradi tadašnjeg Filozofskog fakulteta, današnjeg Sveučilišta.

Kroz nekoliko različitih radionica pod vodstvom Luke Bogdanića i studentice Mije Mandarić, najmlađi su otkrivali



Museums at Night, 27 January 2023

For years, the last Friday in January has been reserved for Museums at Night, an event that was held for the 18th time this year. The Department of Archaeology has participated in this event for the last four years, and this year the Department of Classical Philology joined in. The opening of this year's event was organized by students of archaeology, who took us back in time with the play *Shackles of Gold* by presenting the wedding ceremony of wealthy Roman citizens. After the ceremony, the visitors participated in a wedding celebration with ancient Roman delicacies, prepared by Ankica Bralić, PhD, assistant professor, from the Department of Classical Philology.

The visitors could also see the **exhibition of the Department of Archaeology**, which was officially opened for the first time for Museums at Night in 2020, and especially for this occasion, there was also a **photo exhibition - Muse-**



kako izgleda arheološko istraživanje, što sve arheolozi pronalaze pod zemljom i kojim se alatima koristimo pri arheološkim iskopavanjima. Uz vodstvo izv. prof. Irene Radić Rossi, posjetitelji su opremljeni tabletima pomoću predloška s 3D modelom imali pri-

liku zaroniti pod more i otkriti skrivene objekte i strukture potopljenog broda koji se već 2000 godina nalazi na dnu Jadranskog mora. Atmosferu je dodatno zagrijao nastup Zbora Fige.

Second Virtual Interdisciplinary Conference, 28. veljače 2023.

Sveučilište u Zadru u sklopu projekta *Research for Society – RFS* organiziralo je virtualnu konferenciju pod nazivom *Heritage turns blue: Glocal impacts on coastal cultural heritage*. Organizator konferencije bio je izv. prof. dr. sc. Dario Vujević s Odjela za arheologiju, dok su pozvani predavači bili izv. prof. dr. sc. Irena Radić Rossi i prof. dr. sc. Nina Lončar s Odjela za geografiju. Predavanja su održali profesori i istraživači s partnerskih sveučilišta EU-CONEXUS alijanse.

Predstavljanje knjige *U potrazi za Višeslavovom krstionicom*

Dana 3. ožujka Muzej hrvatskih arheoloških spomenika u Splitu i Sveučilište u Zadru su u Svečanoj dvorani Sveučilišta u Zadru pred brojnom publikom predstavili novu knjigu prof. dr. sc. dr. h. c. Ante Uglešića *U potrazi za Višeslavovom krstionicom*. O knjizi su govorili ravnatelj Muzeja hrvatskih arheoloških spomenika dr. sc. Miroslav Katić, doc. dr. sc. Tomislav Fabijanić s Odjela za arheologiju, doc. dr. sc. Zdenko Dundović i sam autor.

Četvrtkom u klubu – ČUK

U želji da svojim studentima pružimo mogućnost da na jedan neformalan način podijele međusobna iskustva i čuju iskustva drugih u 2022. godini pokrenut je niz gostujućih



um between Donat and Forum co-authored by Filipa Jurković Pešić from the Department of Archaeology of the University of Zadar and Robert Maršić from the Archaeological Museum in Zadar. The theme of this year's Museum at Night event was *Museums are important*, and this exhibition shows a part of the long history of the Archaeological Museum in Zadar, more precisely, the time between 1954 and 1974 when the Archaeological Museum operated in the building of the then Faculty of Philosophy, presently University.

Through several different workshops led by Luka Bogdanić and student Mija Mandarić, children had a chance to learn what archaeological research looks like, what archaeologists find underground and what tools are used during archaeological excavations. Under the guidance of associate professor Irena Radić Rossi, visitors equipped with tablets using a template with a 3D model had the opportunity to dive under the sea and discover hidden objects and structures of a sunken ship that has been at the bottom of the Adriatic Sea for 2000 years. The performance of the Fige Choir further enriched the evening.

Second Virtual Interdisciplinary Conference, 28 February 2023

As part of the *Research for Society - RFS* project, the University of Zadar organized a virtual conference called *Heritage turns blue: Global impacts on coastal cultural heritage*. The organizer of the conference was Dario Vujević, PhD, associate professor, from the Department of Archaeology, while the invited lecturers were Irena Radić Rossi, PhD, associate professor, and Nina Lončar, PhD, full professor, from the Department of Geography. Lectures were given by professors and researchers from partner universities of the EU-CONEXUS alliance.

Presentation of the book *In search of Višeslav's baptistery*

On 3 March, the Museum of Croatian Archaeological Monuments in Split and the University of Zadar presented a new book by Ante Uglešić, PhD, full professor, Dr. h. c., *In search of Višeslav's baptistery*. The book was presented by the director of the Museum of Croatian Archaeological Monuments, Miroslav Katić PhD; Tomislav Fabijanić, PhD, assistant professor, from the Department of Archaeology; Zdenko Dundović, PhD, assistant professor, and the author himself.

Thursdays in the club – "ČUK"

In order to give our students the opportunity to share their experiences and hear the experiences of others in an informal way, a series of visiting lectures *Students for students* was launched in 2022. During 2023, three lectures were given at the Božo Lerotić club.

On **16 March 2023**, the lecture was given by Domagoj



predavanja *Studenti za studente*. Tijekom 2023. godine u klubu Božo Lerotić održana su tri predavanja.

Dana **16. ožujka 2023.** predavanje je održao Domagoj Marić, urednik časopisa *Serilia – časopis studenata arheologije Sveučilišta u Zadru*. Domagoj je među ostalim govorio o povijesti časopisa, imenu, kako se časopis financira, zašto uopće pisati za studentski časopis, tko su urednici i koji su njihovi zadatci i obaveze. Dana **3. listopada 2023.** u goste nam je došao bivši student Odjela za arheologiju Marin Lutring, koji je održao predavanje pod naslovom *Zaštitna arheološka istraživanja u Njemačkoj – iskustva i mogućnosti*. Dana **20. travnja 2023.** studenti Luka Žarković i Monika Špoljarić govorili su o organizaciji manifestacije *Antički dani*, koju studenti Odjela za arheologiju organiziraju već dugi niz godina.

Stručna ekskurzija u Slavoniju

U razdoblju od 21. do 24. ožujka studenti, profesori i drugi djelatnici Odjela za arheologiju u sklopu stručne ekskurzije posjetili su Slavoniju i upoznali se s arheologijom istočne Hrvatske. Prvi dan posjetili smo Arheološki muzej u Osijeku



i razgledali grad. Drugi smo dan u pojačanom tempu posjetili Arheološki park Sopot, Gradski muzej Vinkovci, Muzej Vučedolske kulture i Gradski muzej Vukovar. Posljednji dan otišli smo do Iloka, najistočnijeg hrvatskog grada gdje smo razgledali Muzej grada Iloka – Palaču Odescalchi i nezaobilazne Iločke podrumce. Ovim putem od srca zahvaljujemo svim kolegama u spomenutim muzejima koji su nas srdačno dočekali i ugostili.

Marić, editor of the journal *Serilia - the journal of archaeology students of the University of Zadar*. Among other things, Domagoj talked about the history of the journal, the name, how it is financed, why write for a student journal at all, who the editors are and what their tasks and responsibilities are. On 3 October 2023, a former student of the Department of Archaeology, Marin Lutring, came to visit us, and he gave a lecture entitled *Rescue archaeology in Germany - experiences and possibilities*. On 20 April 2023, students Luka Žarković and Monika Špoljarić spoke about the organization of the *Ancient Days* event, which the students of the Department of Archaeology have been organizing for a number of years.

Professional excursion to Slavonia

In the period from March 21 to 24, students, professors and other employees of the Department of Archaeology visited Slavonia and learned about the archaeology of eastern Croatia within a professional excursion. On the first day, we visited the Archaeological Museum in Osijek and took a tour of the city. On the second day, we visited the Archaeological Park in Sopot, the Vinkovci Municipal Museum, the Museum of Vučedol Culture and the Vukovar Municipal Museum without losing any time. On the last day, we went to Ilok, the easternmost Croatian town, where we visited the Ilok Municipal Museum - Odescalchi Palace and the must-see Ilok cellars. We would like to express our heartfelt thanks to all our colleagues in the mentioned museums who warmly welcomed and hosted us.

16th volume of the journal *Archaeologia Adriatica*

On 3 April 2023, the presentation of the 16th volume of the journal *Archaeologia Adriatica* was held in the exhibition area of the Department of Archaeology. After the opening speech of the head of the Department of Archaeology, Dario Vujević, PhD, associate professor, the works were presented by Mladen Pešić, PhD, director of the International Center for Underwater Archaeology and Šime Vrkić, PhD.

The entire magazine is available in electronic form on the



XVI. svezak časopisa *Archaeologia Adriatica*

Dana 3. travnja 2023. u izložbenom prostoru Odjela za arheologiju održano je predstavljanje XVI. sveska časopisa *Archaeologia Adriatica*. Nakon uvodne riječi pročelnika Odjela za arheologiju, izv. prof. dr. sc. Daria Vujevića, radove su predstavili dr. sc. Mladen Pešić, ravnatelj Međunarodnog centra za podvodnu arheologiju i dr. sc. Šime Vrkić. Cijeli časopis dostupan je u elektroničkom obliku na platformi Morepress, na linku: <https://morepress.unizd.hr/.../adriatica/issue/view/380/61>

Terenska nastava studenata arheologije Filozofskog fakulteta u Mostaru – Zvonigrad

U periodu od 17. do 28. travnja studij arheologije Filozofskog fakulteta Sveučilišta u Mostaru uspješno je proveo terenski dio nastave. Ove akademske godine studenti su imali priliku upoznati se s primjenom nedestruktivnih metoda arheološkog istraživanja kroz intenzivni terenski pregled. Za studiju slučaja tom je prigodom odabrano arheološko nalazište gradinskog tipa Zvonigrad u Gornjem Pologu. Studenti su stekli osnovna praktična znanja o arheološkim nalazištima gradinskog tipa i njihovim prirodnim i prostornim odrednicama. Isto tako upoznali su se s osnovnim arheološkim tehničkim instrumentarijem i dokumentacijom terenskog pregleda, kao i različitim fazama i metodama prikupljanja, te kasnije obrade prikupljene arheološke građe i podataka. Istraživanja su obavljena pod vodstvom izv. prof. dr. sc. Daria Vujevića (Sveučilište u Zadru) i doc. dr. sc. Tina Tomasa (Sveučilište u Mostaru).

20. Festival znanosti, 24. – 29. travnja 2023.

Glavna tema ovogodišnjeg Festivala znanosti bila je *Priroda i društvo*. Tim povodom izv. prof. dr. sc. Ivana Jadrić-Kučan održala je predavanje *Kamen koji život znači i moćni Heraklo*, te radionicu s učenicima 4. e razreda Osnovne škole Bartula Kašića Zadar. Učenici su doznali o važnosti kamena i njegovoj obradi na prostoru Dalmacije još od antičkih vremena, te o moćnom Heraklu, koji je kao personifikacija fizičke snage i izdržljivosti bio zaštitnik kavadura i klesara čiji je naporan posao vađenja i obrade kamena zahtijevao iste osobine. Na radionici su se ukratko upoznali s načinom izrade mozaika čiju su repliku i samostalno izrađivali.

Zadar na jedra: plovidba latinskim jedrom u Zadarskom kanalu

U 2023. godini jedrenje latinskim i oglavnim jedrom proglašeno je nematerijalnim kulturnim dobrom Republike Hrvatske. Povodom ovog važnog priznanja, 29. travnja 2023. godine Kanata – Udruga za istraživanje i zaštitu ma-

Morepress platform, at the link: <https://morepress.unizd.hr/.../adriatica/issue/view/380/61>

Fieldwork practice for archaeology students of the Faculty of Philosophy in Mostar - Zvonigrad

The practical part of lessons for students of archaeology at the Faculty of Philosophy of the University of Mostar was successfully conducted in the period from April 17 to 28. This academic year, students had the opportunity to learn about the application of non-destructive methods of archaeological research through an intensive field survey. On that occasion, the archaeological site of the hillfort type Zvonigrad in Gornji Polog was chosen for the



case study. Students acquired basic practical knowledge about hillfort-type archaeological sites and their natural and spatial determinants. They were also introduced to the basic archaeological technical instruments and documentation of the field survey, as well as the different phases and methods of collection and later processing of the collected archaeological materials and data. The research was conducted under the guidance of Dario Vujević, PhD, associate professor (University of Zadar), and Tino Tomas, PhD, assistant professor (University of Mostar).

20th Science Festival, 24 – 29 April 2023

The main theme of this year's Science Festival was *Nature and Society*. On this occasion, Ivana Jadrić-Kučan, PhD, as-

ritimne baštine i Odjel za arheologiju Sveučilišta u Zadru organizirali su jedrenje na tradicijskim drvenim gajetama Babi Majo, Klementini i Rajni.

Europski dani arheologije, 16. – 18. lipnja 2023.

Dana 17. lipnja 2023. povodom manifestacije Europski dani arheologije na Odjelu za arheologiju izv. prof. dr. sc. Ivana Jadrić-Kučan održala je predavanje *Škola u rimsko vrijeme* i radionicu izrade voštanih pločica (*tabula cerata*) za djecu od 11 do 15 godina.



Europska noć istraživača, 29. rujna 2023.

Europska noć istraživača glavna je aktivnost projekta *Reconnect science with the blue society - Blue-connect*, čiji je cilj predstaviti najnovija znanstvena otkrića na razumljiv i zabavan način, približiti istraživački rad javnosti i pokazati utjecaj znanosti na naš svakodnevni život.

Tim povodom izv. prof. dr. sc. Ivana Jadrić-Kučan održala je radionicu *Škola u rimsko vrijeme – izrada voštanih pločica (tabula cerata)*. Uz brojne male „znanstvenike“ sudjelovali su učenici 5. d razreda OŠ Bartula Kašića Zadar.

Izv. prof. dr. sc. Irena Radić Rossi je u sklopu Noći istraživača organizirala interaktivnu virtualnu prezentaciju podvodnog nalazišta kod rta Letavice na Pagu.

Zlatni trozubac

Izv. prof. dr. sc. Ireni Radić Rossi, koja je u hrvatskom podmorju provela veći dio svojeg radnog vijeka, dodijeljena je prestižna nagrada za predani rad na istraživanju, zaštiti i očuvanju podmorske arheološke baštine. Riječ je o nagradi Zlatni trozubac (*Tridente d'oro*), koju dodjeljuje Međunarodna akademija podvodnih znanosti i tehnika (Accademia Internazionale di Scienze e Tecniche Subacquee / The International Academy of Underwater Science and Technology).

sociate professor, held a lecture *The importance of stone and the mighty Heracles*, and a workshop with pupils of the 4th grade of Bartul Kašić Elementary School in Zadar. The pupils learned about the importance of stone and its processing in Dalmatia since ancient times, and about the mighty Heracles, who, as the personification of physical strength and endurance, was the patron of quarry workers and stonemasons whose hard work of quarrying and shaping stone required the same qualities. At the workshop, they were briefly introduced to the method of making mosaics, a replica of which they made on their own.

Sails in Zadar: sailing with lateen sails in the Zadar channel

In 2023, sailing with lateen and lugs sails was declared intangible cultural heritage of the Republic of Croatia. On the occasion of this important recognition, on 29 April 2023, Kanata - Association for the Research and Protection of Maritime Heritage and the Department of Archaeology of the University of Zadar organized sailing on the traditional wooden boats Baba Majo, Klementina and Rajna.

European Archaeology Days, 16-18 June 2023

On 17 June 2023, on the occasion of the European Archaeology Days event at the Department of Archaeology, Ivana Jadrić-Kučan, PhD, associate professor, held a lecture *School in Roman times* and a workshop on making wax tablets (*tabula cerata*) for children from 11 to 15 years old.

European Researchers' Night, 29 September 2023

The European Researchers' Night is the main activity of the project *Reconnect science with the blue society - Blue-connect*, whose goal is to present the latest scientific discoveries in an understandable and entertaining way, to bring research work closer to the public and show the impact of science on our everyday life.

On this occasion, Ivana Jadrić-Kučan, PhD, associate professor, held the workshop *School in Roman times - making wax tablets (tabula cerata)*. The fifth-graders of Bartul Kašić Elementary School in Zadar participated in the workshop along with numerous little "scientists".

As part of the Researchers' Night, Irena Radić Rossi, PhD, associate professor, organized an interactive virtual presentation of the underwater site near Cape Letavica on Pag.

Golden trident

Irena Radić Rossi, PhD, associate professor, who devoted most of her working life to the underwater archaeological research, was awarded a prestigious award for dedicated work on research, protection and preservation of underwater archaeological heritage. It is the Golden Trident award



Promocija prvostupnika arheologije

U subotu 9. prosinca 2023. u svečanoj dvorani Sveučilišta u Zadru održana je XIV. i XV. svečana promocija prvostupnika arheologije generacija 2021./2022. i 2022./2023. Tom prigodom promovirano je 19 prvostu-



(*Tridente d'oro*), which is awarded by the International Academy of Underwater Science and Technology (Accademia Internazionale di Scienze e Tecniche Subacquee).

Commencement ceremony for the bachelors of arts in archaeology

The 14th and 15th commencement ceremony for the bachelors of arts in archaeology of the 2021/2022 and 2022/2023 generations took place on Saturday, 9 December 2023. On that occasion, 19 bachelors of arts in archaeology were promoted. Along with numerous friends and relatives, the students were congratulated on this step of their educational journey by the deputy head of the Department of Archaeology, Karla Gusar, PhD, associate professor, and promoter Tomislav Fabijanić, PhD, assistant professor.

PZAF

The tenth edition of the international scientific conference Postgraduate Zooarchaeology Forum (PZAF) was held at the Faculty of Philosophy in Zagreb from May 24 to 26, 2023. It is an affiliated working group of the International Council of Archaeozoology, whose congress is organized every two years by postgraduate and graduate students and young scientists in the field of archaeozoology from all over the world. Maja Grgurić Srzentić, assistant at the Department of Archaeology of the University of Zadar, participated in the organizing committee this year.

Exhibitions

Guest exhibition New archaeological research of Neolithic sites in the Benkovac area, authored by Kristina Horvat Oštrić, PhD, assistant professor, was opened in the Regional Museum in Benkovac on the occasion of the International Museum Day on 18 May 2023. The author gave a lecture on the research of Neolithic sites. The exhibition was created as a result of trial excavations of several Neolithic sites in the Benkovac area in collaboration between the Department of Archaeology of the University of Zadar and the Regional Museum in Benkovac.

On 29 September 2023, the exhibition **On the border of two worlds - the MIGRASSI project and the archaeolog-**



pnika arheologije. Uz brojne prijatelje i rodbinu studentima su na ovom koraku njihova obrazovnog puta čestitali zamjenica pročelnika Odjela za arheologiju izv. prof. prof. dr. sc. sc. Karla Gusar i promotor doc. dr. sc. Tomislav Fabijanić.

PZAF

Deseto izdanje međunarodne znanstvene konferencije *Postgraduate Zooarchaeology Forum (PZAF)* održano je na Filozofskom fakultetu u Zagrebu od 24. do 26. svibnja 2023. godine. Riječ je o pridruženoj radnoj skupini pri Međunarodnom vijeću za arheozoologiju (International Council of Archaeozoology) čiji kongres svake dvije godine organiziraju studenti poslijediplomskih i diplomskih studija te mladi znanstvenici iz područja arheozoologije iz cijelog svijeta. U organizacijskom odboru ove godine sudjelovala je asistentica Odjela za arheologiju Sveučilišta u Zadru, Maja Grgurić Srzentić.

Izložbe

Povodom Međunarodnog dana muzeja 18. svibnja 2023. godine u Zavičajnom muzeju otvorena je gostujuća izložba **Nova arheološka istraživanja neolitičkih nalazišta na benkovačkom području**, autorice doc. dr. sc. Kristine Horvat Oštrić, u sklopu koje je održano i predavanje na temu istraživanja neolitskih lokaliteta. Izložba je nastala kao rezultat probnih istraživanja nekoliko neolitskih nalazišta na benkovačkom području u suradnji Odjela za arheologiju Sveučilišta u Zadru i Zavičajnog muzeja Benkovac.

U Interpretacijskom centru u Hanu Jusufa Maškovića u Vrani 29. rujna 2023. otvorena je izložba **Na granici dvaju svjetova – projekt MIGRASSI i arheološko istraživanje Maksanova gomile**. Izložba je bila završna aktivnost dvogodišnjeg institucionalnog projekta, koji je financiralo Sveučilište u Zadru, na kojoj su se predstavili rezultati istraživanja, koja je zajedno sa suradnicima vodio doc. dr. sc. Jure Šučur.

Radionice

Na Sveučilištu u Zadru od 17. do 21. travnja 2023. održana je doktorska radionica s temom **Living, Praying and Dying in an Island and Coastal Space between the 4th and the 11th Century**. Radionica je organizirana u okviru znanstvenog projekta ANR MONACORALE – *History and Archaeology of Monasteries and Ecclesiastical sites in the Eastern Adriatic (4th-12th c.)* na kojem sudjeluju Odjel za arheologiju i Odjel za klasičnu filologiju Sveučilišta u Zadru. U sklopu navedenog projekta u organizaciji radionice sudjelovali su École française de Rome, Odjel za arheologiju Sveučilišta u Zadru, Chrono-Environnement, ARTEHIS, HISOMA, Orient et Mediterranee. Na radionici je sudjelovalo 12 doktoranada iz Hrvatske, Italije, Poljske, Grčke, Francuske i Albanije.



ical investigation of Maksanova gomila was opened at the Interpretation Center in Maškovića Han in Vrana. The exhibition was the final activity of a two-year institutional project, financed by the University of Zadar, presenting the results of the research which was led by Jure Šučur, PhD, assistant professor, together with his associates.

Workshops

At the University of Zadar, from 17 to 21 April 2023, a doctoral workshop was held on the topic of **Living, Praying and Dying in an Island and Coastal Space between the 4th and the 11th Century**. The workshop was organized within the scientific project ANR MONACORALE – *History and Archaeology of Monasteries and Ecclesiastical sites in the Eastern Adriatic (4th-12th c.)*, participated by the Department of Archaeology and the Department of Classical Philology of the University of Zadar. Participants in the organization of the workshop, within the aforementioned project, included École française de Rome, the Department of Archaeology of the University of Zadar, Chrono-Environnement, ARTEHIS, HISOMA, Orient et Mediterranee. Twelve PhD students from Croatia, Italy, Poland, Greece, France and Albania took part in the workshop.

Dana 24. travnja 2023. godine s učenicima Povijesne grupe Osnovne škole Silvija Strahimira Kranjčevića u Senju održana je radionica **Kako se obrađuju i spremaju arheološki nalazi**. Radionicu su održale doc. dr. sc. Vedrana Glavaš s Odjela za arheologiju Sveučilišta u Zadru i dr. sc. Ana Konestra s Instituta za arheologiju u Zagrebu. Na radionici su učenici obrađivali ulomke keramike koji su pronađeni tijekom arheoloških istraživanja na području antičke vodospreme u podrumu škole.

U prostorijama CodeHuba u starom studentskom domu 5. svibnja 2023. godine održana je **arheološko-antropološka radionica** za studente u okviru projekta *MIGRASSI (Migracije na razmeđu dvaju svjetova – Mletačke Republike i Osmanskog Carstva – u svjetlu analize stabilnih izotopa)*. U programu su kroz predavanja sudjelovali gotovo svi članovi projektnog tima (J. Šučur, A. Uglešić, K. Gusar, M. Ilkić, Ž. Bedić), a naglasak je bio na praktičnom studentskom radu na nalazima novca, dijelova odjeće i osteološkim ostatcima pokojnika.

Javna predavanja

U sklopu manifestacije Dani Vele spile, 6. kolovoza u atriju Centra za kulturu Vela Luka, izv. prof. dr. sc. Mate Parica održao je predavanje na temu **Što se nalazi na dnu Gradine? Potopljena cesta, prapovijesno naselje...?** Dan kasnije, 07. kolovoza izv. prof. dr. sc. Igor Borzić, u sklopu iste manifestacije održao je predavanje naziva **Gradina sv. Ivana tijekom brončanog doba, bizantska utvrda na Gradini, groblje i crkva sv. Ivana u novom vijeku**.

U sklopu Dana betinske gajete – Regata za dušu i tilo, koji su se odvijali u Betini (Murter) od 14. kolovoza do 3. rujna, izv. prof. Irena Radić Rossi održala je predavanje pod naslovom **Potopljeni brodi murterskog akvatorija**.

Od 13. do 15. listopada u Bologni je održan 29. European Dive Show (EUDI show) u sklopu kojeg je izv. prof. Irena Radić Rossi održala je predavanje pod naslovom **Podvodna arheologija u Hrvatskoj**.

On 24 April 2023, a workshop **How to process and store archaeological finds** was held with young history enthusiasts from Silvija Strahimira Kranjčević Elementary School in Senj. The workshop was held by Vedrana Glavaš, PhD, assistant professor, from the Department of Archaeology of the University of Zadar and Ana Konestra, PhD, from the Institute of Archaeology in Zagreb. At the workshop, the pupils processed pottery sherds that were found during archaeological research in the area of the Roman-era water reservoir in the school basement.

On 5 May 2023, an **archaeological-anthropological workshop** for students was held in the CodeHub premises in the old student dormitory as part of the *MIGRASSI project (Migrations between two worlds, the Republic of Venice and the Ottoman Empire, in the light of stable isotope analysis)*. Almost all members of the project team participated in the program through lectures (J. Šučur, A. Uglešić, K. Gusar, M. Ilkić, Ž. Bedić), and the emphasis was on practical student work on finds of money, parts of clothing and osteological remains of the deceased.

Public lectures

As part of the Vela Spila Days event, on 6 August in the atrium of the Vela Luka Culture Center, Mate Parica, PhD, associate professor, gave a lecture on the topic **What is at the bottom of Gradina? A submerged road, a prehistoric settlement...?** A day later, on 7 August, within the same event, Igor Borzić, PhD, associate professor, gave a lecture called **Gradina sv. Ivana in the Bronze Age, The Byzantine fort at Gradina, the cemetery and the church of St. John in the Modern Period**. Irena Radić Rossi, PhD, assistant professor, gave a lecture entitled **Shipwrecks in the Murter water area** within the Days of the gajeta of Betina - Regatta for body and soul which took place in Betina (Murter) from 14 August to 3 September.

From 13 to 15 October, the 29th European Dive Show (EUDI show) was held in Bologna, where Irena Radić Rossi, PhD, assistant professor, gave a lecture entitled **Underwater Archaeology in Croatia**.

Predavanja na radionicama / Workshop lectures:

Interdisciplinary Doctoral School 'Eastern Mediterranean coastal and island environments: natural resources, their uses and perceptions (15th-18th centuries), Ljubljana, Slovenia, 29th June – 1st July 2023.:

- Studying the use of natural resources based on submarine archaeology: the case of Gnalić shipwreck (I. Radić Rossi)

Joint ICTP-IAEA Advanced Workshop on Accelerator Mass Spectrometry Radiocarbon Dating for Heritage and Forensic Sciences, Trieste, Italy, 22nd – 26th May 2023.:

- Radiocarbon Dating of Lead White Colouring Materials from Archaeological Sites along the Adriatic Coast (K. Batur, L. Beck, C. Messenger, A. Bonneau, M. Čelhar, I. Radić Rossi)

Breaking the Surface, 15th International Interdisciplinary Field Workshop of Maritime

Robotics and Applications, Kumbor, Crna Gora, 24. – 30. rujna 2023.:

- Archaeological experience in the Neretva River, 2023 (I. Radić Rossi)

Sudjelovanje na znanstvenim skupovima / Participations in scientific conferences:

SHA 2023 Conference on Historical and Underwater Archaeology: Revisiting Global Archaeologies, Lisabon, Portugal, 4th – 7th January 2023.:

- Glass Beads from the Gagliana Grossa : a Reference Collection for the Venetian Production at the End of the 16th Century (A. Bonneau, I. Radić Rossi, K. Batur, V. Delmas, B. Gratuze)
- Tool for Rapid Generation of Ship Hull Forms Used for Comparative Performance Analysis of Various Ship Designs (P. Prebeg, S. Rudan, Š. Sviličić, I. Radić Rossi)
- The Old Port of Dubrovnik (Ragusa) (I. Radić Rossi)

II. skup hrvatske ranokršćanske arheologije (HRRANA), Zagreb, 16. – 17. ožujka 2023.:

- A church in a church: Smratina site on the island of Vir (T. Fabijanić)

Early Christianity in the Danube Region – Frühes Christentum im Donauraum International Hybrid Conference, University of Pécs, Pečuh, 3rd – 5th May 2023.:

- Retrospective and perspective of defining archaeological context of early christianity in Dalmatia (J. Baraka Perica)

Canine Detection and Olfaction Science Conference, Miami, Florida, 23rd – 25th May 2023.

- Successful use of Human remains detection dogs for locating burials dating to European Middle Ages (10th – 15th centuries) (V. Glavaš, A. Pintar)

XXXIII réunion'APAT (L'Association pour l'Antiquité tardive), Rab, 1st – 4th June 2023.:

- Program MONACORALE: New Research on Churches, Monasteries and Ecclesial Complexes of Zadar and Šibenik Region (J. Baraka Perica)

International Mustafa V. Koç Underwater Archaeology Symposium, Istanbul, Turkey, 15th – 17th June 2023.:

- The shipwreck at Gnalić – Gagliana grossa (1569–1583) (I. Radić Rossi)

29th EAA Annual Meeting: Weaving narratives, Belfast, United Kingdom, 30th August – 2nd September 2023.:

Organizacija sekcije / session organization: Stone, Brick and Mortar: Architecture of the Early Medieval Period in the Balkans (T. Fabijanić, J. Baraka Perica, Z. Hoxha, Z. Rama)

- Stone, some bricks and less mortar: considerations on changes in architecture in late-antique and post-roman Dalmatia (T. Fabijanić)
- Some consideration about village life in late Roman rural Dalmatia: the case of Rivine – Crkvina site in Dalmatian hinterland (J. Baraka Perica, A. Uglešić)

20th UISPP World Congress, Timisoara, Romania, 5th – 9th September 2023.:

- Epigravettian bone industry from the Vlakno cave (Dugi

otok island, Croatia): some preliminary results (S. Vitezović, D. Vujević)

Archeologie konfliktů – Archaeology of Conflicts, Hradec Králové, Czech Republic, 12th – 14th September 2023.:

- The MIGRASSI project – life and death on the troubled border between the Republic of Venice and the Ottoman Empire (J. Šučur, Ž. Bedić, E. Zavodny)

6th International Association for Research on Pottery of the Hellenistic Period, Catania - Syracuse, Italy, 9 – 12 October 2023.:

- A small island with large archaeological potential – Hellenistic finds from the Rača Cave on the island of Lastovo (Croatia) (K. Brkić Drnić, I. Borzić, I. Drnić)
- TAK master potter/workshop of Dalmatian Hellenistic relief pottery (I. Borzić, M. Čelhar)
- Beyond Greek Colonies: Investigating pithoi and kitchenware at Nadin-Gradina, an Iron Age Liburnian Settlement in Northern Dalmatia (Croatia) (M. Miše, C. Allardice, M. Čelhar)
- Intermediaries on the Maritime Trade System of the Ancient Mediterranean: Pottery from the Hellenistic Shipwreck near the island of Žirje (Croatia) (V. Hawkins, M. Miše, P. S. Quinn, I. Radić Rossi)

Studies for Albanians in Great Britain and in Western Europe, Academy of Sciences and Arts of Kosovo, Priština 26th – 27th October 2023.:

- Arthur Evans and Archaeology: A case study of the so-called Martyrium of Bajinca (J. Baraka Perica, Z. Hoxha)

Consumption of ceramics in the Adriatic from protohistory to the early roman period: micro-scale and macro-narrative, Zagreb, 2. studenog 2023.:

- Late Iron Age Pottery from Nadin: Settlement vs Mortuary Context / Keramika kasnog željeznog doba iz Nadina: naseobinski i pogrebni kontekst (I. Borzić, M. Čelhar)

26th Neolithic Seminar – Eurasian neolithics: How cultures and societies evolve and why it matters, Ljubljana, Slovenia, 9th – 11th November 2023.:

- Early Neolithic herders of northern Dalmatia: new insight from cave in Ždrilo (M. Bodružić, K. Horvat Oštrić, M. Grgurić Srzentić)

Znanstveni skup – Općina Sveti Filip i Jakov u sjeni povijesnog Rogova, Zadar – Sveti Filip i Jakov, 10. i 11. studenog 2023.:

- Arheološka istraživanja na gradini u Turnju (M. Čelhar)
- Podmorski arheološki ostatci u Općini Sveti Filip i Jakov (M. Ilkić, M. Parica)
- Numizmatički nalazi s područja Općine Sveti Filip i Jakov (M. Ilkić)
- Antička i srednjovjekovna arheološka baština na području Općine Sveti Filip i Jakov (J. Baraka Perica, I. Borzić, A. Uglešić)

11th Scientific Conference Methodology and Archaeometry, Zagreb, 7. i 8. prosinca 2023.:

- Field survey methodology and lithic scatters in Dinaric karst landscapes – a case study from Bristivica in the Trogir hinterland (M. Bažoka, F. Sirovica, M. Bodružić, L. Paraman)

Arheološki laboratorij III: Prapovijesna lončarija istočnojadranske obale i zaleđa, Grab, 12. prosinca 2023.:

- Kozja peć na Dugom otoku (M. Bodružić)
- Brončanodobna keramika s gradine u Turnju (M. Čelhar)
- Brončanodobna keramika s Lergove gradine (M. Čelhar, M. Ilkić)
- Brončanodobna keramika s gradine sv. Ivana na Korčuli – marker transjadranske komunikacijske mreže (M. Čelhar, D. Radić, I. Borzić)

Korištene fotografije su iz arhiva Sveučilišta u Zadru
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ARHEOLOŠKA ISTRAŽIVANJA NA LOKALITETU LJUBLJANA U LJUPČU KOD ZADRA

Archaeological investigations
on Cape Ljubljana in Ljubač
near Zadar

Tradicionalno, svibanj i početak lipnja rezervirani su za studentsku terensku nastavu, a kao i posljednje dvije godine mjesto radnje je Ljubljana (Vujević *et al.* 2023), na samom kraju Ljubačke kose. Odabir pozicija za istraživanje pao je na dvije već poznate lokacije crkava sv. Marije i sv. Marcele.

Sv. Marija je jednobrodna crkva čija je izgradnja započela krajem 14. ili početkom 15. stoljeća (Vujević *et al.* 2023). Tijekom protekle kampanje unutrašnjost joj je istražena u cijelosti, pa su istraživanja usmjerena na okolni prostor, zapadno i južno od ulaza u crkvu. Glavni razlog tomu je pronalazak više različitih struktura pri istraživanju jugozapadnog kuta crkve, stratigrafski preslojenih gradnjom crkve i kronološki starijih od crkve. Preciznije, riječ je o najmanje trima različitim objektima iz različitih razdoblja koja prethode gradnji crkve sv. Marije. Kako je ovo jedino mjesto, na područjima zahvaćenim dosadašnjim iskopavanjem, na kojem se javljaju strukture stratigrafski starije od kasnog srednjeg vijeka, bilo je logično proširiti prostor iskopavanja na mali plato koji se nalazi uokolo crkve ne bi li se uspjele definirati sta-



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Traditionally, May and early June are reserved for student fieldwork practice. For the last two years, the site to investigate has been Ljubljana (Vujević *et al.* 2023), at the very end of Ljubačka kosa. The churches of St. Mary and St. Marcella were chosen for research as locations that have already been known.

St. Mary is a single-nave church whose construction began at the end of the 14th or the beginning of the 15th century (Vujević *et al.* 2023). During the past campaign, its interior was investigated in its entirety, so research was focused on the surrounding area, west and south of the entrance to the church. The main reason for this is the discovery of several different structures during the excavation of the southwestern corner of the church, in terms of stratigraphy overlain by the construction of the church and chronologically older than the church. More precisely, we are referring to at least three different buildings from different periods that precede the construction of the church of St. Mary. This is the only place in the areas encompassed by the excavation so far with structures older than the



Ljubljana (foto/photo: M. Šimičić)



Pogled na crkvu sv. Marije (foto: M. Šimičić)
View of the church of St. Mary (photo: M. Šimičić)





rije faze lokaliteta. Paralelno s iskopavanjem obavljala se i konzervacija ostataka crkve sv. Marije koju provodi tvrtka Travej s ciljem zaštite i prezentacije pronađenog sakralnog objekta.

Da bismo obuhvatili linije rasprostiranja spomenutih zidova, a ujedno iskoristili mogućnosti platoa ispred, za iskopavanje je odabrano područje dimenzija 7 x 10 m, postavljeno tako da obuhvati jugozapadni kut crkve, a samim time i već spomenute ostatke starijih struktura. Površinski sloj sadrži miješani materijal uključujući i dijelove srušene crkve među kojima treba spomenuti ulomke s dviju strana prizmatično obrađenih dovratnika. Unutar sloja također pronalazimo građevinsku keramiku, grubu stolnu i skladišnu keramiku, kao i ulomke kasnoantičke keramike ukrašene reljefnim kanelurama, glazirane *invetriate*, arhajske majolike, engobirane slikane i arhajske gravirane keramike. U istom sloju nađene su srebrna trojagodna naušnica i brončana kružna pojasna kopča. Svi spomenuti nalazi nisu kasniji od 15. stoljeća.

Skidanjem ujednačenih površinskih slojeva dolazimo do površine podijeljene u dva dijela. Plitko ispod površinskog sloja, na sjevernoj polovici istraživačkog prostora, ispred samog ulaza u crkvu nalazi se sloj od nabijene žuto-sive glinaste zemlje ograničen na južnoj strani velikom zidanom grobnicom i stubom od deset pravilno postavljenih kamenja međusobno povezanih žbukom koja se nastavlja na grobnicu. Grobnica i niz kamenja stvorili su ispred ulaza mali plato u hodnoj razini crkve, dok je površina južno od njega očito bila nešto niža.

Prostorom ispred crkve dominira zidana grobnica s masivnom kamenom poklopnicom, postavljena uz sam ulaz u crkvu s njegove južne strane. Ploča je od obrađenog vapnenca dimenzija 232 x 106 x 17 cm. Slomljena je na zapadnom kraju, a zanimljivo je da je jedino na tom dijelu, otprilike do samog loma, ploča vezana žbukom s konstrukcijom ispod nje. Sve navedeno, u kombinaciji s izrazito velikom masom poklopnice te uz činjenicu da je grobnica korištena za višekratno ukapanje govori da je lom na poklopnici iskorišten da bi se pri novim pokopima uklonio samo dio poklopnice, dio dovoljan da se pokojnik unese u grobnicu, a da bi se nakon vraćanja tog dijela na grob, spojevi dodatno ožbukali. Ploča pokriva zidanu grobnicu ožbukane unutarnje lica, a iako duboka, na bočnim zidovima nema vidljivih utora ili istaka za kat. Grobnica je dobrim dijelom pronađena prazna. Tek se na dnu nalazila zapuna od rahle, svjetlosmeđe zemlje iz koje su

late Middle Ages in terms of stratigraphy, so it was logical to extend the excavation area to the small plateau around the church, in order to define the older phases of the site. Simultaneously with the excavation, conservation of the remains of the church of St. Mary was carried out by the Travej company with the aim of protecting and presenting this religious building.

In order to encompass the lines of expansion of the mentioned walls, and at the same time to use the possibilities of the plateau in front, an area measuring 7 x 10 m was selected for excavation, placed in such a way as to include the southwestern corner of the church, and thus the already mentioned remains of older structures. The surface layer contains mixed material, including parts of the demolished church, among which we should mention fragments of doorjambs shaped prismatically on two sides. Inside the layer we also found ceramic building material, coarse tableware and storage pottery as well as fragments of late antique pottery decorated with relief grooves, glazed *invetriata*, archaic majolica, painted pottery with engobe and archaic engraved pottery. In the same layer, a silver three-beaded earring and a round bronze belt buckle were found. All the mentioned finds are not later than the 15th century.

By removing the uniform surface layers, we arrived at a surface divided into two parts. A layer of compacted yellow-gray clay soil was found shallow below the surface layer, in the northern half of the research area, in front of the entrance to the church. This layer was bounded on the southern side by a large stone-built tomb and a step of ten neatly placed stones bound with mortar that continues to the tomb. The tomb and a row of stones created a small plateau in front of the entrance at the walking level of the church, while the area south of it was obviously somewhat lower.

The space in front of the church is dominated by a stone-built tomb with a massive stone lid, placed next to the entrance to the church on its southern side. The slab is made of dressed limestone, with dimensions 232 x 106 x 17 cm. It was broken at the western end, and it is interesting that only in that part, approximately up to the break, the slab is bound with mortar to the structure below it. All of the above, in combination with the extremely heavy lid and the fact that the tomb was used for multiple burials, indicates that the break in the lid

provirivale kosti pokojnika; što onih pronađenih *in situ* što dislociranih. U trima razinama nalaze se cjelovito sačuvani ostatci pokojnika, pokopani u ispruženom položaju na leđima, s rukama uz tijelo. Lubanje i duge kosti položene uokolo svjedoče da je grobnica mjesto pokopa za više od tri pokojnika koliko smo ih pronašli u izvornom položaju. Nalaza gotovo da i nema. Tek je uz lakat desne ruke jednog od pokojnika pronađen ulomak *Krautstrunk* čaše koja se može datirati najranije u 15. stoljeće, ali on se ne može pripisati samom pokopu.

Prostor južno od crkve iskorišten je za groblje. U ovoj kampanji dokumentirana su 32 groba, a prepoznaju se dvije razine pokapanja. Onu gornju čine pokopi vjerojatno iz kasnog srednjeg vijeka. Jednostavni pokopi u zemljanoj raci najčešće nemaju arhitekturu. Tek su na nekoliko grobova ostale sačuvane poklopnice ili se vidi rijetko kamenje stavljeno uz rub grobne jame. Dio grobova bio je označen izbočenim kamenom na zapadnoj strani – učelkom. Pokojnici su položeni u ispruženi položaj na leđima s glavom naslonjenom na potiljak i rukama položenima uz bokove ili savijenim na zdjelici. U grobovima gotovo da i nema nalaza, tek pokoja željezna kopča.

Druga razina grobova je nešto starija i vjerojat-

was used to remove only a part of the lid during new burials, a part sufficient to bring the deceased into the tomb, and that after returning that part to the grave, the joints were additionally plastered. The slab covers a stone-built tomb with a plastered inner face, and although it is deep, there are no visible grooves or protrusions for another floor on the side walls. The tomb was found empty for the most part. Only at the bottom was a fill made of loose, light brown earth, from which the bones of the deceased protruded; some of them found *in situ* and some dislocated. At three levels, there are completely preserved remains of the deceased, buried in an extended position on their back, with their arms next to their bodies. The skulls and long bones lying around testify that the tomb was burial place for more than three deceased people which we found in their original position. There are almost no finds. A fragment of a *Krautstrunk* beaker was found next to the elbow of the right arm of one of the deceased, which can be dated to the 15th century at the earliest, but it cannot be attributed to the burial.

The area south of the church was used for a cemetery. In this campaign, 32 graves were documented, and two burial levels were recognized.



... Trojagodna naušnica (foto: K. Gusar)
... Three-beaded earring (photo: K. Gusar)





Pogled na crkvu sv. Marcele (foto: M. Šimičić)
View of the church of St. Marcella (photo: M. Šimičić)

no je povezana s ranim srednjim vijekom. Iako je i dalje riječ o jednostavnim ukopima u zemlju, veći dio pronađenih grobova na ovoj razini ima grobnu arhitekturu od klesanog i amornog kamenja. U jednom od grobova uz lubanju su pronađene karičice i grozdolike naušnice kakve se javljaju u grobljima bjelobrdske kulture 10. i 11. stoljeća (Tomičić, 2019, 78-111). Iako u trenutku pisanja rada još nisu poznati rezultati radiokarbonskih analiza, činjenica da ovi grobovi uništavaju dijelove suhozidne arhitekture, te da je u arhitekturu jednog od grobova inkorporiran dio predromaničke grede s natpisom kakav se može datirati u polovicu 9. stoljeća, daje određeni *terminus post quem* za same pokope.

Druga pozicija ovogodišnjih iskopavanja povezana je s crkvom sv. Marcele. Već smo u protekloj kampanji utvrdili postojanje dviju faza. U ranijoj fazi crkva sv. Marcele ima jednu polukružnu apsidu na

The upper one consists of burials probably from the late Middle Ages. Simple burials in earth pits usually have no stone elements. Only a few graves have preserved lids or one can see rare stones placed along the edge of the grave pit. Some of the graves were marked with a protruding stone on the western side (*"učelak"*). The deceased are laid in an extended position on their back with the head resting on the nape of the neck and the hands on the sides or bent on the pelvis. There are almost no finds in the graves, only some iron buckles.

The second level of graves is somewhat older and is probably related to the early Middle Ages. Although these are still simple burials in the ground, most of the graves found at this level have grave structure made of dressed and amorphous stones. In one of the graves, next to the skull, circlets and

istoku, dok je poslije oltarni prostor crkve produžen i proširen, pri čemu su dodane tri polukružne apside. Na poziciji nastavljamo gdje smo stali, točnije, na troapsidalnom prostoru crkve sv. Marcele u kojem smo u protekloj kampanji dosegli razinu grobova. No sudeći prema nalazima pronađenima u trima već istraženim takvim grobovima, niz masivnih ploča koje su služile kao poklopnice samih grobova nisu dio originalnog poda crkve, nego pokopi pronađeni ispod njih pripadaju posljednjoj fazi korištenja crkvenog prostora.

Razine samih ploča blago variraju, dio njih je utonuo, a dio je raspucan, što utječe na varijacije u visini poda. To može biti posljedica i različitih postdepozicijskih faktora, no isto tako može pokazivati da niti u vremenu kada su grobovi podignuti nije bilo potrebno da ploče budu u idealnoj ravnini. Zanimljivo je što dio kamenih ploča, uz poprečnu stranicu, ima

grape-shaped earrings were found, typical of the cemeteries of the Bijelo Brdo culture of the 10th and 11th centuries (Tomičić, 2019, 78-111). Although at the time of writing this paper the results of the radiocarbon analyses had not been known, the fact that these graves destroyed parts of the dry stone wall architecture, and that a part of a pre-Romanesque architrave with an inscription that can be dated to the middle of the 9th century was incorporated into the structure of one of the graves, gives a certain *terminus post quem* for the burials themselves.

The second position of this year's excavations is related to the church of St. Marcella. In the previous campaign, we have already established the existence of two phases. In the earlier phase, the church of St. Marcella had one semicircular apse in the east, while later the altar area of the church was extended and expanded, adding three semicircular apses. We continued at the position where we left off, more precisely in the three-apsidal area of the church of St. Marcella, where we reached the level of the graves in the previous campaign. But judging by the finds from three such graves that have already been explored, a series of massive slabs that served as covers for the graves are not part of the original floor of the church, but the burials found under them belong to the last phase of the use of the church space.

The levels of the slabs vary slightly, some of them are sunken and some are cracked, which affects the variations in floor height. This may be a consequence of various post-depositional factors, but it may also indicate that even at the time when the graves were erected, it was not necessary for the slabs to be in an ideal plane. It is interesting that some of the stone slabs have a vertically placed stone along the transverse side, which resembles *"učelak"*, or a grave marker. Both situations indicate that such an arrangement could not function at the time of the use of the apsidal space as a sacral part, which in turn opens up the possibility of interpretation that the apsidal space in the last phase of use could have been turned into a kind of burial chapel.

Only the peripheral segments have been preserved of the original floor of the church from the





okomito postavljen kamen. Nešto što podsjeća na učelak, ili oznaku groba. Obje situacije pokazuju da takav raspored nije mogao funkcionirati u vrijeme korištenja apsidalnog prostora kao sakralnog dijela, što pak otvara mogućnost tumačenja da je apsidalni prostor u posljednjoj fazi korištenja mogao biti pretvoren u svojevrsnu grobnu kapelu.

Od originalnog poda crkve iz vremena kada je apsidalni prostor služio izvornoj, sakralnoj namjeni, sačuvani su tek rubni segmenti po kojima zaključujemo da je crkva imala pod popločan manjim kamenim blokovima i opekama. Iz ove faze potje-

time when the apsidal space served its original, sacral purpose. These segments suggest that the church had a floor paved with smaller stone blocks and bricks. The three altars, the pedestals of which were found in the apses, probably originate from this phase, as well as the narrow stoup found along the southern wall. The stoup was made of an old column.

As for the graves, excavations in the three-apsed part of the church of St. Marcella showed at least two burial levels. The upper one consists of the aforementioned tombs under massive stone



Uklanjanje grobnih ploča (foto: M. Šimičić)
Removal of grave slabs (photo: M. Šimičić)



ču vjerojatno i tri oltara, čija su postolja pronađena u apsidama, kao i uska škropionica pronađena uz južni zid, za čiju je izradu reupotrijebljen stariji stup.

Što se tiče samih grobova, iskopavanja u troapsidalnom dijelu crkve sv. Marcele pokazala su najmanje dvije

slabs; all erected in a similar way, with only slight variations. In all graves, there is usually a twenty-centimeter thick layer of sandy soil under the large stone slab, in which small fragments of human bones are scattered. They are accompanied by finds from various time periods, as well as parts of the church furnishings. Similar parts or decorative elements of the church (fragments of arches, columns, etc.) were used as spolia in the construction of the tombs.

Grave architecture with a rectangular floor plan, made of unworked stones, stone slabs or spolia is usually found beneath the layer of sandy soil. It is filled with a layer of dark-brown loose soil in which we find dislocated human bones or the remains of the deceased in their original position. The ritual is uniform. The deceased are laid in an extended position, in the west-east direction, with the head to the west. The position of the arms varies, although the most common variant is that the arms were crossed on the chest or pelvis.

In this uniform horizon of burials, only one tomb stands out, and it is a large stone-built single-floor tomb found in the middle of the space. But the finds in it, as well as the fact that it had spolia in its construction, testify that it also belongs to the same burial horizon.

The finds in the graves can be divided into two groups. The first consists of those found in the highest layer of graves together with dislocated bones. Among them, spherical buttons, two-part double-loop clasps ("ažule") and beaded earrings dominate, and the finds mostly belong to the Mid-

Istraživanja crkve sv. Marcele (foto: M. Šimičić)
Archaeological investigations of the church of St. Marcella (photo: M. Šimičić)





razine pokapanja. Gornju čine spomenute grobnice pod masivnim kamenim pločama; sve podignute na sličan način, uz tek blage varijacije. Kod svih grobova ispod velike kamene ploče u pravilu se nalazi dvadesetak centimetara tanki sloj pjeskovite zemlje u kojoj su razbacani sitni ulomci ljudskih kostiju. Njih prate i nalazi iz različitih vremenskih razdoblja, kao i dijelovi arhitekture crkve. Slični dijelovi ili ukrasni elementi crkve (ulomci luka, stupova i sl.) javljaju se i kao spolije u arhitekturi samih grobnica.

Ispod sloja pjeskovite zemlje javlja se u pravilu grobna arhitektura pravokutnog tlocrta, slagana od neobrađenog kamena, kamenih ploča ili spolija. Nju ispunjava sloj tamnosmeđe rahle zemlje u kojem od početka pronalazimo dislocirane ljudske kosti ili ostatke cjelovitih pokojnika u izvornom položaju. Ritus je ujednačen. Pokojnici se polažu u ispruženi položaj, u smjeru zapad-istok, s glavom na zapadu. Položaj ruku varira, iako je češće varijanta da su ruke bile prekrížene na prsima ili zdjelici.

U ovom ujednačenom horizontu pokapanja tek se jedna grobnica razlikuje, a riječ je o velikoj zidanoj grobnici na kat pronađenoj po sredini prostora. No nalazi u njoj, kao i činjenica da je u svojoj konstrukciji imala spolije, svjedoče da i ona pripada istom horizontu pokapanja.

dle Ages. Their stratigraphic position and archaeological context is a consequence of the destruction of older graves during the construction of large tombs.

The second group consists of finds related to the *in situ* deceased, which mostly come from the Modern Period, among which we find common jewelry such as plain rings, rings with a decorative bezel and signet rings, but there are also rare finds of bronze bracelets composed of small links and extended front plates with relief decoration. Parts of the costume such as buttons, buckles and shoe fittings also belong to the same period. The most numerous finds are devotional artifacts such as rosaries, medals and crosses. There is also a large quantity of bone and glass beads that could have been part of rosaries and jewelry.

In terms of stratigraphy, the lowest burial level was found below the mentioned tombs, and due to the depth of the tombs, more precisely the depth of the construction works when the tombs were made, these burials were preserved only in segments and in smaller parts of the space, in places where the bedrock was somewhat lower. This horizon is marked by simple burials in earth pits. Later devastation of the graves caused by the construc-

Nalaze u grobovima možemo podijeliti u dvije skupine. Prvu čine oni nađeni u najvišem sloju grobova zajedno s dislociranim kostima. Među njima prevladava kuglasta dugmad, dvodijelne dvopetljaste kopče (ažule) te naušnice s jagodama, a nalazi najvećim dijelom pripadaju srednjem vijeku. Njihov stratigrafski položaj i arheološki kontekst posljedica je uništenja starijih grobova pri gradnji velikih grobnica.

Drugu skupinu čine nalazi povezani s *in situ* pokojnicima koji uglavnom potječu iz novog vijeka, među kojima nalazimo uobičajen nakit poput vitica, prstenja s ukrasnom krunom i pečatnjaka, no zabilježeni su i rijetki nalazi brončanih narukvica sastavljeni od malih karika te proširene prednje pločice s reljefnim ukrasom. Istom vremenu pripadaju i dijelovi nošnje kao što su dugmad, kopče i okovi za obuću. Najbrojnije nalaze čine devocionalije unutar kojih se javljaju krunice, medaljice i križevi. Također je prisutna velika količina koštanih i staklenih perli koje su mogle činiti dio krunica, ali i nakita.

Stratigrafski najniža razina pokapanja pronađena je ispod navedenih grobnica, a zbog dubine grobnica, točnije dubine građevnih zahvata pri gradnji samih grobnica, ovi pokopi ostali su sačuvani tek u segmentima, i to na manjim dijelovima prostora, na mjestima gdje je matična stijena bila nešto niža. Ovaj horizont obilježavaju jednostavni pokopi u zemljanu raku. Kasnije devastacije grobova nastale gradnjom mlađih grobnica poništile su većinu tragova, ali izgleda da ovaj horizont nema arhitekturu. Također za sada nisu pronađeni nalazi koji bi upućivali na vrijeme pokapanja. No, s obzirom na nedostatak arhitekture, možemo ih povezati sa središnjim horizontom pokopa na istraženom dijelu groblja sjeverno crkve sv. Marcele koji možemo datirati u početak kasnog srednjeg vijeka. Vjerojatno je riječ o grobovima iz istog konteksta, koji su povezani sa starijom fazom crkve sv. Marcele i nekropolom koja se širi izvan same crkve na okolne platee (Vujević *et al.* 2023).

tion of younger tombs obliterated most of the traces, but it seems that graves from this horizon do not have stone structure. Also, so far, no finds have been recovered that would indicate the time of the burial. However, given the lack of stone elements, we can connect them to the central burial horizon in the explored part of the cemetery north of the church of St. Marcella, which can be dated to the beginning of the late Middle Ages. It is likely that these are graves from the same context, which are related to the older phase of the church of St. Marcella and the necropolis that extends beyond the church to the surrounding plateaus (Vujević *et al.* 2023).

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Students of archaeology (photo: Ž. Miletić)
Archaeology students (photo: Ž. Miletić)





NEOLITIČKO NALAZIŠTE GRADUŠA – LOKVE U ISLAMU GRČKOM

The Neolithic Site of Gradušša – Lokve in Islam Grčki

IN SITU - 2/1 (2023)

U sklopu projekta *Život i razvoj prvih poljoprivrednih zajednica na području Ravnih kotara – primjer Islama Grčkog*, koji je financiran sredstvima Zaklade Hrvatske akademije znanosti i umjetnosti u Zagrebu, u veljači 2023. proveden je terenski pregled neolitičkog nalazišta Gradušša – Lokve u Islamu Grčkom.¹ Istraživanje je imalo nekoliko ciljeva: 1) kartirati i proučiti tamne obrise (pretpostavljene potpovršinske neolitičke objekte) vidljive na zračnim snimkama i pri obilasku nalazišta; 2) utvrditi njihovu povezanost s distribucijom površinskih nalaza; 3) definirati prostorne okvire nalazišta; 4) odrediti prostorni odnos između naselja srednjeg i kasnog neolitika (Horvat Oštrić 2023).

Prostor obuhvaćen terenskim pregledom zauzimao je nešto veću površinu od one na kojoj su zahvaljujući zračnim i satelitskim snimkama bili vidljivi tamni obrisi. Taj prostor podijeljen je u de-

A field survey of the Neolithic site of Gradušša – Lokve in Islam Grčki was carried out in February 2023, as part of the project *Life and development of the first agricultural communities in the area of Ravni kotari - an example of Islam Grčki*, which is financed by the funds of the Foundation of the Croatian Academy of Sciences and Arts in Zagreb.¹ The research had several goals: 1) to map and study the dark outlines (presumed subsurface Neolithic structures) visible on aerial photographs and when visiting the site; 2) to determine their connection with the distribution of surface finds; 3) to define the spatial framework of the site; 4) to determine the spatial relationship between the Middle and Late Neolithic settlements (Horvat Oštrić 2023).

The area covered by the field survey occupied a slightly larger area than the one where dark outlines were visible thanks to aerial and satellite


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¹ Voditeljica istraživanja bila je doc. dr. sc. Kristina Horvat Oštrić s Ocjela za arheologiju Sveučilišta u Zadru, a zamjenik voditelja student poslijediplomskog studija Antropologije sa Sveučilišta u Santa Barbari (Kalifornija, USA) Nicholas Triozzi. Uz njih, u terenskom pregledu sudjelovali su dokumentarist Ocjela za arheologiju sa Sveučilišta u Zadru mag. archeol. Luka Bogdanović i studenti arheologije s istog Ocjela, Mia Mandarić i Rudolf Pirak-Šepak.

¹ The leader of the research was Kristina Horvat Oštrić, PhD, assistant professor, from the Department of Archeology of the University of Zadar, and Nicholas Triozzi, a postgraduate student of anthropology from the University of Santa Barbara (California, USA), as the deputy. Other participants in the field survey included the documentalist of the Department of Archeology of the University of Zadar, Luka Bogdanović and archeology students from the same department, Mia Mandarić and Rudolf Pirak-Šepak.



Pogled na nalazište s jugozapada (foto: L. Bogdanović)
View of the site from the southwest (photo: L. Bogdanović)



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 Ulomak posude daniške kulture ukrašen spiralnim motivom (foto: K. Horvat Oštrić)
 Fragment of a Danilo culture vessel decorated with a spiral motif (photo: K. Horvat Oštrić)

set blokova. Članovi ekipe kretali su se paralelno, na međusobnoj udaljenosti od 4 do 5 metara. Za provjeru kretanja i kartiranja nalaza korištene su dvije mobilne aplikacije – OruxMaps i Status GPS-a. Od arheološke građe prikupljeni su kameni nalazi, nalazi od opsidijana i dijagnostički keramički nalazi. Dan nakon terenskog pregleda nalazište je snimljeno bespilotnom letjelicom.

Detaljnou analizom prikupljenog keramičkog materijala (ukupno 701 ulomak) po blokovima moguće je pretpostaviti kojim su se pozicijama na Gradušama koristile zajednice tijekom srednjeg / kasnog / srednjeg i kasnog neolitika. Pregledom zračnih snimaka i analizom gustoće prikupljenog površinskog materijala, moguće je odrediti gdje su točni položaji neolitičkih potpovršinskih objekata,

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 Istraživačka ekipa tijekom terenskog pregleda (foto: K. Horvat Oštrić)
 Research team during the field survey (photo: K. Horvat Oštrić)

images. This space is divided into ten blocks. The team members moved parallel, at a distance of 4 to 5 meters from each other. Two mobile applications - OruxMaps and GPS Status - were used to check the movement and map the findings. Collected archaeological artifacts included stone finds, obsidian finds and diagnostic pottery sherds. A day after the field inspection, the site was photographed with an unmanned aerial vehicle.

Through a detailed analysis of the collected ceramic material (701 fragments in total) by block, it is possible to assume which positions were used by the communities in Graduša during the Middle / Late / Middle and Late Neolithic. By reviewing



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 Ulomak ručke ritona (foto: K. Horvat Oštrić)
 Fragment of a rhyton handle (photo: K. Horvat Oštrić)

čiju će vrstu i karakter otkriti buduća arheološka iskopavanja.

Zahvaljujući provedenom terenskom pregledu i zračnom snimanju, definirana je sjeverna granica nalazišnog kompleksa. Istočnu granicu nije bilo moguće odrediti zbog gustog raslinja koje je onemogućavalo pristup tom dijelu terena, tj. nalazišta. Pitanje rasprostiranja nalazišta prema zapadu i jugu također ostaje otvoreno. Čini se da zapadnu granicu čini zapadni dio pregledanog područja,





gdje je prikupljen tek manji broj nalaza. Na južnoj strani obuhvaćenoj terenskim pregledom također je prikupljen sporadičan broj površinskih nalaza. Međutim, prema zračnim snimkama iz 2022. godine, na kojima su vidljivi tamni obrisi, nije moguće isključiti da je i on dio nalazišnog kompleksa. Kako bi se definirala južna granica nalazišta, fokus novih istraživanja bit će u prvom redu stavljen na taj dio pregledom obuhvaćenog područja. Bez obzira na to je li on dio nalazišta ili izlazi izvan njegovih okvira, nalazište Graduša – Lokve veličinom premašuje većinu danas poznatih neolitičkih nalazišta sjeverne Dalmacije. Prikupljanje novih podataka važnih za razumijevanje života i kulturnog razvoja neolitičkih zajednica sjeverne Dalmacije osigurat će buduća sustavna arheološka istraživanja na nalazištu.

aerial photographs and analyzing the density of collected surface finds, it is possible to determine the exact locations of Neolithic subsurface structures, the type and character of which will be revealed by future archaeological excavations.

Thanks to the conducted field survey and aerial photography, the northern border of the site complex was defined. It was not possible to determine the eastern border due to the dense vegetation that prevented access to that part of the terrain, i.e. the site. The question of the site's expansion to the west and south also remains open. The western border seems to be the western part of the examined area, where only a small number of finds were collected. A sporadic number of surface finds were also collected on the southern side covered by the field survey. However, according to aerial photographs from 2022, on which dark outlines are visible, it cannot be ruled out that it is also part of the site complex. In order to define the southern border of the site, the focus of new research will be primarily on that part of the area covered by the survey. Regardless of whether it is part of the site or goes beyond its boundaries, the Graduša - Lokve site exceeds most of the Neolithic sites known so far in northern Dalmatia in size. Collecting of new data important for understanding the life and cultural development of the Neolithic communities of northern Dalmatia will be ensured by future systematic archaeological research at the site.

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RTINSKA MIRILA

Stone monuments to the departed (*mirila*) from Rtina

Mirila su suhozidna pogrebna spomen-obilježja karakteristična za širi prostor Velebita i dijela sjeverne Dalmacije. U duhovnom smislu oni su granica između svijeta mrtvih i svijeta živih, kameni spomenik kojim se obilježava mjesto posljednjeg pokojnikova boravka na zemlji i oproštaja sa suncem, prije negoli bude poko-

Mirila are mortarless stone structures and memorials characteristic of the wider area of Velebit and part of northern Dalmatia. In the spiritual sense, they are a border between the world of the dead and the world of the living, a stone monument that marked the place of the deceased's last stay on earth and a fare-



Definiranje struktura (foto: M. Šimičić)
Defining the structures (photo: M. Šimičić)



pan na groblju (Katić 2010: 35; Trošelj 2013: 31).

Praksa odmaranja s pokojnikom bila je uobičajeni ritual koji se na većini prostora zadržao do sredine 20. stoljeća, a na nekim mjestima i danas se prakticira (Katić 2017: 235–236). Kao dio rituala mirila su nastajala tijekom pogrebne svečanosti kada se preminule nosilo do seoske crkve i groblja. Na tom putu pogrebna povorka zastavljala se na mjestu gdje bi se pokojnika spustilo na tlo kako bi se napravilo mirilo. Najčešće se to radilo na pola puta od pokojnikova mjesta do groblja ili župne crkve (Katić 2010: 19), a mirila su gotovo u pravilu postavljana uz put (Trošelj 1991: 202; Černički, Forenbaher

well to the sun, before being buried in the cemetery (Katić 2010: 35; Trošelj 2013: 31). The practice of resting with the deceased was a common ritual that was retained in most areas until the middle of the 20th century, and in some places it is still practiced today (Katić 2017: 235–236). As part of the ritual, these stone monuments were created during the funeral ceremony when the deceased was carried to the village church and cemetery. On that way, the funeral procession stopped at a place where the deceased would be put down on the ground to make *mirilo*. Most often, this was done half way from the deceased's



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2011: 430). Prema Katiću (2017: 143) „mirila su građena u zaseoku koji je pokojnik smatrao svojim, tako da se pokojnik „izmiri“ na svome teritoriju i duša dolazi na svoje, a tijelo će se pokopati u groblje na području „tuđe“ zemlje izvan svoga zaseoka“.

Kada bi se ljudi koji su nosili pokojnika umorili, onda bi ga spustili na zemlju i „uzeli mu miru“ (Trošelj 1991: 201–202; 2013: 35). Danas ne postoji zapis o značenju „uzimanja mire“ preminuloga (Černički, Forenbaher 2019: 153). Postoje tek različite hipoteze. Možda se na taj način čuvala uspomena na čovjeka i njegov fizički izgled (Katić 2010: 18). Mirilo predstavlja identitet pokojnika jer se prema dužini mirila iz naraštaja u naraštaj znalo tko je „izmireni“ pokojnik (Trošelj 2010: 64). Ujedno je to ritualni ra-

dwelling place to the cemetery or parish church (Katić 2010: 19), and *mirila* were almost regularly placed along the way (Trošelj 1991: 202; Černički, Forenbaher 2011: 430). According to Katić (2017: 143), “*mirila* were built in the hamlet that the deceased considered his own, so that the deceased could “be measured” in his territory, the soul could find peace, and the body would be buried in a cemetery in the territory of “someone else’s” land outside his own hamlet”.

When the people carrying the deceased got tired, they would lay him on the ground and “take his measure” (Trošelj 1991: 201–202; 2013: 35). Today, there is no record of the meaning of “taking measure” of the deceased (Černički, Forenbacher 2019:

Pogled na mirila (foto: F. Jurković Pešić)
View of *mirila* (photo: F. Jurković Pešić)





Čišćenje mirila (foto: M. Šimičić)
Cleaning the stone monuments (*mirila*) (photo: M. Šimičić)

stanak duše od tijela i zajednice kojoj je pripadala (Katić 2017: 142).

Mirilo ili mira (mjera) pokojnika označila bi se s dva kamena koja bi se postavila iznad glave (uzglavnica) i ispod nogu pokojnika (uznožnica/podnožnica). Uzelo bi se neobrađeno kamenje iz neposredne okoline, a poslije tog dana ili nakon nekog vremena, lokalni bi majstori obradili ploče i popločali prostor između (podnicu), sagrađivši tako mirilo (Trošelj 1991: 203). Vrlo su često uzglavni i uznožni kamen ukrašeni raznim simbolima ili bi se uklesalo ime pokojnika i datum smrti. Pozornost se obraćala na uzglavnicu na kojoj bi majstori pokazali svu svoju vještinu u izradi najrazličitijih motiva.

Mirila su se štovala i posjećivala kao sveta mjesta gdje se duša odijelila od tijela i gdje je ostala povezana s mjerom u kamenu. Činom je mirilo postalo vječno počivalište njegove duše koje čuva trajnu uspomenu na pokojnika. Kada se izmjereno tijelo pokopa, duša neće lutati svugdje te tako prestaje opasnost zajednicu. Ona se na Dušni dan vraća na svoje mirilo (Katić 2017: 142). Iz tog razloga mirila su važna kao i sami grobovi, a prema pojedinim autorima čak i važnija od groblja na kojem je pokopan pokojnik (Trošelj 1982: 118; Katić 2017: 50).

Mirila danas možemo naći na Velebitu, u Ravnim

153). There are only different hypotheses. Perhaps in this way the memory of the man and his physical appearance was preserved (Katić 2010: 18). *Mirilo* represents the identity of the deceased because according to the length, it was known from generation to generation who the "measured" deceased was (Trošelj 2010: 64). At the same time, it is a ritual separation of the soul from the body and the community to which it belonged (Katić 2017: 142).

Mirilo or *mira* (measure) of the deceased would be marked with two stones that would be placed above the head (headstone) and below the feet of the deceased (footstone). Unworked stones would be taken from the immediate vicinity, and after that day or after some time, local craftsmen would work the slabs and pave the space between them (floor), thus building a *mirilo* (Trošelj 1991: 203). Very often, headstones and footstones were decorated with various symbols, or the name of the deceased and the date of death would be engraved. Attention was paid to the headstone, on which the masters would show their skill in creating the most diverse motifs.

Mirila were venerated and visited as holy places where the soul separated from the body and re-

kotarima, Bukovici i Dalmatinskoj zagori, a u narodu ih nazivaju različitim imenima: mirila, mjerila, počivala i počivaljke (Trošelj 2013: 33).

Na području Općine Ražanac nalazimo dvije pozicije mirila. Postojalo je i treće, na području Jovića, između sela Rudića i Garića, no ta su mirila uništena (Prpić Burić 2021: 6). Sačuvana su mirila u Gajinama, nasuprot današnjem groblju koja su pripadala selima Podvršju i Krnezi, a po natpisima pravljena su od kraja 19. stoljeća pa sve do Drugog svjetskog rata. Danas su obnovljena i prezentirana. Posljednja mirila na području Ražanca nalaze se na zapadnom dijelu, između Gajetovice i Dragunice. Dio su pogrebne prakse povezane s prijenosom pokojnika iz Rtine. Brojnija su od prethodno spomenutih. Sva tri mirila nalaze se na putevima prema starom groblju, a nastala su iz razloga što sela koja su pripojena Općini nisu imala ni svoja groblja ni crkvu (Prpić Burić 2021: 11). Staro groblje nalazilo se kod današnjeg spomenika uz kapelicu svetog Ante po kojoj se i nazivalo groblje. Ono je na toj poziciji postojalo oko 500 godina i služilo je za sahranjivanje žitelja Ražanca, Jovića, Rtine, Podvršja i Krneze (Prpić Burić 2021: 22).

Poslije Drugog svjetskog rata, povećanom urbanizacijom mjesta, praksa podizanja mirila prestaje.

mained connected to the measure in stone. Thus, *mirilo* became the eternal resting place of the soul, which preserves a permanent memory of the deceased. When the dead body is buried, the soul will not wander around, thus ending the danger to the community. On All Souls' Day, it returns to its *mirilo* (Katić 2017: 142). For this reason, these monuments are as important as the graves themselves, and according to some authors, even more important than the cemetery where the deceased was buried (Trošelj 1982: 118; Katić 2017: 50).

Mirila can still be found on Velebit, in Ravni kotari, Bukovica and Dalmatinska zagora, and people call them by different names: *mirila*, *mjerila*, *počivala* and *počivaljke* (Trošelj 2013: 33).

In the area of Ražanac Municipality, we find two positions of *mirila*. There was also a third one, in the area of Jovići, between the villages of Rudići and Garići, but they were destroyed (Prpić Burić 2021: 6). These stone monuments have been preserved in Gajine, opposite the present-day cemetery, which belonged to the villages of Podvršje and Krneza, and according to the inscriptions, they were made from the end of the 19th century until the Second World War. At present they have been restored and presented. The most recent



Staro u novo (foto: M. Šimičić)
Something old, something new (photo: M. Šimičić)





Zanemarivanje rituala dovelo je do gubitka pojma u kolektivnoj svijesti, a taj gubitak je doveo i do devastacije mirila infrastrukturnim projektima, depoziranjem građevnog materijala po njima, pa čak i uzimanja kamenja za ukrašavanje kuća.

U želji da se proces devastacije zaustavi i da se dokumentira postojeće stanje, a na poziv Turističke zajednice Općine Ražanac tijekom 2023. godine studenti Odjela za arheologiju u više su navrata radili na čišćenju i dokumentaciji rtinskih mirila. Do sada je na području dimenzija 55 x 18 metara dokumentirano 61 mirilo, raspoređeno u 14 redova. Na istočnom dijelu mirila su relativno dobro sačuvana, a sačuvanost pada prema zapadnom kraju gdje se pojedina gotovo više i ne prepoznaju.

U skladu s općom tendencijom mirila da pokojnik

mirila in the area of Ražanac are located in the western part, between Gajetovica and Dragunica. They are part of the funeral practices associated with the transfer of the deceased from Rtina. They are more numerous than those previously mentioned. All three *mirila* are located on the roads leading to the old cemetery, and they were created because the villages that were joined with the municipality had neither their own cemeteries nor churches (Prpić Burić 2021: 11). The old cemetery was located near the modern monument next to the chapel of St. Anthony, after which the cemetery was named. It was in that position for about 500 years and was used for the burial of residents of Ražanac, Jovići, Rtina, Podvršje and Krneza (Prpić Burić 2021: 22).

gleda prema istoku i rtinska su orijentirana u smjeru zapad-istok s uzglavnicama na zapadu. Različitim su dimenzija i variraju od 86 cm do 216 cm u dužini. Sudeći po dimenzijama većinom je riječ o mirilima za odrasle osobe, no pojavljuje se nekoliko manjih, dječjih mirila. Najčešće su raspoređena u grupama, ali ima i pojedinačnih. Kao i na ostalim mirilima na širem području natpisi na pločama imaju sve oznake ruralne sepulkralne epigrafike: sažeti su, plitko uklesani, pisani su latiničnim pismom različite grafije, a donose najvažnije podatke o pokojniku. Uzglavnice i uznožnice na rtinskim su mirilima uglavnom neobrađene ili samo grubo obrađene. Na uzglavnicama se pojavljuju uklesani datumi ili samo godine rođenja/smrti, imena i prezimena pokojnika, križ i natpisi poput: „Boga pomilova“, „Laka zemlja“. Na

After the Second World War, with the increased urbanization of the place, the practice of erecting *mirila* stopped. The neglect of the ritual led to the loss of the concept in the collective consciousness, and this loss also led to the devastation of *mirila* with infrastructure projects, depositing building materials on them, and even taking stones to decorate houses.

In an attempt to stop the process of devastation and to document the current situation, and at the invitation of the Tourist Board of Ražanac Municipality, during 2023, the students of the Department of Archaeology worked on cleaning and documentation of *mirila* in Rtina on several occasions. So far, 61 of these stone monuments, arranged in 14 rows, have been documented in an area measuring 55 x 18 meters. In the eastern part, the *mirila* are relatively well preserved, and the preservation of the monuments is not as good towards the western end, where some of them are almost unrecognizable.

In accordance with the general tendency for the deceased to look towards the east, the *mirila* from Rtina are oriented in the west-east direction with the headstones in the west. They have different dimensions and vary from 86 cm to 216 cm in length. Judging by the dimensions, most of them were for adults, but there are a few smaller, children's *mirila*. Most often they are arranged in groups, but there are also individual ones. As in other cases in the wider area, the inscriptions on the slabs have all the marks of rural sepulchral epigraphy: they are concise, shallowly carved, written in the Latin script applying different ways of writing, and provide the most important information about the deceased. The headstones and footstones on the *mirila* from Rtina are mostly untreated or only roughly worked. On the headstones, dates are engraved or just the years of birth/death, names and surnames of the deceased, a cross and inscriptions such as: "Lord have mercy", "May the earth be light on you". There is either a cross on the footstone or it is an unmarked slab (Prpić Burić 2021: 8). In two cases, a cross is carved on the headstone and on the footstone. Cases have also been recorded when the headstone of an older *mirilo* was installed as a footstone of a younger *mirilo* or it was placed on the floor. The *mirila* from Ražanac differ



Pogled iz zraka (foto: M. Šimičić)
Aerial view (photo: M. Šimičić)





uznožnici se nalazi ili križ ili je riječ o ploči bez oznake (Prpić Burić 2021: 8). U dva slučaja križ je uklesan na uzglavnici i na uznožnici. Zabilježeni su i slučajevi kada je uzglavnica sa starijeg mirila ugrađena kao uznožnica mlađeg mirila ili je stavljena u podnicu. Ražanačka mirila razlikuju se od velebitskih koja su znatno bogatije ukrašena. Kod njih su najrašireniji motiv različite vrste križeva, ali može se pronaći i svastika, osmerokraka zvijezda, četverolisna rozeta, trozub, pentagram itd. (Trošelj 2013: 36).

Nakon Drugog svjetskog rata praksa gradnje mirila u Ražancu se postupno gubi, a posljednji sprovod na starom groblju bio je 1952. godine (Prpić Burić 2021: 23). Posljednji svećenik za kojeg znamo da je prakticirao mirila bio je don Romano Lukin koji je službu župnika u Ražancu obavljao od 1937. do 1942. godine (Dušević 1998: 38). Spomenuto se poklapa s natpisima na mirilima. Najmlađe dokumentirano mirilo je ono Frane Miočića koji je umro 10. 1. 1951. godine.

from those from Velebit, which are much more elaborately decorated. Among them, the most widespread motifs are various types of crosses, but one can also find swastika, eight-pointed star, four-leaf rosette, trident, pentagram, etc. (Trošelj 2013: 36).

After the Second World War, the practice of building *mirila* in Ražanac gradually disappeared, and the last funeral at the old cemetery was in 1952 (Prpić Burić 2021: 23). The last priest we know of who practiced *mirila* was Father Romano Lukin, who served as parish priest in Ražanac from 1937 to 1942 (Dušević 1998: 38). The aforementioned coincides with the inscriptions on the monuments. The youngest documented *mirilo* is that of Frano Miočić, who died on 10 January 1951.

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PEĆINA U ŽDRILU KOD ROVANJSKE



Cave in Ždrilo
near Rovanjaska



Pećina u Ždrilu kod Rovanjske kompleksan je speleološki objekt smješten na istočnoj strani Novigradskog ždrila, morskog tjesnaca koji spaja Novigradsko more na jugu s Velebit-skim kanalom na sjeveru. Novigradsko ždrilo danas predstavlja geomorfološki fenomen potpuno okrštenog kanjona koji svoju genezu duguje djelovanju rijeke Zrmanje tijekom kasnog pleistocena, dok se vrijeme njegova potapanja zbog podizanja razine mora datira oko 9 200 godina prije sadašnjosti (Hasan et al. 2020: 16). Do pećine vodi prvo makadamski put, a potom pješćaka staza s istoka, iz uvale Rovanjske, koja se posljednjih 50-ak metara spušta strmom padinom kanjona do prostranog ulaza okrenutog prema sjeverozapadu ispred kojeg se nalazi manji zemlja-

Cave in Ždrilo near Rovanjska is a complex speleological structure located on the eastern side of Novigradsko ždrilo, a sea strait that connects Novigradsko more in the south with Velebit-ski kanal in the north. Today, Novigradsko ždrilo represents the geomorphological phenomenon of a completely karstified canyon, which owes its genesis to the action of the Zrmanja river during the late Pleistocene, while the time of its submergence due to rising sea levels dates back to around 9,200 years before the present (Hasan et al. 2020: 16). A macadam road leads to the cave, and then a footpath from the east, from Rovanjska bay, which descends the steep slope of the canyon for the last 50 meters to a spacious entrance facing northwest, in front



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of which is a small earthen plateau. The entrance leads to the spacious first hall, which branches into several side channels. The total length of all branches of the structures is about 93 meters.

In professional literature, the cave has long been known as an Early Neolithic site (Batović 1979: 484). However, the first archaeological research was only carried out in 2021 as part of the *Epigravettian Communities of Northern Dalmatia* project (HRZZ IP-2019-04-6115). On that occasion, two trial trenches were excavated, at the entrance and in the left side channel. The entrance trench gave better results; the upper part of the stratigraphic sequence (the first 30 cm) can be dated to younger prehistoric periods, while the rest of the sequence could be attributed to the Upper Palaeolithic based on the few finds, primarily lithics. The cultural layers could be traced to a depth of 1.2 meters, and the oldest documented layer contained the remains of a hearth from which a charcoal sample was collected that gave a radiocarbon date of 31490 +/- 170 uncal years before the present or 34261 to 33481 years BC (36210 – 35430 cal BP, 2σ sigma), at the very beginning of the Upper Palaeolithic.

The results of the trial trench at the entrance were the main motive for undertaking systematic research during 2023 when a larger area (20 m²) was investigated at the back of the entrance hall, more precisely at the place where the right side channel separates towards the south. The entire stratigraphic sequence can roughly be divided into three main phases: recent, Neolithic and Palaeolithic.

The surface layers were mostly composed of dried animal excrement and testify to the use of the cave for animal stabling until the recent period. Pottery from the Early Neolithic period was already present in them, as well as other prehistoric pottery, and after removal, several buried structures were defined which, based on the few finds, can be dated to late prehistoric times and antiquity. The further stratigraphic sequence consists of the characteristic sedimentary "layer-cake" facies (French *fumier*), with small finds from the Neolithic period that was layered in the southeastern part with a thickness of about 70 cm, and in the northeastern part about 30 cm. The appearance

Pogled iz pećine prema sjeverozapadu (foto: M. Dubolnić Glavan)
View from the cave to the northwest (photo: M. Dubolnić Glavan)







sadržavao je i ostatke vatrišta iz kojeg je prikupljen uzorak ugljena koji je dao radiokarbonski datum od 31490 +/- 170 uncal godina prije sadašnjosti ili 34261 do 33481 godinu pr. Kr. BC (36210 – 35430 cal BP, 2 σ sigma), dakle u sam početak gornjeg paleolitika.

Rezultati probne sonde na ulaznom dijelu bili su glavni motiv za poduzimanje sustavnih istraživanja tijekom 2023. godine. Pri tom je istražena veća površina (20 m²) na stražnjem dijelu ulazne dvorane, točnije na mjestu gdje se prema jugu odvaja desni bočni kanal. Ukupno otkriveni stratigrafski slijed može se okvirno podijeliti na tri glavne faze: recentnu, neolitičku i paleolitičku.

Površinski slojevi većinom su bili sastavljeni od osušenog životinjskog izmeta i svjedoče o korištenju pećine u stočarske svrhe sve do recentnog perioda. Već u njima bila je prisutna keramika iz ranog neolitika kao i druga prapovijesna keramika, a nakon uklanjanja definirano je nekoliko ukopanih objekata koji se na osnovi malobrojnih nalaza mogu datirati u kasnu prapovijest i antiku. Daljnji stratigrafski slijed čini karakteristični sedimentni facijes „slojevite torte“ (franc. *fumier*), s pokretnim materijalom iz neolitičkog razdoblja koji se na jugoistočnom dijelu uslojavao u debljini od oko 70, a na sjeveroistočnoj oko 30 cm. Pojava ovih slojeva u pećinama obično se uzima kao pokazatelj njihova korištenja u svrhu čuvanja stoke jer nastaju depozicijom i raspadanjem mješavine životinjskog izmeta i stelje (Gerometta, Boschian 2022: 12-15). U Ždrilo, facijes slojevite torte makroskopski je karakteriziran tipičnom izmjenom sivkastih slojeva pepela debljine od 1 do 10 cm s tankim crnim slojevima reduciranog gorenja. Ovaj ritam sedimentacije povremeno je prekinut slojevima različitog sastava, ali s velikom količinom morskih školjaka (većinom dagnje i kamenice), koji svjedoče o intenzivnom iskorištavanju morskih resursa. U skladu s dubinom uslojavanja, većina neolitičkih slojeva bila je reducirana na jugoistočni dio sonde te su se nastavljali pod južni profil koji se nalazi ispod prolaza u desni bočni kanal. Prostorna disperzija ovih slojeva, kao i raspored rupa za stupove koji su dokumentirani u pojedinim fazama neolitičke okupacije govore u prilog prostornoj organizaciji ljudskih aktivnosti pri čemu bi stražnji dio dvorane bio povezan s čuvanjem stada i akumulacij otpada. Prema ulazu je intenzitet ovakvih aktivnosti bitno manji, dok na samom ulazu, barem unutar probne sonde, ovakvi slojevi nisu dokumentirani.

Cijeli stratigrafski slijed „slojevitih torti“ može se

of these layers in caves is usually taken as an indication of their use for the purpose of keeping livestock, as they are formed by the deposition and decomposition of a mixture of animal excrement and litter (Gerometta, Boschian 2022: 12-15). In Ždrilo, the “layer-cake” facies is macroscopically characterized by the typical alternation of grayish layers of ash from 1 to 10 cm thick with thin black layers of reduced burning. This rhythm of sedimentation is occasionally interrupted by layers of different composition, but with a large amount of sea shells (mostly mussels and oysters), which testify to the intensive exploitation of marine resources. In accordance with stratification depth, most of the Neolithic layers were reduced to the southeastern part of the trench and continued under the southern profile located below the passage into the right lateral channel. The spatial dispersion of these layers, as well as the arrangement of postholes documented in certain phases of Neolithic occupation, speak in favor of the spatial organization of human activities, whereby the rear part of the hall would have been connected with herd stabling and waste accumulation. Towards the entrance, the intensity of such activities is significantly lower, while at the entrance, at least within the trial trench, such layers have not been documented.

The entire stratigraphic sequence of “layered cakes” can be dated to the Early and Middle Neolithic on the basis of stylistic and typological characteristics of pottery finds. The lower part of the sequence is characterized by a typical Early Neolithic inventory of deep pots with a narrowed opening decorated with the *impresso* decorative techniques. Although sherds with the *impresso* decoration also occur in the upper part of the sequence, one must notice the dominance of hemispherical bowls with a constricted rim, which correspond more to the Middle Neolithic, but with the absence of the typical Danilo decorative style. Other small finds include bone objects (awls, bone hook, perforated tooth) and lithic material composed mostly of raw material originating from the Gargano peninsula. A preliminary examination of the animal bones showed the dominance of ovicaprids with the appearance of cattle and wild animals in the upper part of the sequence. The Neolithic phases are confirmed by three radiocarbon dates, ranging from 5800 to 4900 BC.

The Palaeolithic phase consists of several lay-

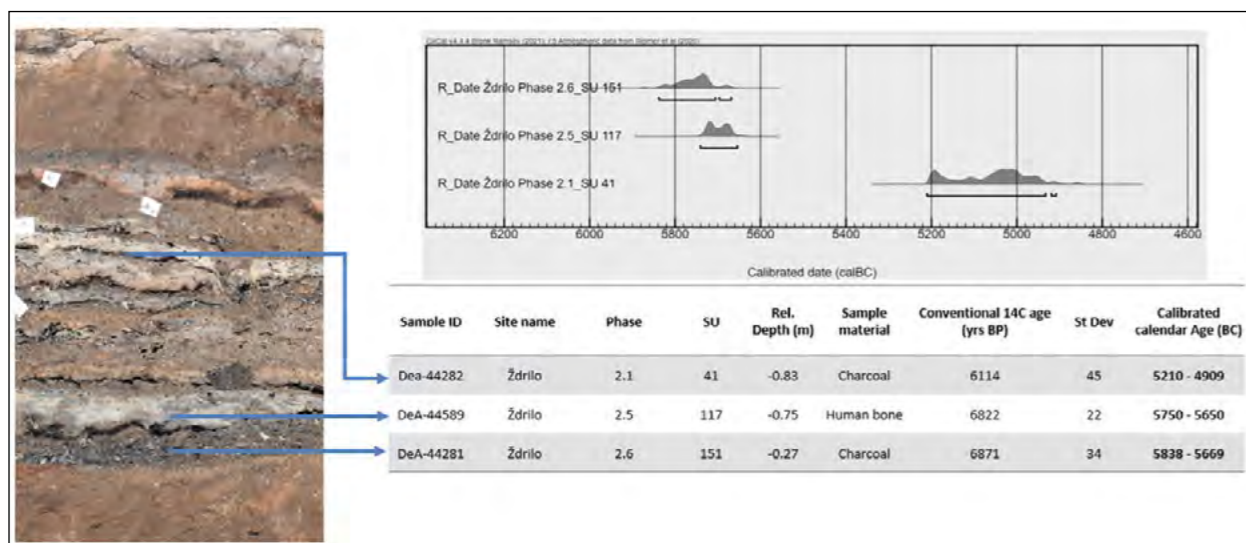


Sustavna iskopavanja, pogled iz lijevog bočnog kanala (foto: M. Grgurić Srzentić)
Systematic excavations, view from the left side channel (photo: M. Grgurić Srzentić)



Neolitički sloj 151 „in situ“ (foto: A. Karađole)
Neolithic layer 151 in situ (photo: A. Karađole)





Rezultati radiokarbonskog datiranja uzoraka iz neolitičke faze (desno) s pozicijom datiranih slojeva na segmentu jugoistočnog profila (lijevo) (izradio: M. Bodružić)
Results of radiocarbon dating of samples from the Neolithic phase (right) with the position of the dated layers on the segment of southeastern profile (left) (made by: M. Bodružić)

na osnovi stilsko-tipoloških karakteristika keramičkih nalaza datirati u rani i srednji neolitik. Donji dio slijeda karakterizira tipični ranoneolitički inventar dubokih lonaca suženog otvora ukrašenih *impresso* ukrasnim tehnikama. Iako se ulomci s *impresso* ukrasom javljaju i u gornjem dijelu slijeda, ipak je uočena dominacija poluloptastih zdjela stegnutog oboda, kakve više odgovaraju srednjem neolitiku, ali uz izostanak tipičnog danilskog ukrasnog stila. Od ostalih pokretnih nalaza zabilježeni su predmeti od kosti (šila, koštana udica, perforirani zub) i litički materijal sastavljen većinom od sirovinskog materijala podrijetlom s poluotoka Gargana. Preliminarni pregled životinjskih kostiju pokazao je dominaciju ovikaprda uz pojavu goveda i divljih životinja u gornjem dijelu slijeda. Neolitičke faze potvrđene su trima radiokarbonskim datumima, s rasponom trajanja od 5800 do 4900 godina pr. Kr.

Paleolitičku fazu čini nekoliko slojeva crvenkaste gline, s manjim razlikama u boji i sastavu, bez sačuvanih vatrišta. Najmlađi dio sekvencije karakterizira pojava zasiganih slojeva i nakupina kamenja, na gotovo cijeloj površini sonde, a na jednom od slojeva sigovine dokumentiran je i tanki sloj vulkanskog pepela. Preliminarna analiza pokazala je da je riječ o pepelu iz vulkanske erupcije napuljskog žutog tufa (NYT; usmeno priopćenje A. Di Roberto) datiranog oko 15 000 godina prije sadašnjosti (Deino et al. 2004: 168), kakva je zabilježena u kasnoepigravetijenskom stratigrafskom slijedu Vele špilje na Korčuli (Dean et al. 2020: 6) i pećine Vlakna na Dugom otoku (Vujević, Bodružić 2021: 6). Litički nalazi iz ovih slojeva, osobito sječiva, mogu se povezati s

ers of reddish clay, with minor differences in color and composition, without preserved hearths. The youngest part of the sequence is characterized by the appearance of dripstone cemented layers and accumulations of stones, on almost entire surface of the trench, and a thin layer of volcanic ash was also documented on one of the flowstone layers. Preliminary analysis showed that it is ash from a volcanic eruption of the Neapolitan Yellow Tuff (NYT; oral communication with A. Di Roberto) dated about 15,000 years before present (Deino et al. 2004: 168), as recorded in the late Epigravettian stratigraphic sequence of the caves Vela špilja on Korčula (Dean et al. 2020: 6) and Vlakno on Dugi otok (Vujević, Bodružić 2021: 6). Lithic finds from these layers, especially blades, can be associated with the Epigravettian technocomplex, which corresponds to the tephra chronology. In the layers below the flowstone, the lithic material corresponds to the early Upper Palaeolithic, with the appearance of few tools with Aurignacian characteristics. In addition to lithics, two specimens of pierced animal teeth were also found in them. In terms of stratigraphy, this phase would correspond to the layer with the hearth remains from the trial trench. Radiocarbon dates for this layer suggest a period that corresponds chronologically to the Aurignacian cultural complex. The oldest documented layer in the lithic inventory indicated the presence of the Levallois production process and tools that correspond more closely to the Mousterian cultural inventory in terms of typology. This preliminary relative dating of the old-

epigravetijenskim tehnokompleksom što se uklapa u kronologiju tefre. U slojevima ispod sigovine, litički materijal odgovarao bi ranom gornjem paleolitiku, s pojavom malobrojnih alatki s orinjasijenskim karakteristikama. U njima su, osim litike, pronađena i dva primjerka probušenih životinjskih zuba. Stratigrafski bi ova faza odgovarala sloju s ostatkom vatrišta iz probne sonde koji je radiokarbonski datiran u razdoblje koje kronološki odgovara orinjasijenskom kulturnom kompleksu. Najstariji dokumentirani sloj u litičkom inventaru uputio je na prisutnost levaloaškog proizvodnog postupka i oruđa koja se tipološki više uklapaju u musterijenski kulturni inventar. Ova preliminarna relativna datacija nastarijeg sloja donekle je potvrđena rezultatom radiokarbonske analize uzorka ugljena prikupljenog u ovoj kampanji koji je pokazao starost veću od 43 500 godina, ali uz nedovoljnu količinu izmjerene izotope ugljika-14 što je onemogućilo uspostavljanje donje kronološke granice, odnosno precizniju dataciju.

Zaključno, može se reći da je sustavnim iskopavanjima potvrđen znatan kulturni slijed. Neolitički slojevi predstavljaju veliki potencijal za daljnje istraživanje stočarskih praksi u ovom razdoblju. Paleolitički slijed Ždrila, iako brojčano skromnog inventara, na osnovi do sad prikupljenih radiokarbonskih datuma predstavlja jedini lokalitet na istočnoj obali Jadrana s radiokarbonski datiranim slojevima iz srednjeg i ranog gornjeg paleolitika.

er layer was confirmed to a certain extent by the radiocarbon analysis of the charcoal sample collected in this campaign, which showed an age of over 43,500 years, but with an insufficient amount of the measured carbon-14 isotope, which made it impossible to establish lower chronological border, that is a more precise dating.

In conclusion, it can be said that systematic excavations confirmed a significant cultural sequence. The Neolithic layers represent a great potential for further research into animal husbandry practices in this period. The Palaeolithic sequence of Ždrilo, although with a numerically modest inventory, represents the only site on the eastern coast of the Adriatic with radiocarbon-dated layers from the Middle and Early Upper Palaeolithic based on the radiocarbon dates collected so far.

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ARHEOLOŠKI NADZOR U ULICI FRANKA LISICE

Archaeological supervision in Franka Lisice Street

Posljednih nekoliko godina brojne rekonstrukcije zadarskih prometnica i ostali infrastrukturni radovi popraćeni su arheološkim nadzorima, pa tako Odjel za arheologiju već godinama prati radove na izgradnji plinskog distribucijskog sustava grada Zadra, a od ožujka do listopada 2023. radovi su se odvijali u ulicama Put Kotlara i Franka Lisice. (karta)

S iskopom se započelo u ulici Put Kotlara, od jugozapada prema sjeveroistoku odnosno prema križanju s Ulicom Franka Lisice. Ukupna duljina iskopa u spomenutoj ulici bila je 68 metara, dubina 110 cm, a širina kanala u prosjeku 70 cm.

Kamen živac je na cijelom potezu bio relativno visoko, pretežito na dubini od 50 do 80 cm, iznad je bio nasip od lomljenog kamena, a pri vrhu, ispod asfalta, recentna podloga ceste. U gornjem dijelu ulice, prema raskrižju s Ulicom F. Lisice, na dubini od 65 cm od površine asfalta otkriven je segment puta – kaldrme od sitnog nabijenog kamena, djelomično prekrivenog i povezanog pjeskovitom nabijenom zemljom. Mjestimično je vidljiva i živa stijena čija je površina uglačana i izlizana od korištenja. Ukupna dokumentirana dužina je 5 metara. Podloga je u većem dijelu masna crvenica sa sitnim kamenom, a mjestimično živa stijena. Nedostatak sitnih nalaza i uski kanal iskopa gdje nisu bili vidljivi rubni dijelovi strukture onemogućavaju preciznu dataciju. (Slika)

In the last few years, numerous reconstructions of roads in Zadar and other infrastructural works have been accompanied by archaeological supervisions, so the Department of Archaeology has been monitoring the works on the construction of the gas distribution system of the city of Zadar for years, and from March to October 2023, the works took place in Put Kotlara and Franka Lisice Streets.

The excavation began in Put Kotlara Street, from southwest to northeast, that is, towards the intersection with Franka Lisice Street. The total length of the excavation in the mentioned street was 68 meters, the depth 110 cm, and the average width of the channel was 70 cm. The bedrock was relatively high along the entire excavated segment, mostly at a depth of 50 to 80 cm, above it was a fill of crushed stone, and near the top, under the asphalt, the recent road base. In the upper part of the street, towards the intersection with F. Lisice Street, at a depth of 65 cm from the asphalt surface, a segment of the road was discovered – cobbled pathway made of small compacted stones, partially covered and connected with packed sandy soil. Bedrock is also visible in places, the surface of which is polished and worn from use. The total documented length is 5 meters. The base is mostly red clay with small stones, and in places

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Karta područja s ucrtanim trasama iskopa (preuzeto s: geoportal.dgu.hr)
Map of the area with marked excavation areas (downloaded from: geoportal.dgu.hr)



Pogled na kanal u ulici Put Kotlara (foto: L. Bogdanić)
View of the channel in Put Kotlara Street (photo: L. Bogdanić)





Otprije je poznato da je trasa antičkog vodovoda Biba – Jader prolazila ulicom F. Lisice ili u njezinoj neposrednoj blizini (Ilakovac 1982: 152–230). To je potvrđeno i nedavnim arheološkim istraživanjima tijekom kojih je otkriven dio podzemne trase, udaljen svega 200 metara istočno od sadašnje pozicije iskopa (Štefanac 2021). Nadzemni dijelovi antičkog vodovoda i danas su vidljivi u zapadnom dijelu Ulice F. Lisice i u Ulici Ivana Zadrana. Na križanju ulica Put Kotlara i Franka Lisice gdje je iskop poprečno presjekao Ulicu F. Lisice očekivalo se naići na ostatke akvedukta, međutim ostatci strukture nisu otkriveni, kao ni tragovi njegova eventualnog ranijeg uništenja. Riječ je o trasi akvedukta između pozicijskih točaka 24 i 23 (Ilakovac 1982: 216–217) gdje se, prema Ilakovcu, akvedukt javlja kao plitko ukopani kanal, a s obzirom na to da je matična stijena u tom dijelu dosta visoko, moguće je da su ostatci kanala odavno uništeni na čitavom području križanja ulice Put kotlara i Franka Lisice.

Iskop u Ulici Franka Lisice krenuo je s istoka prema zapadu, a kanal je bio pozicioniran u sjevernom dijelu prometnice. Na samom početku iskopa matična je stijena izrazito visoko, na nekim mjestima i do 40 cm ispod današnjeg asfalta tako da podloga današnje prometnice leži na matičnoj stijeni i nisu otkriveni nikakvi arheološki slojevi ni strukture. Od križanja s ulicom Put Kotlara razina matične stijene se spušta te je u idućih 130 metara iskopa na dubini

bedrock. Precise dating is prevented by the lack of small finds and the narrow excavation channel where the peripheral parts of the structure were not visible.

It has already been known that the route of the Roman-era Biba-Jader water supply system passed through F. Lisice Street or in its immediate vicinity (Ilakovac 1982: 152–230). This was also confirmed by recent archaeological research, during which a part of the underground route was discovered, only 200 meters east of the current position of the excavation (Štefanac 2021). The above-ground parts of the Roman-era water supply system are still visible today in the western part of F. Lisice and Ivana Zadrana Streets. The remains of the aqueduct were expected at the intersection of Put Kotlara and Franka Lisice Streets, where the excavation cut F. Lisice Street transversely. However, they were not spotted, nor were there any traces of its possible earlier destruction. It is the route of the aqueduct between position points 24 and 23 (Ilakovac 1982: 216–217) where, according to Ilakovac, the aqueduct appears as a shallowly dug channel, and considering that the bedrock is quite high in that part, it is possible that the remains of the channel have long since been destroyed in the entire area of the intersection of Put Kotlara and Franka Lisice streets.



Detail of kaldrme in Ulici Franka Lisice (foto: F. Jurković Pešić)
Detail of the cobbled area in Franka Lisice Street (photo: F. Jurković Pešić)

od 100 do 130 cm. Zanimljivo je da to područje Ilakovac naziva velikom vrtačom koju akvedukt između pozicijskih točaka 22 i 20 zaobilazi s južne strane (Ilakovac 1982: 202). Upravo je ta niža konfiguracija terena omogućila da se do danas očuvaju i arheološki slojevi, pa je tako na prostoru pred crkvicom Sv. Duha na dubini od 105 cm otkriven segment puta. Kaldrma je od, čini se, neobrađenog kamena, prosječne veličine 10 x 10 cm, koji je s gornje strane istrošen od korištenja. Između kamena je sloj smeđe, relativno rahle zemlje. Vidljiva je u čitavoj širini kanala i očuvana u dužini od 3 metra, ali ni na ovoj

The excavation in Franka Lisice Street started from east to west, and the channel was positioned in the northern part of the road. At the very beginning of the trench, the bedrock is extremely high, in some places up to 40 cm below the current asphalt, so that the base of today's road lies on the bedrock and no archaeological layers or structures were discovered. From the intersection with Put Kotlara Street, the level of the bedrock falls, and in the next 130 meters, the excavation was carried out at a depth of 100 to 130 cm. It is interesting that Ilakovac calls that area a large sinkhole, bypassed by the aqueduct on the southern side between position points 22 and 20 (Ilakovac 1982: 202). It is precisely this lower configuration of the terrain that enabled preservation of the archaeological layers to this day, so a road segment was uncovered in the area in front of the church of the Holy Spirit at a depth of 105 cm. The cobbled area is made of, it seems, unworked stone, with the average size of 10 x 10 cm, which is worn from use on the upper side. Between the stones is a layer of brown, relatively loose soil. Unfortunately, the edges of the structure were not discovered in this position either. A total of four Roman-era graves were discovered in the immediate vicinity: two burials in square stone urns, one in a ceramic urn and the remains of a destroyed grave under tegulae.

The graves in square stone urns with the remains of the cremated deceased contained typ-



Kaldrma u Ulici Franka Lisice (izradila: M. Šimičić)
Cobbled area in Franka Lisice Street (made by: M. Šimičić)





poziciji, nažalost, nisu otkriveni rubovi strukture. (Slike 2 i 3) U neposrednoj blizini otkrivena su ukupno četiri rimskodobna groba; dva pokopa u kvadratnim kamenim urnama, jedan u keramičkoj urni te ostatci uništenog groba pod tegulama. Grobovi u kvadratnim kamenim urnama (Slika 4) s ostacima spaljenih pokojnika sadržavali su klasične nalaze i priloge karakteristične za razdoblje 1. i početak 2. stoljeća, a posebno se ističe grob 3 gdje je unutar urne otkriveno 14 staklenih balzamarija od kojih su tri spaljena, a ostali cjeloviti i datiraju se u 1. stoljeće (Eterović Borzić, Štefanac 2021: 72–83). (Slika 5) Jedan je pokop u keramičkoj urni koja je već ranije bila djelomično uništena tijekom izgradnje sustava odvodnje koji se nalazi odmah s južne strane kanala, te je u jednom dijelu otkrivena veća količina ulomaka tegula i mogući dio grobne konstrukcije od kamena, ali je, nažalost, i taj grob prije uništen, i to vjerojatno postavljanjem strujnih instalacija koje se nalaze s druge, sjeverne strane iskopa za plinovod.

Arheološki nadzor u Ulici Franka Lisice potvrdio je očekivanja temeljena na prijašnjim istraživanjima i slučajnim pronalascima tijekom prošlog stoljeća. S obzirom na to da znamo da je rimskodobna cesta prolazila u neposrednoj blizini akvedukta, a potvrđena je i pri istraživanju na Benkovačkoj cesti (da-

ical finds and items characteristic of the period of the 1st and early 2nd century, and grave 3 is particularly noteworthy, where 14 glass balsamaria were found inside the urn, three of which were burned and the remaining examples are complete and date to the 1st century (Eterović Borzić, Štefanac 2021: 72–83). One burial is in a ceramic urn that was previously partially destroyed during the construction of the drainage system located on the southern side of the channel. In one part a large quantity of tegula fragments and a possible part of the stone burial structure were discovered, but unfortunately, that grave was also destroyed earlier, probably by the electrical installations located on the other, northern side of the excavation for the gas pipeline.

Archaeological supervision in Franka Lisice Street confirmed expectations based on previous research and accidental finds during the last century. Since we know that a Roman-era road passed in the immediate vicinity of the aqueduct, and it was also confirmed during research in Benkovačka Street (today's Fra Ivana Zadrana Street) in the 1970s (Nedved 1980: 343, 346), it is possible that the cobbled area is actually a segment of the Roman-era road, but at the moment, given the state



Grob 3 (foto: L. Bogdanić)
Grave 3 (photo: L. Bogdanić)



Stakleni balzamariji iz groba 3 (foto: F. Jurković Pešić)
Glass balsamaria from grave 3 (photo: F. Jurković Pešić)

našnja Ulica fra Ivana Zadrana) 70-ih godina prošlog stoljeća (Nedved 1980: 343, 346), moguće je da je otkrivena kaldrma upravo segment rimskodobne ceste, no u ovom trenutku s obzirom na stupanj istraženosti to ne možemo sa sigurnošću ustvrditi. Tijekom ovog arheološkog nadzora dokumentirana su četiri rimskodobna ukopa, koji svakako doprinose boljem i cjelovitijem poznavanju nekropole antičkog Zadra, a prije svega njezina rasprostiranja.

of research, it is still hypothetical. During this archaeological survey, four Roman-era burials were documented, which certainly contribute to better and more comprehensive understanding of the necropolis of ancient Zadar, and above all its dispersion.

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ARHEOLOŠKA ISTRAŽIVANJA NA LERGOVOJ GRADINI

Archaeological
excavations at
Lergova gradina



Tijekom ožujka 2023. provedena su arheološka istraživanja na Lergovoj gradini, približno 20 km sjeveroistočno od Zadra, i to zahvaljujući novcu mještana Turnja, Alana Mandića,¹ koji je financirao i prva iskopavanja na tom lokalitetu poviše Gornje Slivnice, obavljena šest godina prije (Ilkić, Čelhar 2018: 617–620). Površina Lergove gradine je oko 3 hektara pa pripada liburnskim naseljima srednje veličine. Dominira krševitim terenom, uz čije je južno podnožje usko polje bogato vodom. Vizualno komunicira s nekoliko istovremenih sjevernodalmatinskih gradina, a s vrhom od 268 m nadmorske visine nadzire plovidbu južnim dijelom Velebitskog kanala.

Lergovu gradinu opasava kameni bedem, koji je dokumentiran metodom fotogrametrije (Ilkić, Čelhar, Grgurić 2020). Njegov je istočni opseg izgrađen od istesanih krupnijih blokova, često sačuvanih *in situ* u više redova. Na tome markantnom dijelu bedema uočljivo je nekoliko izvornih ulaza, čije je rubno kamenje istaknuto anatirozom. Znatno je slabije sačuvan zapadni fortifikacijski perimetar, koji je, čini se, bio podignut od lomljenog ili samo dijelom priklesanog kamena pločaste forme. U približno jugoistočnom podnožju Lergove gradine zamijećena je trasa prapovijesne komunikacije. Dijelom urezana u krš, pruža se nekoliko stotina metara u smjeru obližnjeg izvora s ovećom lovkom (Ilkić, Čelhar, Grgurić 2020). Na površini Lergove gradine razasuto je mnoštvo keramike, uglavnom ulomaka amfora, a naziru se i položaji mnogobrojnih nastambi pravokutne osnove, koje su na kosom terenu katkad urezane u živac (Čače 1985: 722–723, 815–816; Brusić 2000: 129–130, 133–136; Čelhar 2014: 143–149). Od pokretne građe do sada su objavljeni u većem broju raznovrsni predcarski numizmatički nalazi, među kojima dominira novac Kartage i Numidije (Ilkić, Šeparović 2023: 180–181). Otkriveni su pojedinačno te kao takvi svjedoče da su bili u optjecaju kao platežno sredstvo. Pojedini su lomljeni radi dobivanja sitniša, što također upućuje na monetarna, a ne simbolička ili neka drukčija korištenja novca. Uostalom, novčana struktu-

¹ Istraživanja su 2023. obavili djelatnici Odjela za arheologiju Sveučilišta u Zadru, i to izv. prof. dr. sc. Mato Ilkić (voditelj), doc. dr. sc. Martina Čelhar (zamjenica), izv. prof. dr. sc. Igor Borzić, dipl. arheol. Filipa Jurković Pešić (voditeljica Arheološke zbirke) i mag. arheol. Luka Bogdanić (dokumentarist) te studenti arheologije Mia Mandarić, Ivan Mašković i Miroslav Novak. Marin Lerga dao je suglasnost da na njegovoj parceli obavimo istraživanja, na čemu mu najljepše zahvaljujemo.

During March 2023, archaeological research was carried out at Lergova gradina, approximately 20 km northeast of Zadar, thanks to the funding by the resident of Turanj, Alan Mandić,¹ who also financed the first excavations at that site above Gornja Slivnica, carried out six years before (Ilkić, Čelhar 2018: 617–620). The area of Lergova gradina covers about 3 hectares, so it belongs to the medium-sized Liburnian settlements. It dominates the rugged terrain, at the southern foot of which is a narrow field abounding in water. It provides unobstructed visual communication with several contemporaneous northern Dalmatian hill-forts, and with a peak of 268 m above sea level, it ensures monitoring of the navigation in the southern part of the Velebit Channel.

Lergova gradina is surrounded by a stone rampart, which was documented by the method of photogrammetry (Ilkić, Čelhar, Grgurić 2020). Its eastern perimeter is built of larger dressed blocks, often preserved *in situ* in several rows. On this imposing part of the rampart, several original entrances can be seen, the edge stones of which are highlighted with anathyrosis. The western fortification perimeter

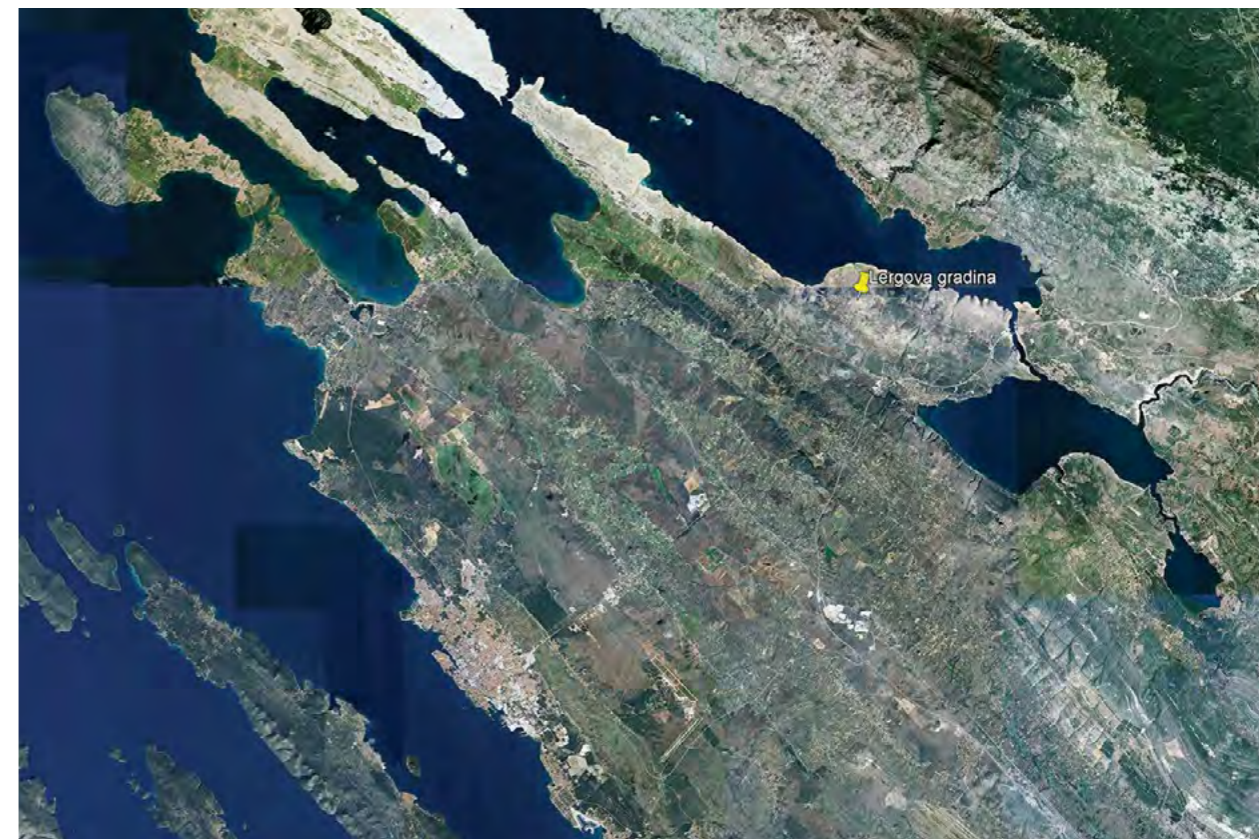
is not so well preserved, and it seems it was built of broken or only partially dressed flat stone. A pre-historic communication route was noticed approximately at the southeastern foot of Lergova gradina. Partly carved into the karst, it stretches several hundred meters in the direction of a nearby spring with a large puddle (Ilkić, Čelhar, Grgurić 2020). The surface of Lergova gradina abounds in pottery, mainly amphora fragments. The positions of numerous rectangular dwellings can be recognized, sometimes cut into bedrock on the sloping ground (Čače 1985: 722–723, 815–816; Brusić 2000: 129–130, 133–136; Čelhar 2014: 143–149). Of small finds, a large number of various pre-Imperial numismatic artifacts have been published so far, among which the coins of Carthage and Numidia dominate (Ilkić, Šeparović 2023: 180–181). They were discovered individually and as such testify that they were in circulation as means of payment. Some were broken in order to

¹ In 2023, the research was carried out by the employees of the Department of Archeology of the University of Zadar, associate prof. Mato Ilkić (PI), assistant prof. Martina Čelhar (vice PI), associate prof. Igor Borzić, Filipa Jurković Pešić (head of the Archaeological Collection) and mag. archaeol. Luka Bogdanić (documentarian) and archeology students Mia Mandarić, Ivan Mašković and Miroslav Novak. Marin Lerga gave his consent to carry out research on his plot, for which we are very grateful.



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Geografski položaj Lergove gradine
Geographical location of Lergova gradina



Segment bedema (foto: M. Parica)
Rampart segment (photo: M. Parica)





ra s Lergove gradine je u skladu s onima s drugih gradinskih naselja u Liburniji, ali i Japodiji. Dakle, objedinjuje ih uporaba goleme količine sjevernoafričkog novca.

U arheološkoj kampanji iz 2023. odlučeno je da se iskopavanja prostorno nadovežu na sondu 1 koja je istražena 2017. u južnom dijelu k. č. 651, i to na parceli u vlasništvu Marina Lerge. Naime, tada su otvorene dvije sonde na toj katastarskoj čestici koja je razdijeljena na dva nejednaka dijela. Otkrivena su dva suhozidna objekta, međusobno udaljena oko 50 m. Pripadaju razdoblju od kasnog 3. do druge polovice 1. st. pr. Krista. Navedeni kronološki okvir potvrđen je oblikom arhitekture, pratećom mnogobrojnom i raznovrsnom pokretnom arheološkom građom te dodatno dvama 14 C datumima koji su dali kronološki okvir od 204. do 46. pr. Krista. Međutim, tragovi korištenja prostora iz još starijeg razdoblja skoro su u potpunosti izostali. Iznimka je periferno uhvaćen stratum u kutu sonde 1, na mjestu gdje je uočljiv pad matične stijene. Tu je na malenoj površini utvrđen stariji kulturni sloj s keramičkom građom koja je prema makroskopskim i tipološkim odlikama određena u brončano doba. U kampanji 2023. nastojali smo istražiti prostor između navedene sonde i pravca pružanja bedema ne

obtain change, which also suggests monetary rather than symbolic or other uses of money. After all, the monetary structure from Lergova gradina is in line with those from other hillfort settlements in Liburnia, as well as in Japodia. Thus, they are united by the use of a large quantity of north African coins.

In the archaeological campaign of 2023, it was decided that the excavations would spatially adhere to trial trench 1, which was explored in 2017 in the southern part of cadastral plot 651, on a piece of land owned by Marin Lerga. Namely, two trial trenches were opened on that cadastral plot, which was divided into two unequal parts. Two dry stone wall buildings were discovered, about 50 m apart. They belong to the period from the late 3rd to the second half of the 1st century BC. The mentioned chronological framework is confirmed by the form of architecture, the accompanying numerous and diverse archaeological finds and additionally by two 14 C dates which gave the chronological framework from 204 to 46 BC. However, traces of the use of this space from an even older period are almost completely absent. The exception is the peripherally captured stratum in the corner of trial trench 1, in the place where the fall of bedrock is noticeable. There, on a small surface,



... Početna faza istraživanja sonde 3 (foto: M. Ilkić)
... Initial phase of the investigation of trial trench 3 (photo: M. Ilkić)



... Završna faza istraživanja sonde 3 (foto: M. Ilkić)
... Final phase of the investigation of trial trench 3 (photo: M. Ilkić)

bi li preciznije determinirali karakter i kronologiju starijeg naselja i potencijalno potvrdili ili demantirali dugi kronološki hijatus između prvotnog naseljavanja u brončanom dobu te kasnijeg korištenja pozicije tijekom mlađeg željeznog doba.

U sondi 3 (dimenzija 5 x 4 m) potvrđena je relativno jednostavna stratigrafija bez istaknutijih arhitektonskih ostataka, kakve smo zabilježili u onima iz 2017. godine. Riječ je o prostoru između objekta istraženog u sondi 1 i zakošenog ulaznog koridora u sklopu megalitskog bedema. Njegovi arhitektonski ostatci jasno su uočljivi u depresiji ispunjenoj golemom količinom obrađenog i lomljenog kamenja. Nakon uklanjanja površinskih naslaga, u sondi 3 uočen je očekivani subhumus s pokretnom arheološkom građom koja odgovara mlađem željeznom dobu. Ispod njega je dokumentiran masni kompaktniji sloj svjetlije crvenosmeđe boje koji prekriva matičnu stijenu i zapunjava procijepe u njoj. Njega karakterizira prisustvo brončanodobne lončarije. Od ove jednostavne stratigrafske slike odudara tek situacija u južnom dijelu sonde 3, i to u neposrednoj blizini gradinskog ulaznog koridora. Naime, tu je primjetan pad terena i veća depresija u matičnoj stijeni koja je zapunjena lomljenim kamenjem, po svemu sudeći, radi nivelacije hodne površine

an older cultural layer with ceramic material was defined, which, according to macroscopic and typological characteristics, was dated to the Bronze Age. In the 2023 campaign, we tried to investigate the space between the mentioned trial trench and the direction of the ramparts in order to determine the character and chronology of the older settlement more precisely and potentially confirm or deny long chronological hiatus between the initial settlement in the Bronze Age and the later use of the position during the Late Iron Age.

In trial trench 3 (dimensions 5 x 4 m), a relatively simple stratigraphy was confirmed without prominent architectural remains, as we noted in those from 2017. It is the space between the structure investigated in trial trench 1 and the slanted entrance corridor as part of the megalithic rampart. Its architectural remains are clearly visible in the depression filled with a huge quantity of worked and broken stones. The removal of the surface deposits uncovered the expected subhumus layer with movable archaeological finds that correspond to the Late Iron Age in trial trench 3. Beneath it, there was an oily, more compact layer, light red-brown in color, which covers the bedrock and fills the cracks in it. It is characterized by the presence of Bronze Age pottery. Only the situation





Ulomak keramičke posude s trakastom ručkom u sondi 3 (foto: M. Ilkić)
Fragment of a ceramic vessel with a strap handle in trial trench 3 (photo: M. Ilkić)

in the southern part of trial trench 3, in the immediate vicinity of the hillfort's entrance corridor, differs from this simple stratigraphic picture. Namely, there is a noticeable fall of terrain and a larger depression in the bedrock, which is filled with broken stones, apparently to level the walking surface next to the original entrance. In the stone fill, one occasionally comes across archaeological finds from the Late Iron Age, and only at the very bottom, above the bedrock, Bronze Age pottery was found. The depth of the investigated trial trench varies from approximately 40

organizirano tijekom srednjeg brončanog doba. Relativno jednoličan sloj s ujednačenom materijalnom građom ne ide u prilog nekom dužem kontinuitetu naseljavanja.

Za sada nije moguće pouzdano odgovoriti na pitanje što se događalo na Lergovoj gradini tijekom kasnog brončanog i starijeg željeznog doba. Još su intrigantniji problemi povezani sa zajednicom koja podiže svoje domove na ovom lokalitetu tijekom mlađeg željeznog doba. Naime, tada se na njemu odvija znatna graditeljska aktivnost, o čemu osobito svjedoče tzv. megalitski bedemi. Zsigurno je bila riječ o bogatoj i dobro organiziranoj autohtonoj populaciji, jer mnogobrojni i raznovrsni nalazi pokretne materijalne baštine nedvojbeno upućuju na njezino aktivno sudjelovanje u trgovačkim ak-

centimeters on the northern side to almost 1.5 meters on the southern side.

The Late Iron Age cultural layer contained numerous fragments of pre-Imperial pottery, primarily for storage purposes (probably early amphorae of the Lamboglia 2 type). Several fragments of fine Hellenistic pottery were also found. Among few metal objects made of copper alloy, several examples of north African coins from the late 3rd and 2nd centuries BC stand out. The pottery assemblage from the older layer is dominated by the characteristic vertical strap handles. They are sometimes decorated at the top with an extension in the form of a rounded protrusion, which is a typical feature of the pottery of the Dinara culture (Arena, Barbarić, Radić Rossi 2020: 27–28, fig. 2: 3, 7–8, 10, 3: 12–14).

uz izvorni ulaz. U kamenom nasipu povremeno se nailazi na pokretnu arheološku građu mlađeg željeznog doba, a tek na samom dnu, iznad matične stijene, pronađena je i brončanodobna keramika. Dubina istražene sonde varira od približno 40 centimetara na sjevernoj strani, do skoro 1,5 metara dubine na južnoj.

Kulturni sloj mlađeg željeznog doba sadržavao je brojne ulomke predcarske keramike, ponajprije skladišne namjene (vjerojatno rane amfore tipa Lamboglia 2). Nađeno je i nekoliko fragmenata fine helenističke keramike. Otkriveno je i ponešto kovinskih predmeta od bakrene slitine, među kojima se izdvaja više primjeraka sjevernoafričkog novca iz kasnog 3. i 2. st. prije Krista. U keramografskom korpusu starijeg sloja dominiraju karakteristične vertikalne trakaste ručke. One su katkad na vrhu dekorirane produžetkom u obliku zaobljenog izdanka što je tipična značajka lončarije dinarske kulture (Arena, Barbarić, Radić Rossi 2020: 27–28, sl. 2: 3, 7–8, 10, 3: 12–14). Uočljiva je i relativno učestalija pojavnost plastično oblikovanih ukrasa, poput jednostavnih okomitih plastičnih traka ili složenijeg mrežastog motiva. Sve navedeno upućuje na to da je naselje na ovoj poziciji

Sonda 3 po završetku istraživanja (foto: L. Bogdanić)
Trial trench 3 at the end of the investigation (photo: L. Bogdanić)





Ulomak keramike s plastičnim mrežastim motivom iz sonde 3 (foto: M. Ilkić)
Ceramic fragment with an embossed reticular motif from trial trench 3 (photo: M. Ilkić)

tivnostima, što vjerojatno uključuje i komunikacijske kontakte s vrlo udaljenim prekomorskim središtima. Prema dosadašnjim spoznajama, osobito numizmatičkim, život na Lergovoj gradini prestaje tijekom druge polovice 1. st. prije Krista. Njezino je napuštanje vjerojatno posljedica rimske prisutnosti, odnosno reorganizacije južne Liburnije pod novom vlašću.

Plastically shaped decorations, such as simple vertical strips or a more complex reticular motif are relatively more common. All of the above suggests the fact that the settlement in this position was organized during the Middle Bronze Age. A relatively uniform layer with uniform material does not suggest any longer continuity of settlement.

For now, it is not possible to offer a definite answer to the question what happened on Lergova gradina in the Late Bronze and Early Iron Ages. Even more intriguing are the questions associated with the community building their homes at this site during the Late Iron Age. Namely, at that time considerable construction activity took place on it, which is best illustrated by the so-called megalithic ramparts. It was certainly a rich and well-organized autochthonous population, because numerous and diverse archaeological finds undoubtedly indicate its active participation in trade activities, which probably also includes communication contacts with very distant overseas centers. According to current knowledge, especially numismatic data, life on Lergova gradina ends during the second half of the 1st century BC. Its abandonment was probably a consequence of the Roman presence and the reorganization of southern Liburnia under a new government.

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CRTICA O CRKVICI NEPOZNATA TITULARA NA MUSAPSTANU

A note about a church of unknown dedication in Musapstan

Sa zapadne strane Jadranske magistrale na položaju Musapstan u naselju Crno iznad Zadra nalaze se ostatci crkvice nepoznatog titulara. Zbog planirane gradnje stambenog objekta na crkvi susjednim zemljišnim parcelama, Odjel za arheologiju Sveučilišta u Zadru proveo je probno arheološko istraživanje tijekom 2023. godine. Unutar zone istraživanja nalazi se dio bočnog i dio pročelnog zida odnosno sjeverni kut crkvice. Crkva je zarasla niskom vegetacijom iz koje se naziru zidovi.

O ostacima crkve pok. izv. prof. dr. sc. Franjo Smiljanić (Smiljanić 2007: 285) navodi sljedeće:

Na položaju Kanali u Katastarskoj mapi upisana je zemljišna čestica nekog Marka Musa, gdje se s vremenom formirao zaseok Musapstan i gdje su još danas vidljivi ostaci apside manjeg crkvenog objekta. Budući da se radi se o položaju smještenom prema današnjem Sokinom brigu u pravcu zapada, dopušteno je pretpostaviti da se radi o položaju crkve sv. Ivana navedenog u opisu iz 1563.

The ruins of a small church of unknown dedication are located on the western side of the Jadranska magistrala road, at the location of Musapstan in the village of Crno, near Zadar. Due to the planned construction of a residential building on the land plots adjacent to the church, the Department of Archaeology of the University of Zadar conducted archaeological trial excavation in 2023. Part of the side wall and part of the front wall, i.e. the northern corner of the church, are located within the research zone.

The walls protrude from low vegetation that the church is overgrown with.

The late Franjo Smiljanić, PhD, associate professor, states the following about the remains of the church (Smiljanić 2007: 285):

At the location of Kanali, a land plot belonging to a certain Marko Musa was entered in the Cadastral map, where the hamlet of Musapstan was formed over time and where the ruins of the apse of a smaller church building are still visible. Since


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Zemljišna čestica Marka Musa na katastarskoj mapi općine Borgo Erizzo (izvor: DAZd, Mapped Catastrali, Borgo Erizzo, br. 446, 1826)
Marko Musa's land plot on the cadastral map of Borgo Erizzo Municipality (source: DAZd, Mapped Catastrali, Borgo Erizzo, no. 446, 1826)



Prostor istraživanja prije radova, ostatci crkvice vide se u desnom kutu fotografije (foto: M. Šimičić)
The research area before the beginning of the works, ruins of the small church can be seen in the right corner of the photo (photo: M. Šimičić)

godine. Navedena Katastarska mapa je ona općine Borgo Erizzo (Arbanasi) koja se čuva u Državnom arhivu u Zadru (DAZd, Mapped Catastrali, Borgo Erizzo, br. 446, 1826).

Smiljanić se poziva na opis zadarskog bilježnika Danielea Cavalca koji navodi:

... *positi in loco Calopech supra Sanctum Joannem...*

... nalazi se u Čalopeku (selo i brdo blizu Crnog, Bianchi 1879: 359) nasuprot Svetog Ivana... (DAZd, ZB, Daniel Cavalca, B I, I/5, od 26. 4. 1563.).

I danas se padina između Musapstana i potoka Jaruge naziva Kanali, te prema Smiljaniću (Smiljanić 2007: 285), nema sumnje da je riječ o položaju istoimenog srednjovjekovnog posjeda (navodi izvore iz 1375. i 1536. godine). Generalni providur 1679. godine Pietro Valier spominje crkvicu u Crnom:

... *chiesetta ereta nella villa della Cerno officiata da un prete Greco ... stata ereta nella villa di Cerno ... entro una Murvacca vecchia, la quale venga officiata a un sacersato greco...*

... crkvica podignuta u selu Crno koju služi grčki svećenik ... podignuta u selu Crno ... unutar stare Murvice (murve), koju služi grčki svećenik... (HR DAZd-1, libro 5, str. 519).

U spisima se navodi pojam *villa* za selo Crno. Naime, u zadarskim srednjovjekovnim dokumentima zabilježena je pojava da vlasnici posjeda svoja imanja na ladanju nazivaju *villa* ili selo bez obzira na veličinu posjeda. Osobito mnogo takvih sela bilo je u Crnom (*Cerno*) koja su bila u posjedu različitih zadarskih patricijskih obitelji. Bianchi (1879: 384) navodi obitelji de Picenga, Begna, de Grisogono, Matafara i druge. Zemljišna čestica na kojoj je provedeno istraživanje i smještena crkvica nalazi se na rubnom prostoru zadarske srednjovjekovne komune. Štovanje grkokatoličkih svetaca i grkokatolički obred na području Zadra i Dalmacije dio su bizantske tradicije čije tragove baštinitimo do danas, a posljedica su i doseljavanja stanovništva u prošlosti, primjerice za potrebe vojske.

Posljednji put crkva je u katastru zabilježena u Mapi Grimani s početka 18. stoljeća, i to kao *Chiesa De Greci chiamata Christanci*. Ovaj je podatak preuzet iz obrazloženja Rješenja (KLASA: UP/I^o-612-08/08-06/0594, URBROJ: 532-04-01-01/4-08-2, Za-

it is a position located towards present-day Sokin brig in the western direction, it is permissible to assume that it is the position of the church of St. John mentioned in the description from 1563. The aforementioned Cadastral map is that of Borgo Erizzo (Arbanasi) Municipality, which is kept in the State Archives in Zadar (DAZd, Mapped Catastrali, Borgo Erizzo, no. 446, 1826).

Smiljanić refers to the description of Daniele Cavalca, notary public in Zadar, who states:

... *positi in loco Calopech supra Sanctum Joannem...*

... it is located in Čalopek (village and hill near Crno, Bianchi 1879: 359) opposite St. John... (DAZd, ZB, Daniel Cavalca, B I, I/5, dated 26. 4. 1563).

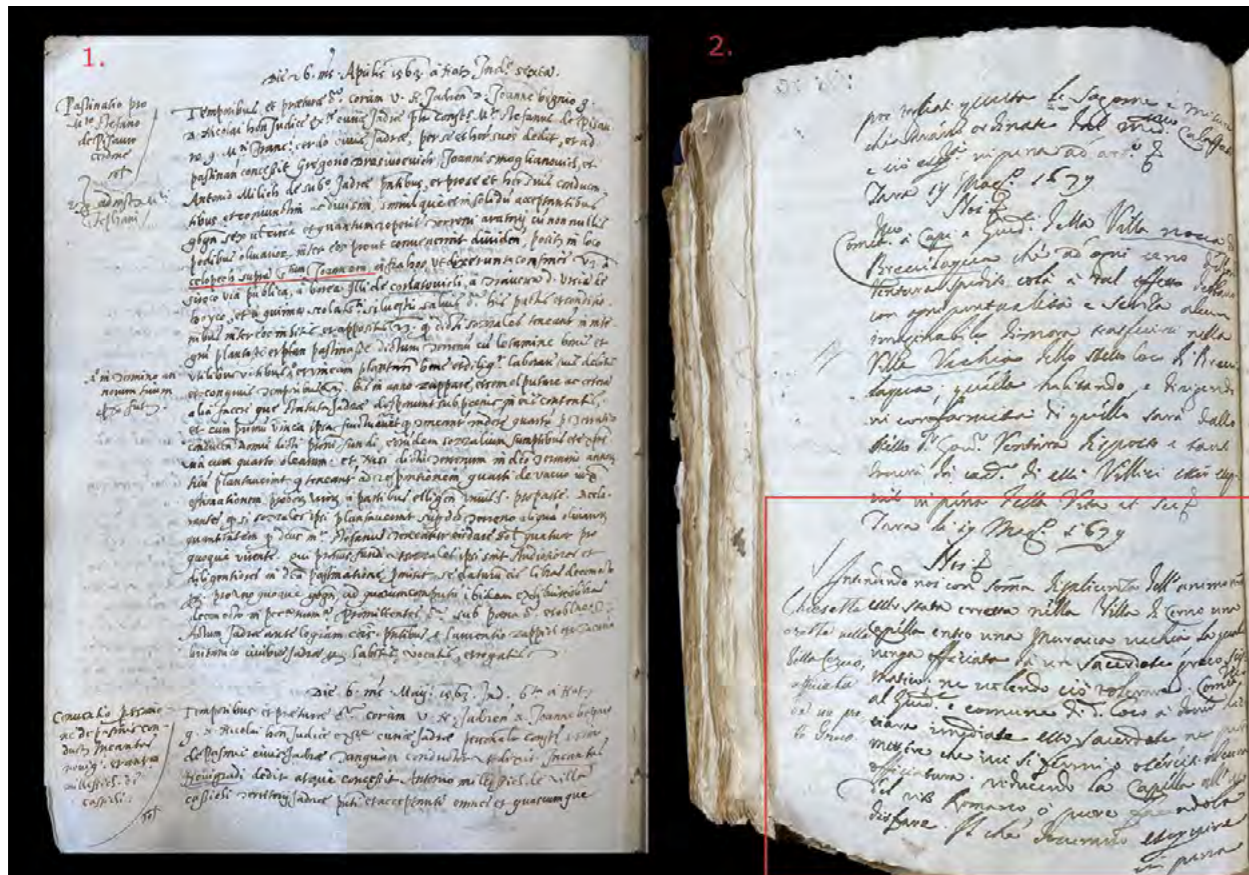
Even today, the slope between Musapstan and the Jaruga stream is called Kanali, and according to Smiljanić (Smiljanić 2007: 285), there is no doubt that it is the location of the medieval property of the same name (he cites sources from 1375 and 1536). The governor of Dalmatia (*provveditore generale*) in 1679, Pietro Valier, mentions the small church in Crno:

... *chiesetta ereta nella villa della Cerno officiata da un prete Greco ... stata ereta nella villa di Cerno ... entro una Murvacca vecchia, la quale venga officiata a un sacersato greco...*

... a small church built in the village of Crno, served by a Greek priest ... built in the village of Crno ... in old Murvica, served by a Greek priest... (HR DAZd-1, libro 5, p. 519).

In the documents, the term *villa* is mentioned for the village of Crno. Namely, in Zadar's medieval documents, it is recorded that property owners call their properties in the countryside a *villa* or a village, regardless of the size of the property. There were especially many such villages in Crno (*Cerno*), which were owned by various Zadar patrician families. Bianchi (1879: 384) mentions the families de Picenga, Begna, de Grisogono, Matafara and others. The land plot on which the excavation was conducted and where the small church is located is situated on the outskirts of the medieval commune of Zadar. The veneration of Greek Catholic saints and Greek Catholic rites in the area of Zadar and Dalmatia are part of the Byzantine tradition, the traces of which are inherited to this day, and





Opisi koji se odnose na crkvu na Musapstanu: 1. bilježnika Cavalca (izvor: DAZd, ZB, Daniel Cavalca, B I, I/5, od 26. 4. 1563.) i 2. generalnog providura Valiera (izvor: Spisi generalnih providura za Dalmaciju i Albaniju DAZd-1, Pietro Valier 1678. -1680., libro 5, str. 519)
 Descriptions related to the church in Musapstan: 1. By notary public Cavalca (source: DAZd, ZB, Daniel Cavalca, B I, I/5, dated 26.4. 1563) and 2. Provveditore generale Valier (source: Records of governors for Dalmatia and Albania DAZd-1, Pietro Valier 1678 - 1680, libro 5, p. 519)

greb, 22. prosinca 2008.) kojim je predmetno kulturno dobro uvršteno na Listu zaštićenih kulturnih dobara Registra kulturnih dobara Republike Hrvatske.

Arheološko probno istraživanje provedeno je na površini od 20 m² iskopanjem četiriju arheoloških sondi (sonda 1, sonda 2 i sonda 3 dimenzija 1 x 5 m te sonda 4 dimenzija 2 x 2 m). Arheološke sonde iskapane su metodom ručnog iskopa, očišćene su, geodetski pozicionirane te je za njih izrađena arheološka dokumentacija. Sonde su pozicionirane na različita mjesta unutar zone istraživanja kako bi se stvorio što bolji uvid u stvarno stanje i provjerilo postojanje arheoloških slojeva.

Istraživana je zona s jugozapadne strane omeđena zidom građenim od kamena povezanog malterom, sa sjeveroistočne strane suhozidom, dok je sa sjeverozapadne strane omeđena recentnim betonskim ogradnim zidom kuće i okućnice na susjednoj parceli. U sjeverozapadnom dijelu sloj je zemlje vrlo plitak te je mjestimice vidljiv i kamen živac, dok je u jugozapadnom dijelu nešto dublji. Najdublji sloj zemlje u jugoistočnom je dijelu na

are also a consequence of the immigration of the population in the past, for example for the needs of the army.

The church was last recorded in the cadastre in the Grimani Maps from the beginning of the 18th century, as *Chiesa De Greci chiamata Christanci*. This information is taken from the explanation in the Decision (CLASS: UP/I^o-612-08/08-06/0594, ID number: 532-04-01-01/4-08-2, Zagreb, 22 December 2008) in which the cultural property in question is included in the List of the Cultural Goods under the Preventive Protection of the Register of Cultural Property of the Republic of Croatia.

The archaeological trial excavation was carried out in an area of 20 m² by excavating four archaeological trial trenches (trial trenches 1, 2 3 measuring 1 x 5 m and trial trench 4 measuring 2 x 2 m). Archaeological trial trenches were excavated using the manual excavation method, they were cleaned, geodetically positioned, and archaeological documentation was made. Trial trenches were positioned in different places within the research zone in order to create the best possible insight

prostoru zapuštenog vinograda. Debljina sloja u sondama je 15 do 65 cm. Najplića je sonda 1, koja je potpuno arheološki sterilna, a najdublja sonda 4. Ispod sloja zemlje nalazi se kamen živac na kojem je izgrađena i sama crkva. Osim ostataka zidova crkve tijekom istraživanja nisu pronađene druge arheološke strukture.

U sondi 1 iskopani su i dokumentirani ostatci sjevernog kuta crkve odnosno dio bočnog sjeverozapadnog zida i dio pročelnog sjeveroistočnog zida s ostatkom kamenog praga. Dijelovi istraženih zidova crkve sazidani su na matičnoj stijeni. Uz kameni prag ulaza crkve pronađena su dva novčića, jedan iz kraja 17. stoljeća, a drugi iz sredine 18. stoljeća – Venecijanska gazeta (iz 1684. godine) i sesino iz Mantove (iz 1754. godine). Za dataciju pronađenih novčića zahvaljujem izv. prof. dr. sc. Mati Ilkiću.

Jugoslavenski dinar iz 1985. godine koji je pronađen u površinskim slojevima sonde 4 dokaz je korištenja ovog prostora u poljoprivredne svrhe sve do kraja 20. stoljeća što potvrđuje i predaja današnjih vlasnika zemljišnih parcela. Malobrojni nalazi keramičkog posuđa mogu se grubo svrstati u razdoblje kasnog novog vijeka (18.-19. st.). Kao najljepše izdvajam dva ulomka keramike iz son-

into the actual situation and verify the existence of archaeological layers.

The investigated zone is bounded on the southwestern side by a wall built of stone bound with mortar, on the northeast side by a dry stone wall, while on the northwestern side it is bounded by a recent concrete enclosure wall of the house and garden on the neighboring plot. In the northwestern part, the layer of soil is very shallow and in some places the bedrock is visible, while in the southwestern part it is a bit deeper. The deepest layer of soil in the southeastern part is in the area of an untended vineyard. The thickness of the layer in the trial trenches is 15 to 65 cm. Trial trench 1 is the shallowest and it is completely archaeologically sterile. Trial trench 4 is the deepest. Beneath the layer of soil is the bedrock on which the church was built. Apart from the remains of the church walls, no other archaeological structures were found during the excavations.

In trial trench 1, the remains of the northern corner of the church were excavated and documented, i.e. part of the northwestern side wall and part of the northeastern front wall with the remains of a stone threshold. Parts of the investigated walls of the church were built on the bedrock. Next to the stone threshold of the church entrance, two coins



Prostor nakon istraživanja (foto: M. Šimičić)
 Post-excavation situation (photo: M. Šimičić)



Sonda 1, naznačen je dio građevinskim radovima oštećenog zida crkve (foto: M. Šimičić)
Trial trench 1, the part of the church wall damaged by construction works is marked (photo: M. Šimičić)

de 2: ulomak s bijelim *smaltom* i ulomak kasne renesansne ili postrenesansne gravirane keramike.

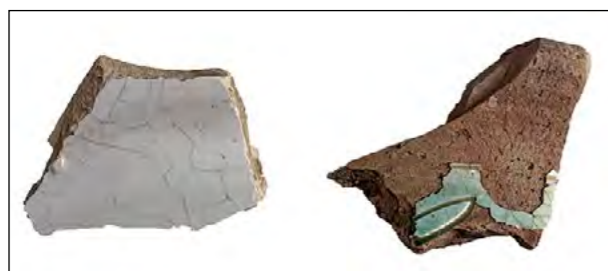
Tijekom istraživanja izrađena je fotodokumentacija ostataka crkve i ostataka zida s jugozapadne



Venecijanska gazeta (foto: M. Šimičić)
Venetian gazetta (photo: M. Šimičić)



Sessino iz Mantove (foto: M. Šimičić)
Sesino from Mantua (photo: M. Šimičić)



Ulomci novovjekovne keramike iz sonde 2 (foto: M. Šimičić)
Fragments of post-medieval pottery from trial trench 2 (photo: M. Šimičić)

were found, one from the end of the 17th century, and the other from the middle of the 18th century – a Venetian gazetta (from 1684) and a sesino from Mantua (from 1754). I would like to thank Mato Ilkić, PhD, associate professor, for dating the coins.

The Yugoslav dinar from 1985, which was found in the surface layers of trial trench 4, is a proof of the use of this area for agricultural purposes until the end of the 20th century, which is also confirmed by the present-day land owners. The few finds of ceramic vessels can be roughly dated to the late Modern Period (18th-19th centuries). I single out two pottery fragments from trial trench 2 as the most visually appealing: a fragment with white



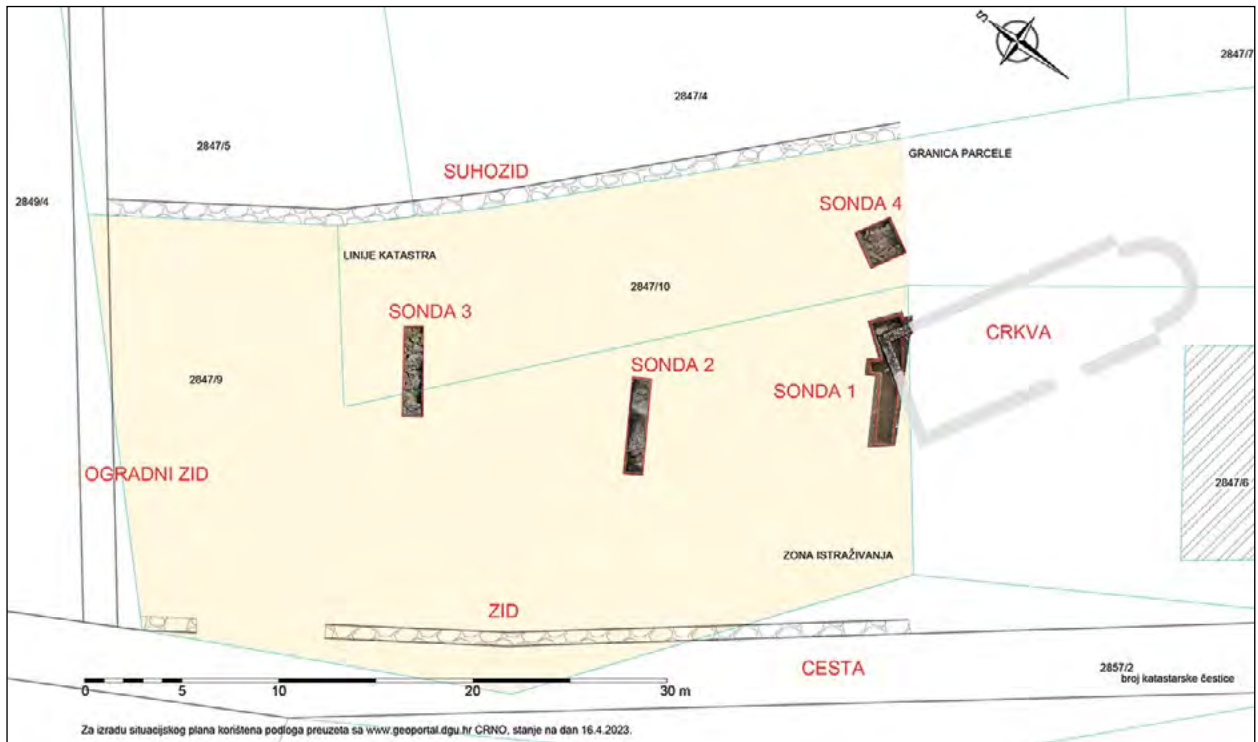
Dokumentiranje (foto: M. Popović)
Documenting (photo: M. Popović)



Sonda 1 za vrijeme istraživanja (foto: M. Šimičić)
Trial trench 1 during excavations (photo: M. Šimičić)



Sonda 2 za vrijeme istraživanja (foto: M. Šimičić)
Trial trench 2 during excavations (photo: M. Šimičić)



Situacijski plan istraživnog prostora (izradila: M. Šimičić)
Scale sketch of the research area (made by: M. Šimičić)

strane katastarske čestice. Crkva je jednobrodna, jednostavnog longitudinalnog tlocrta, položena u pravcu sjeverozapad-jugoistok s polukružnom apsidom na jugoistoku. Duga je 13,2, a široka 6,1 metar. Zidovi su sačuvani u visini od oko 56 cm do 65 cm u prostoru apside. Crkva je geodetski pozicionirana.

Nakon završenog istraživanja sonde su zatrpane iskopanim materijalom, a prostor je doveden u stanje prije istraživanja. Ostaci crkvice na Musapstanu ugroženi su recentnom novogradnjom u neposrednoj blizini. Nepažnja građevinara, potkopavanje zidova i upotreba teške mehanizacije u blizini zdanja mogli bi dovesti do ozbiljnih oštećenja zidova crkve kao i njihova rušenja.

smalto (enamel) and a fragment of late Renaissance or post-Renaissance engraved pottery.

During the research, photo documentation was made of the ruins of the church and the remains of the wall on the southwestern side of the cadastral plot. The church is a single-nave building, with a simple longitudinal floor plan, laid out in the northwest-southeast direction with a semicircular apse in the southeast. It is 13.2 meters long and 6.1 meters wide. The walls have been preserved to a height of about 56 cm to 65 cm in the area of the apse. The geodetic position of the church was determined.

After the excavation was completed, the trial trenches were backfilled, and the area was restored to the pre-excavation condition. The remains of the church in Musapstan are threatened by recent new construction in the immediate vicinity. Carelessness of the builders, undermining of the walls and use of heavy machinery near the building could lead to serious damage to the walls of the church as well as their demolition.

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TERENSKI PREGLED ŠIREG ZADARSKOG PODRUČJA – ARHEOLOŠKA VALORIZACIJA RIMSKOG KATASTRA

Field survey of the wider
Zadar area -archaeological
valorization of the Roman
cadastre

IN SITU - 2/1 (2023)

Agrarni pejzaž antičke kolonije *Iader* formirao se prema principima agrimenzura, a prostor agera se od trenutka formiranja kontinuirano mijenjao djelovanjem ljudskih i prirodnih čimbenika. Povijesne (fotografije RAF-a), a osobito suvremene zračne snimke pokazuju da su ostatci antičke centurijacije vidljivi i u današnjoj podjeli urbanog prostora grada i njegove okolice.

Budući da organizacija prostora pojedinih suvremenih gradskih teritorija upućuje na mogućnost da je riječ o staroj antičkoj podjeli koja izlazi iz okvira tradicionalne interpretacije

The agrarian landscape of the ancient colony of *Iader* was formed according to the principles of Roman land surveying, and the area of the ager continuously changed from the moment of its formation due to human and natural factors. Historical (RAF photographs), and especially contemporary aerial photographs, show that the remains of Roman centuriation are also visible in today's division of the urban space of the city

and its surroundings.

Since the spatial organization of certain modern city territories suggests the possibility that it



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agera kolonije *lader*, što je već i prije primijećeno (Bradford 1957: 145–215, Bussi 1984: 235–240), cilj je bio pregledati pozicije na kojima se takva održivost potencijalno najbolje uočava na način da se u istraživanje uključe sva povijesna razdoblja. Osobit naglasak bio je na rimskoj centurijaciji i njezinu očuvanju do danas. Svi arheološki pregledi bili su ponajprije informativnog karaktera u svrhu određivanja pravog potencijala za daljnje istraživanje teme. Područje je prije svega pregledano pomoću satelitskih snimki, geodetsko-katastarskih podloga i zračnih fotografija, a zatim su određene pozicije pregledane klasičnim terenskim pregledom.

Na satelitskim snimkama i geodetsko-katastarskim podlogama jasno se uočava mreža kvadrata čije su dužine stranica približno ili točno 710 m. Takva mreža vidi se na sljedećim područjima: prostor od Dikla do Sukošana što odgovara veličini *agera centuriatusa* prema tradicionalnoj interpretaciji koju je postavio M. Suić – od Puntamike do Bibinjia u unutrašnjosti do Bilog briga (Suić 1955: 14–17; 2003: 166). D. Maršić je Suićevu interpretaciju agera proširio prema jugoistoku do Sukošana (Maršić

is an old Roman-era division that goes beyond the traditional interpretation of the ager of the *lader* colony, which has already been noticed before (Bradford 1957: 145–215, Bussi 1984: 235–240), the aim was to review the positions where such sustainability is potentially best observed in such a way as to include all historical periods in the research. A special emphasis was placed on Roman centuriation and its preservation until the present day. All archaeological surveys were primarily informative in order to determine the true potential for further research on the topic. First of all, the area was explored using satellite images, geodetic-cadastral records and aerial photographs, and then specific positions were inspected by classic field survey.

A grid of squares whose side lengths measure approximately or exactly 710 m can be clearly seen on satellite images and geodetic and cadastral records. Such a grid can be seen in the following areas: the area from Diklo to Sukošan, which corresponds to the size of *ager centuriatus* according to the traditional interpretation by

1993), te u unutrašnjosti do Zemunika, a N. Jakšić prema zapadu do Dikla (Jakšić 1986). Mreža je vidljiva i na području zapadno od Dikla prema Ninu, te na sjeveru gotovo do Poličnika, kako to vidi i M. Kadi (Kadi 2020). Prisutnost mreže na navedenim područjima vrlo je znakovita jer joj kvadrati ne odstupaju od veličine *1 actusa*, ali ono u čemu sigurno odstupaju jest orijentacija. Naime, orijentacija mreže nije svugdje ujednačena te su primjetni otkloni osobito u smjeru Nina i na sjeveru prema Murvici.

Kao što je već navedeno, u svrhu preciznije determinacije prave prirode nastanka takvih kvadrata i izvan tzv. tradicionalnog prostora zadarskog agera te razloga različite orijentacije mreže, odlučilo se započeti s ciljanim terenskim pregledima koji su do sada obavljani na nekoliko pozicija. Pregledi su provedeni tijekom 2022. i 2023. godine te su potvrđeni potencijalni ostatci centurijacije na više položaja. Riječ je o većim i manjim suhozidima koji se poklapaju s granicama limesa centurija, a pokazuju i određene naznake unutrašnjih podjela.

Jedan od boljih primjera nalazi se na granici između Dikla i Kožina. Riječ je o vrlo zanimljivoj pozi-

M. Suić – from Puntamika to Bibinje and to Bili Brig in the inland (Suić 1955: 14–17; 2003: 166). D. Maršić extended Suić's interpretation of the ager to the southeast to Sukošan (Maršić 1993), and in the interior to Zemunik, and N. Jakšić to the west to Diklo (Jakšić 1986). The grid is also visible in the area west of Diklo towards Nin, and in the north almost to Poličnik, as noticed also by M. Kadi (Kadi 2020). The presence of the grid in the mentioned areas is very significant because its squares do not deviate from the size of *1 actus*, but what certainly deviates is the orientation. Namely, the orientation of the grid is not uniform everywhere, and there are noticeable deviations, especially in the direction of Nin and in the north towards Murvica.

As already stated, for the purpose of determining more precisely the true nature of the formation of such squares also outside the so-called traditional area of the Zadar ager and the reasons for different orientation of the grid, it was decided to start with targeted field surveys that have been carried out so far at several positions. Surveys were carried out during 2022 and 2023, and potential remains of centuriation were confirmed in several positions. These are larger and smaller dry stone walls that coincide with border lines (*limes*) of *centuriae*, and also show certain indications of internal divisions.

One of the better examples is located on the border between Diklo and Kožino. It is a very interesting position northwest of the city dump, where a stone mound was observed forming a wide and elongated structure, about 50 meters long, extending in the east-west direction, and inside it was a smaller square building (a tower). On the mound, several circular pits made of neatly stacked stone were also discovered, which were arranged in a regular sequence. So far, three such constructions have been observed, but it is possible that there are more. This structure and the tower can be seen very well on the photographs from 1968, when there was significantly less vegetation in that area, and they could coincide with the direction of the internal division of *centuriae*. It is also important that the mound with the tower is located in the immediate vicinity of another dry stone wall structure



Satelitska snimka šireg zadarskog područja s vidljivom mrežom kvadrata 710 x 710 (preuzeto s: <https://geoportal.dgu.hr>)
Satellite image of the wider Zadar area with a visible grid of 710 x 710 m squares (taken from: <https://geoportal.dgu.hr>)





..... Kamena gomila s ostacima kule (foto: M. Šimičić)
 Stone mound with the remains of the tower (photo: M. Šimičić)



..... Mogući limes centurijacije (foto: M. Šimičić)
 Possible centuriation grid line (limes) (photo: M. Šimičić)

ciji sjeverozapadno od gradskog deponija, na kojoj je uočena kamena gomila koja tvori široku i izduženu strukturu, dužine oko 50 metara, koja se pruža u smjeru istok-zapad, a unutar nje uočena je manja kvadratna građevina (kula). Na gomili je otkriveno i nekoliko kružnih jama izrađenih od pravilno slagane kamena koje su raspoređene u pravilnom nizu. Zasad su uočene tri takve konstrukcije, ali moguće je da ih ima i više. Ova se struktura i kula vrlo dobro vide na snimkama iz 1968. godine, kada je na tom prostoru bilo znatno manje vegetacije te bi se mogle podudarati sa smjerom unutrašnje podjele centurija. Isto tako, važno je što se gomila s kulom nalazi u neposrednoj blizini druge suhozidne strukture koja se pruža u pravcu sjeveroistok-jugozapad. Ovaj je suhozid, prema orijentaciji, dužini, širini i poziciji vrlo moguće nekada bio dio limesa centurijacije (smjer karda). Problem je što se upravo na ovom dijelu, kako pokazuju satelitske snimke, pravilnost kvadrata najviše poremetila, da bi se dalje prema Ninu ponovno vrlo jasno vidjela mreža, ali u blagom orijentacijskom odklonu. Isto pokazuju snimke iz 1968. godine kao i suvremene snimke. Već se sad uvidjelo da je cijeli prostor arheološki iznimno bogat, a očuvanost je sigurno uvjetovana time što se ovdje ipak nalazi gradski deponij pa se

that stretches in a northeast-southwest direction. According to its orientation, length, width and position, this dry stone wall was very likely once a part of the centuriation grid line (direction of *cardo*). The problem is that precisely in this part, as shown by satellite images, the regularity of the square was most disturbed, so that further towards Nin, the grid could again be seen very clearly, but with a slight deviation in orientation. The photographs from 1968 show the same situation as the contemporary photographs. It has already been noticed that the entire area is extremely rich in terms of archaeology, and the preservation is certainly conditioned by the fact that there is a city dump here, so the expansion of the city and the increasing concentration of apartments did not permanently destroy the historical landscape. In the entire area of Diklo and Kožino, an extremely large number of very interesting positions were recorded, such as forest roads bordered by high dry stone walls, and their position and direction are indicative, suggesting that they could be border lines of *centuriae*. In this area, more detailed inspections of the terrain are planned.

Likewise, interesting results were obtained during the field survey of the area west of the village



..... Visoki suhozidi na predjelu Dikla (foto: F. Jurković Pešić)
 High dry stone walls in the area of Diklo (photo: F. Jurković Pešić)





... Kameni međaši iz vremena Kraljevine Italije (foto: M. Šimičić)
 ... Boundary stones from the time of the Kingdom of Italy (photo: M. Šimičić)



širenjem grada i potenciranjem apartmanizacije povijesni krajolik nije zauvijek izgubio. Na cijelom području Dikla i Kožina zabilježen je iznimno velik broj vrlo zanimljivih pozicija, kao npr. šumski putevi omeđeni visokim suhozidima, a indikativna je njihova pozicija i smjer koji također upućuju na to da je riječ o mogućim limesima centurija. Na ovom predjelu predviđeni su detaljniji pregledi terena.

Isto tako, zanimljivi rezultati pokazali su se i pri terenskom pregledu područja zapadno od sela Baričevića. Tamo se naišlo na tri *in situ* kamena međaša kojima je označena linija razgraničenja između teritorija Kraljevine Srba, Hrvata i Slovenaca i Kraljevine Italije. Na gornjoj površini međaša je oznaka sjevera, dok su na bočnim stranama naznačene oznake slovima i arapskim brojkama. Na sva tri uklesana je i godina postavljanja – 1920. Pozicionirani su na samu granicu nekadašnjih kraljevina i fiksirani su na stijenu. Navedeni međaši za sada ne izgledaju kao da su se nadozvali na starije, eventualno iz rimskog doba.

Na području između Musapstana i Baričevića, nedaleko od pozicije međaša uočena je jedna šira suhozidna struktura čija se orijentacija jugoistok-sjeverozapad podudara sa smjerom limesa (točnije dekumana), dok su u Park-šumi Musapstan primijećeni pravilni nizovi priklesane i oblikovane žive stijene, koji podsjećaju na rubnik ceste ili puta.

Sve otkrivene pozicije zahtijevaju daljnje pregle-

de Baričevići. There, three *in situ* boundary stones were found marking the demarcation line between the territory of the Kingdom of Serbs, Croats and Slovenes and the Kingdom of Italy. On the upper surface of the boundary stone is the marking of the north, while on the sides there are marks in letters and Arabic numbers. All three are engraved with the year of installation - 1920. They are positioned on the very border of the former kingdoms and fixed on the rock. For the time being, mentioned boundary stones do not look as if they were related to the older ones, possibly from the Roman era.

In the area between Musapstan and Baričevići, not far from the position of the boundary stones, a wider dry stone wall structure was observed whose orientation southeast-northwest coincides with the direction of grid lines (more precisely *decumanus*), while in the Musapstan Forest Park regular rows of carved and shaped bedrock were noticed, which resemble the curb of the road.

All discovered positions require further inspections, detailed surveys and potential archaeological excavations. The current results of the review, although modest, confirmed great potential for investigating the centuriation of Roman-era lader. The main purpose of the field surveys is to update



... Ostatci suhozida na Musapstanu (foto: F. Jurković Pešić)
 ... Dry stone wall remains in Musapstan (photo: F. Jurković Pešić)

de, detaljna snimanja i potencijalna arheološka iskopavanja. Trenutačni rezultati pregleda, iako skromni, potvrdili su velik potencijal za istraživanje problematike centurijacije antičkog *ladera*. Glavna svrha terenskih pregleda jest aktualiziranje problematike povezane s rimskim katastrom, osobito na prostoru unutar kojeg se još uvijek živi i u kojem se neprestano djeluje. Želja nam je kreirati ideju o poštovanju i valoriziranju tog prostora kao kulturno-povijesnog spomenika koji će biti ponosna ostavština budućim generacijama.

the issues related to the Roman cadastre, especially in the area where people still live and constantly change their environment. Our desire is to create the idea of respecting and valorizing this space as a cultural and historical monument that will be a valuable legacy for future generations.

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NASTAVAK PODMORSKOG ARHEOLOŠKOG ISTRAŽIVANJA U UVALI CASKI NA OTOKU PAGU

Continuation of underwater archaeological research in the bay of Caska on the island of Pag

UVOD

Uvala Caska nalazi se na sjeveroistočnom dijelu otoka Paga, na samo 3 kilometra zračne udaljenosti od grada Novalje. U uvali se nalaze ostatci antičkog naselja smještenog uz sam rub plodnog Novaljskog i Caskog polja, u kojem su se intenzivnije aktivnosti odvijale u razdoblju od 1. st. pr. Kr. do 3. st. po Kr. Zahvaljujući rezultatima dosadašnjih arheoloških istraživanja, obalni objekti interpretirani su kao gospodarsko-ladanjsko zdanje koje je u vrijeme kasne Rimske Republike i ranog Carstva vje-

INTRODUCTION

The bay of Caska is located on the northeastern part of the island of Pag, only 3 kilometers from Novalja in a straight line. The remains of an ancient settlement were found in the bay, at the very edge of the fertile fields of Novalja and Caska, where more intensive activities took place in the period from the 1st century BC to the 3rd century AD. Owing to the results of the archaeological research so far, the coastal structures have been interpreted as a farming and residential complex that probably



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rojatno pripadalo rimskoj senatorskoj obitelji *Calpurni Pisones*. Nakon što se obitelj povukla s otoka veliko se imanje vjerojatno razdijelilo na nekoliko manjih. Dosadašnji arheološki nalazi upućuju na intenzivne gospodarske aktivnosti, koje još treba detaljnije definirati.

DOSADAŠNJA ISTRAŽIVANJA

Istraživanja lokaliteta započela su 2003. godine, a od 2009. do 2017. godine sustavno su se provodila u okviru projekta *CissAntiqua*, pod vodstvom Sveučilišta u Zadru i instituta *Centre Camille Jullian* (Aix-en-Provence, Francuska) (Radić Rossi, Boetto 2020). Od 2018. godine istraživanja se, s kraćim prekidima, nastavljaju pod vodstvom Sveučilišta u Zadru i Instituta za pomorsku baštinu ARS NAUTICA, uz logističku podršku Ronilačkog centra *Foka* iz Šimuna na Pagu. Pri pokretanju projekta *CissAntiqua* izrađena je topografska karta u koju su unesene sve površinski vidljive strukture i objekti. Površinskim pregledom terena postalo je jasno da prostor zahvaćen sektorima 1–5 sadrži izniman arheološki potencijal. Projekt je dobio ime po toponimu *Cissa*, tj. *oppidum Cissa*, koji

belonged to the Roman senatorial family *Calpurni Pisones* during the Late Roman Republic and the Early Empire. After the family left the island, the large estate was probably divided into several smaller ones. The archaeological finds so far point to intensive economic activities, which need to be defined in more detail.

PREVIOUS RESEARCH

Investigations of the site began in 2003, and were systematically carried out from 2009 to 2017 within the *CissAntiqua* project, under the leadership of the University of Zadar and the *Center Camille Jullian Institute* (Aix-en-Provence, France) (Radić Rossi, Boetto 2020). Since 2018, research has continued, with short interruptions, under the leadership of the University of Zadar and the Institute for Maritime Heritage ARS NAUTICA, with the logistical support of the *Foka* Diving Center from Šimuni on Pag. When the *CissAntiqua* project commenced, a topographical map was made, on which all structures and buildings visible on the surface were marked. A surface survey of the terrain made it clear that the area covered by sec-



Pogled na sjeveroistočni dio uvale i usidrenu splav nad nalazištem (foto: I. Radić Rossi)
View of the northeastern part of the bay and the anchored raft above the site (photo: I. Radić Rossi)

Pogled iz zraka na Casko i Novaljsko polje, i uvale Caska, Novalja i Stara Novalja (foto: V. Glavaš)
Aerial view of the fields of Caska and Novalja, and the bays of Caska, Novalja and Stara Novalja (photo: V. Glavaš)

Stara
Novalja

Novalja

Caska





spominje Plinije Stariji u kapitalnom djelu *Naturalis Historia*. Smatra se da je liburnsko naselje na brdu Košljunu u Plinijevo vrijeme nosilo ime *Cissa*, a zatim se tijekom sljedećih stoljeća primjenjivalo za sjeverni dio otoka, koncentriran oko Novaljskog polja, te do danas preživjelo u toponimu Caska.

Godine 2005. iz podmorja Caske izvađen je u cijelosti očuvan drveni dio antičkog olovno-drvenog sidra. Godine 2007. ušlo se u trag ostacima broda izrađenog tehnikom šivanja (Caska 1), a četiri godine poslije otkriveni su i odlično očuvani ostatci broda izrađenog klasičnom rimskom tehnikom spajanja platica sistemom utora i jezičaca (Caska 2). Tijekom istraživanja broda Caska 2 u njegovoj unutrašnjosti otkriven komad još jednog šivanog broda (Caska 3).

Godine 2007. otkriveni su i drveni sanduci izrađeni od međusobno spojenih trupaca, ispunjeni kamenjem, koji su se nalazili pred današnjom Tunerom u funkciji operativne obale. Istraživanje koje je provedeno 2016. i 2017. godine rezultiralo je otkrićem ostataka još jednog šivanog broda (Caska 4), koji je također u cijelosti istražen. Svi brodovi pronađeni u uvali bili su namjerno potopljeni i iskorišteni za izgradnju priobalnih lučkih uređaja.

tors 1-5 holds exceptional archaeological potential. The project was named after the toponym *Cissa*, i.e. *oppidum Cissa*, mentioned by Pliny the Elder in his major work *Naturalis Historia*. It is believed that the Liburnian settlement on Košljun hill bore the name *Cissa* in Pliny's time, and then in the following centuries it was used for the northern part of the island, around the field of Novalja. It survived to this day in the toponym Caska.

In 2005, a completely preserved wooden part of an ancient lead-wooden anchor was raised from the Caska seabed. In 2007, the remains of a ship made using the sewing technique (Caska 1) were found, and four years later, well-preserved remains of a ship characterized by a tenon-and-mortise assembly of the planking were discovered (Caska 2). During the investigation of the ship Caska 2, a piece of another sewn ship (Caska 3) was found in its interior.

In 2007, wooden caissons made of logs joined together, filled with stones, were also discovered, which were located in front of today's Tunera as an operational waterfront. Research conducted in 2016 and 2017 resulted in the discovery of the remains of another sewn ship (Caska 4), which was also fully explored. All the ships found in the bay were scuttled and used to build coastal harbor



Iskop drvenih elemenata konstrukcije velikog mola (foto: I. Radić Rossi)
Excavation of the wooden elements of the large pier construction (photo: I. Radić Rossi)

Tijekom podmorskog istraživanja provedeno je i dokumentiranje arheoloških ostataka u priobalnom pojasu. Tom je prilikom utvrđeno kako ostatci velikog zida, mjestimično očuvanog do visine od oko 5 m, nisu tragovi gradskog bedema nego velikog potpornog zida koji je od erozije štutio plodnu zemljanu terasu. Osim toga, istražen je i prohodni dio velikog odvodnog kanala koji se pretvara u podzemni tunel visine preko 2 m i širine nešto više od 1 m, koji vodi u smjeru unutrašnjosti uvala. Izlazni dio tunela/kanala nalazi se u uvali zvanj Mala Pošta, jugoistočno od Tunere.

structures.

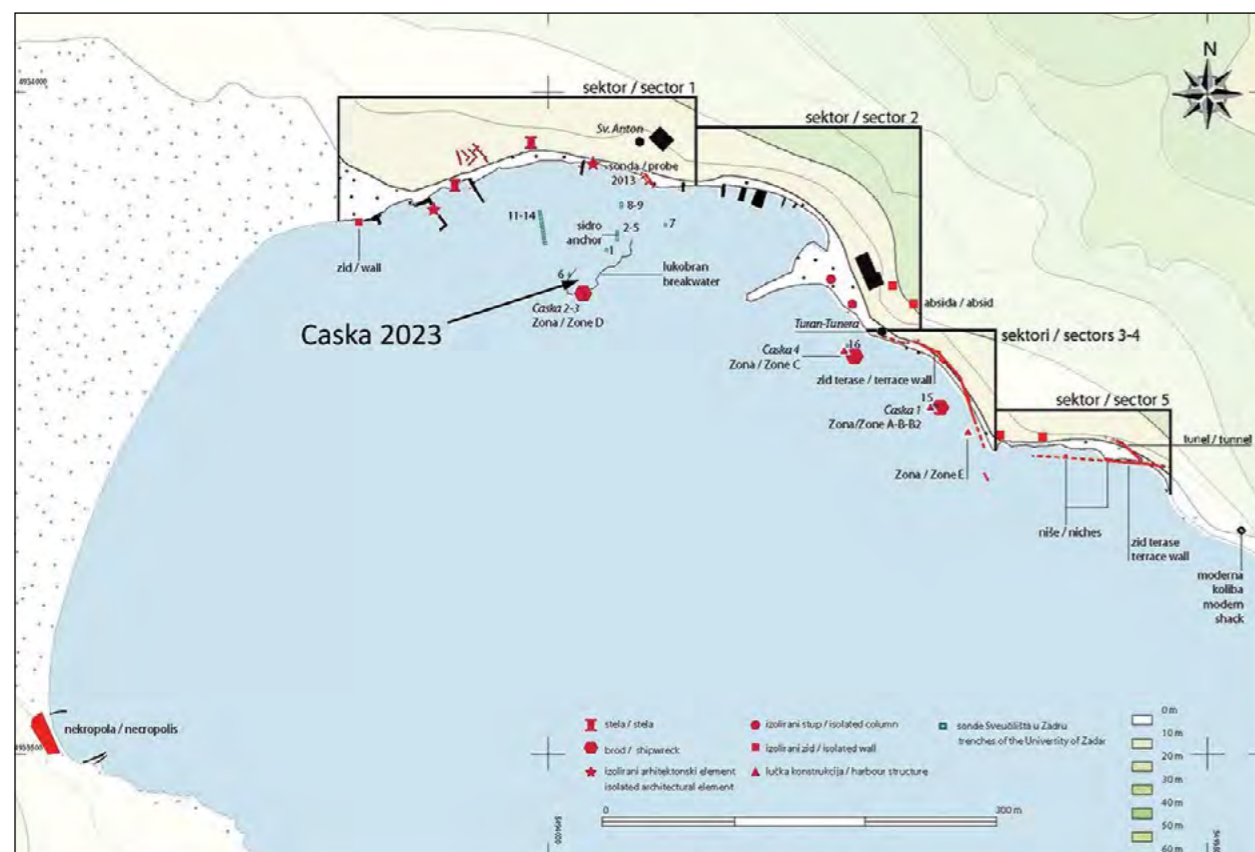
During the underwater research, the documentation of archaeological remains in the coastal zone was also carried out. On that occasion, it was determined that the remains of the large wall, partially preserved up to a height of about 5 m, are not traces of the city wall, but of a large retaining wall that protected the fertile earthen terrace from erosion. Another segment that was also investigated was the passable part of the large drainage channel, which turns into an underground tunnel with a height of over 2 m and a width of slightly more than 1 m, leading in the direction of the interior of the bay. The final part of the tunnel/channel is located in the bay called Mala Pošta, southeast of Tunera.

TIJEK I REZULTATI ISTRAŽIVANJA 2023.

Istraživanje u uvali Caski provedeno je u drugoj polovici mjeseca svibnja. Kao i tijekom prethodnih godina, financijsku podršku za njegov nastavak pružili su Ministarstvo kulture i medija RH i Grad Novalja. Ovogodišnje istraživanje odvijalo se na istočnom kraju sektora 1, u zoni D, u kojoj je tijekom prijašnjih godina istražen brod Caska 2 iz 1. st. po Kr. Tom prilikom u blizini broda uočeni su drveni piloni koji su nekada bili okomito zabi-

THE COURSE AND RESULTS OF THE 2023 RESEARCH

The research in the bay of Caska was conducted in the second half of May. As in previous years, financial support for its continuation was provided by the Ministry of Culture and Media of the Republic of Croatia and the Town of Novalja. This year's research took place at the eastern end of sector



Glavni arheološki nalazi u uvali, s označenom zonom istraživanja 2023 (crtež: V. Dumas, CNRS, Aix-Marseille University)
The main archaeological finds in the bay, with the 2023 research zone marked (drawing: V. Dumas, CNRS, Aix-Marseille University)





jeni u morski sediment te horizontalno položeni drveni elementi, koji su zajedno tvorili učvršćenje antičkog lukobrana, za što je iskorišten i brod Caska 2. Tijekom istraživanja 2012. i 2013. godine otkriveno ih je desetak, a njihov položaj upućivao je na potpornu strukturu koja se urušila prema zapadu. Ove godine odlučeno je da se istraživanje nastavi u toj zoni kako bi se utvrdile granice njezina prostiranja. Prije svega, utvrđen je položaj prije otkrivene drvene građe sa zapadne strane broda Caska 2. Kako je brod bio prekriven geotekstilom i kamenjem koje je ocrtavalo njegov oblik, pokazalo se relativno jednostavnim otkriti originalan položaj spomenute strukture te nad nju postaviti pomoćno metalno mrežište. Početna tri kvadrata, dimenzija 2 x 2 m svaki, uskoro su proširena za još sedam, a do kraja istraživanja njihov je sveukupni broj narastao na osamnaest.

Podmorski iskop započeo je uz sjeverozapadni dio broda Caska 2, u kojem su se nalazili ostatci ranije uočenog dijela strukture, tj. u kvadratima C10 i C11. Nakon uklanjanja geotekstila i čišćenja prostora s arheološkim nalazima, iskop je proširen u smjeru sjevera i juga. U sjevernom dijelu, pred pramcem broda Caska 2, u kvadratu B9 otkriven je u veliki komad drveta, najvećeg promjera oko 1 m i dužine oko 2 m. Njegova funkcija za sada je nepoznata, ali se pretpostavlja da je i on iskorišten za učvršćenje lukobrana. S njegove istočne strane potvrđeno je postojanje još jednog velikog komada drveta koji za sada nije istražen u cijelosti pa se nastavak iskopa na tom prostoru očekuje tijekom sljedeće godine. Iskop je tekao paralelno u oba smjerovima. U smjeru sjevera otkriven je niz ho-

1, in zone D, where the ship Caska 2 from the 1st century AD was explored during previous years. On that occasion, wooden poles were observed near the ship that were once driven vertically into the sea sediment as well as horizontally laid wooden elements, which together formed the reinforcement of the ancient breakwater, for which the ship Caska 2 was also used. During research in 2012 and 2013, about ten of these poles were found, and their position indicated a support structure that collapsed towards the west. This year, it was decided to continue the research in that zone in order to determine the limits of its spreading. First of all, the position of the previously discovered wooden structure on the western side of the ship Caska 2 was determined. As the ship was covered with geotextiles and stones that outlined its shape, it was relatively simple to discover the original position of the mentioned structure and place an auxiliary metal grid over it. The initial three squares, measuring 2 x 2 m each, were soon expanded by seven more, and by the end of the research, their total number had grown to eighteen.

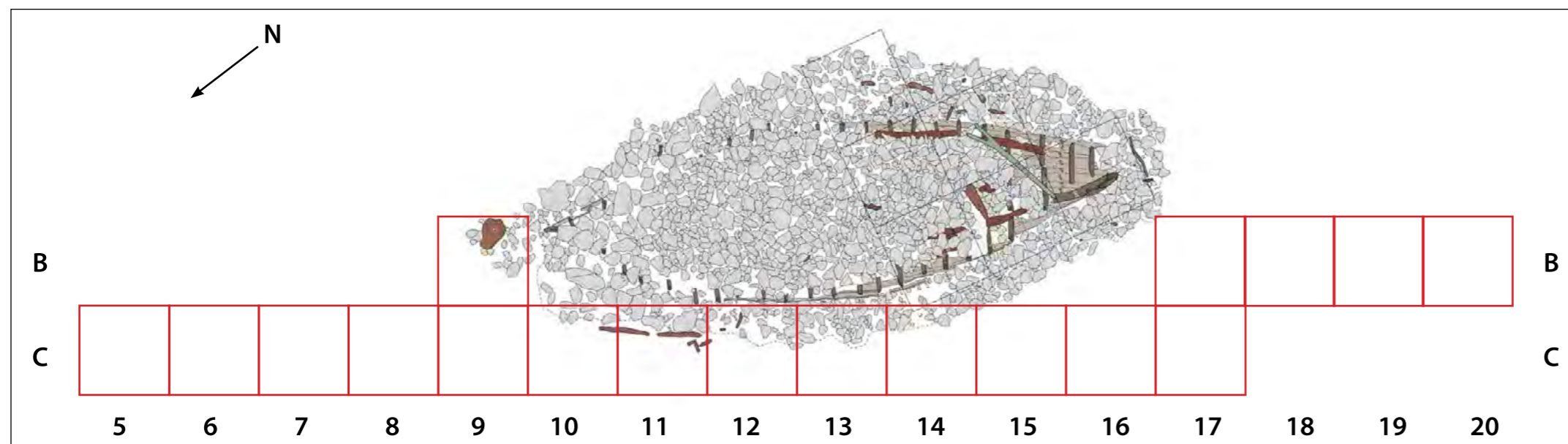
The underwater excavation began next to the northwestern part of the ship Caska 2, which contained the remains of the previously noticed part of the structure, i.e. in squares C10 and C11. After removing the geotextile and cleaning the area that yielded archaeological finds, the excavation was expanded in the northern and southern direction. In the northern part, in front of the bow of the ship Caska 2, in square B9, a large piece of wood was found, with the largest diameter of about 1 m and a length of about 2 m. Its function is currently un-

horizontalno položenih komada drveta, koji su činili istočni rub potporne strukture. S njihove zapadne strane nalaze se okomito zabijeni kolci i nešto deblji piloni. Duljina najdužeg horizontalnog elementa iznosi 276 cm. Uz lijevi bok broda nalazi se veća koncentracija okomito zabijenih kolaca i pilona, dok se u južnom dijelu oni prorjeđuju, ali im se povećava promjer. Južni dio konstrukcije izgleda poput ograde koja se sastoji od okomito zabijenih pilona i horizontalnih greda, nagnutih u smjeru sjevera. Čitav je prostor zasut kamenjem izrazito velikih dimenzija, za razliku od preostalog dijela iskopa, u kojem je kamenje daleko manje. Po površini tog dijela nalazišta, na prostoru promjera dvadesetak metara, pronalazi se velika količina ulomaka tegula, što upućuje na postojanje građevine natkrivene krovom, koja se nalazila na samom kraju lukobrana. Drugo moguće objašnjenje jest pokrov za hrpe soli izrađen od tegula, što je i danas slučaj u tradicionalnim solanama na Siciliji. Druga pretpostavka manje je vjerojatna s obzirom na položaj otkrivenih nalaza, ali je ne treba u potpunosti odbaciti.

Tijekom istraživanja dokumentirano je sveukupno 274 elementa koji su činili učvršćenje lukobrana, a sastoje se, kao što je već prije spomenuto, od vertikalno zabijenih kolaca i pilona te horizontalno položenih elemenata, promjera od 2 do 12,5 cm. Iako u iskopu nije pronađeno mnogo pokretnih arheoloških nalaza, nekoliko ručki amfora tipa Dressel 2-4 upućuje na kulturni sloj nastao krajem 1. st. pr. Kr. ili tijekom 1. st. po Kr. U kvadratu B20 pronađena je nešto veća koncentracija keramičkog materijala, među kojim se ističu jedno rav-

known, but it is assumed that it was also used to reinforce the breakwater. On its eastern side, the existence of another large piece of wood has been confirmed, which has not been explored in its entirety so far, so the continuation of excavations in that area is expected during the next year. The excavation proceeded parallel in both directions. To the north, a row of horizontally laid pieces of wood was discovered, which formed the eastern edge of the support structure. On their western side are vertically driven sticks and somewhat thicker poles. The length of the longest horizontal element is 276 cm. Along the port side of the ship there is a greater concentration of vertically driven sticks and poles, while in the southern part they are not as densely distributed, but their diameter is bigger. The southern part of the structure looks like a fence consisting of vertically driven poles and horizontal beams, sloping in the northern direction. The entire area is covered with extremely large stones, unlike the rest of the excavation area, where the stones are much smaller. On the surface of that part of the site, in an area with a diameter of about twenty meters, a number of fragments of tegulae were found, which suggests the presence of a roofed building, located at the very end of the breakwater. Another possible explanation might be the cover for the piles of salt made of tegulae, which is still the case in traditional salt pans in Sicily. The second assumption is less probable considering the position of the discovered findings, but it should not be completely rejected.

During the research, a total of 274 elements were documented that constituted the reinforcement of the breakwater, and they consist, as already mentioned, of vertically driven poles and pylons and horizontally laid elements, with a diameter of 2 to 12.5 cm. Although not many small archaeological finds were recovered in the excavation, several handles of Dressel type 2-4 amphorae suggest a cultural layer created at the end of the 1st century BC or during the 1st century AD. A slightly larger concentration of ceramic material was found in square B20, including a flat bottom of a large vessel or amphora, a fragment of the neck and a large piece of the belly, and a small discoid stopper of an amphora. All the elements of the wooden struc-



Položaj arheološke sonde 2023. (podloga: V. Dumas; crtež: I. Radić Rossi)
Location of the 2023 archaeological trench (background: V. Dumas; drawing: I. Radić Rossi)





no dno velike posude ili amfore, ulomak grla i veliki komad trbuha te mali diskoidni čep amfore. Svi elementi drvene strukture fotografski su i nacrtano dokumentirani, izmjereni te uneseni u inventarnu tablicu. Po završetku posla, istraženi dio nalazišta prekriven je geotekstilom i zasut sedimentom i kamenjem, ali je geotekstil ostao mjestimično vidljiv, kako bi se lakše uočile granice sonde i nastavilo istraživanje tijekom sljedeće godine.

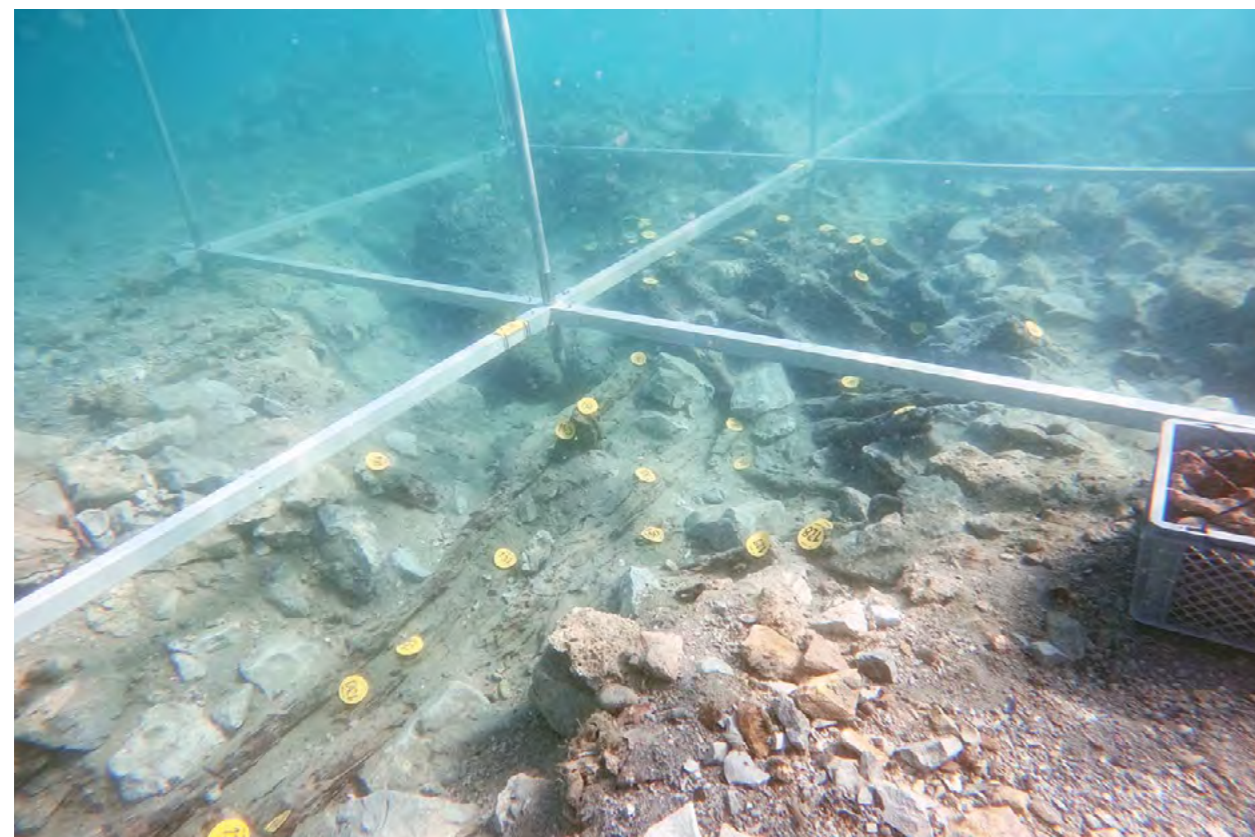
ZAKLJUČAK

Na čitavoj iskopnoj površini, sveukupne dužine 32 m, otkriveni su ostatci drvenih kolaca i pilona, okomito zabijenih u morsko dno te horizontalno postavljenih drvenih trupaca koji su, kao i brod Caska 2, iskorišteni za učvršćivanje antičkog lukobrana. Slične strukture učvršćene drvenom građom uočene su na nalazištu Trstenik u Kaštel-Sućurcu (Radić Rossi, Šuta 2023), u Resniku kod Trogira (Kamenjarin 2022) i u Sukošanu nedaleko od Zadra (Pešić 2019), na istraživanim nalazištima iz rimskog doba, koja leže na pjeskovito-muljevitim terenima. Takvih struktura bilo je vjerojatno i daleko više, ali one za sada nisu istražene. S obzirom na to da su

structure are photographically and schematically documented, measured and entered in the inventory table. At the end of the work, the investigated part of the site was covered with geotextile and filled with sediment and stones, but the geotextile remained visible in places, in order to make it easier to see the boundaries of the trench and to continue the research in the next year.

CONCLUSION

The remains of wooden sticks and poles, driven vertically into the seabed and horizontally placed wooden logs, which, like the ship Caska 2, were used to reinforce the ancient breakwater, were discovered in the entire excavation area, with a total length of 32 m. Similar structures reinforced with timber were observed at the site of Trstenik in Kaštel Sućurac (Radić Rossi, Šuta 2023), in Resnik near Trogir (Kamenjarin 2022) and in Sukošan in the vicinity of Zadar (Pešić 2019), on investigated sites from the Roman era, which lie on sandy-muddy terrains. There were probably far more such structures, but they have not been investigated so far. Given that the structures are well preserved be-



... Pogled sa sjevera u arheološku sondu (foto: I. Radić Rossi)
... View of the archaeological trench from the north (photo: I. Radić Rossi)



... Privremena zaštita nalaza geotekstilom (foto: I. Radić Rossi)
... Temporary protection of finds with geotextile (photo: I. Radić Rossi)

strukture odlično očuvane jer se nalaze udaljene od obale pa nisu izravno ugrožene građevinskim radovima, podmorski dio nalazišta u Caski prikladan je za arheološko istraživanje. Stoga je radove na lukobranu u Caski potrebno nastaviti tijekom narednih godina kako bi se proučio sistem slaganja drvene građe, korišten za učvršćivanje priobalnih struktura u vrijeme Rimskog Carstva.

cause they are located far from the coast and are not directly threatened by construction works, the underwater part of the site in Caska is suitable for archaeological research. Therefore, the work on the breakwater in Caska should continue in the coming years in order to study the system of stacking timber, used to reinforce coastal structures during the Roman Empire.

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VAGANAČKA PEČINA





U svibnju 2023. godine provedeno je arheološko istraživanje Vaganačke pećine na primorskoj strani južnog Velebita. Na arheološki potencijal pećine odavno su upućivale priče lokalnog stanovništva koje spominju već poznati motiv vrča sa zlatom, ali i posudu visokog sjaja koja bljuje kada sunce obasja pećinu pod određenim kutom.¹

Pećina je od prije poznata kao arheološki lokalitet iznimno bogate stratigrafije, s kontinuitetom naseljavanja od mezolitika do ranog željeznog doba (Forenbaher, Vranjican 1985). Svrha ovogodišnje kampanje bila je pristupiti lokalitetu nakon gotovo 40 godina upotrebom suvremenih metoda istraživanja kako bi se prikupili podatci koji prije nisu bili dostupni. Buduća istraživanja trebala bi utvrditi postoje li tragovi ranijeg naseljavanja ovog područja, u odnosu na podatke koji su poznati do danas.

Vaganačka pećina nalazi se na primorskoj strani južnog Velebita, na 660 metara nadmorske visine,

In May 2023, archaeological excavation of Vaganačka pećina on the coastal side of southern Velebit was conducted. The archaeological potential of the cave has long been hinted at by the stories of local residents who mention the well-known motif of a pot of gold, but also a vessel of high luster that sparkles when the sun shines on the cave at a certain angle.¹

The cave has long been known as an archaeological site with exceptionally rich stratigraphy, with occupation continuity from the Mesolithic to the Early Iron Age (Forenbaher, Vranjican 1985). The purpose of this

year's campaign was to approach the site after almost 40 years using modern research methods to collect data that were not available before. Future research should determine whether there are traces of earlier settlement in this area, in relation to the information known to date.

Vaganačka pećina is located on the coastal side of southern Velebit, at 660 meters above sea lev-



**Maja GRGURIĆ
SRZENTIĆ**

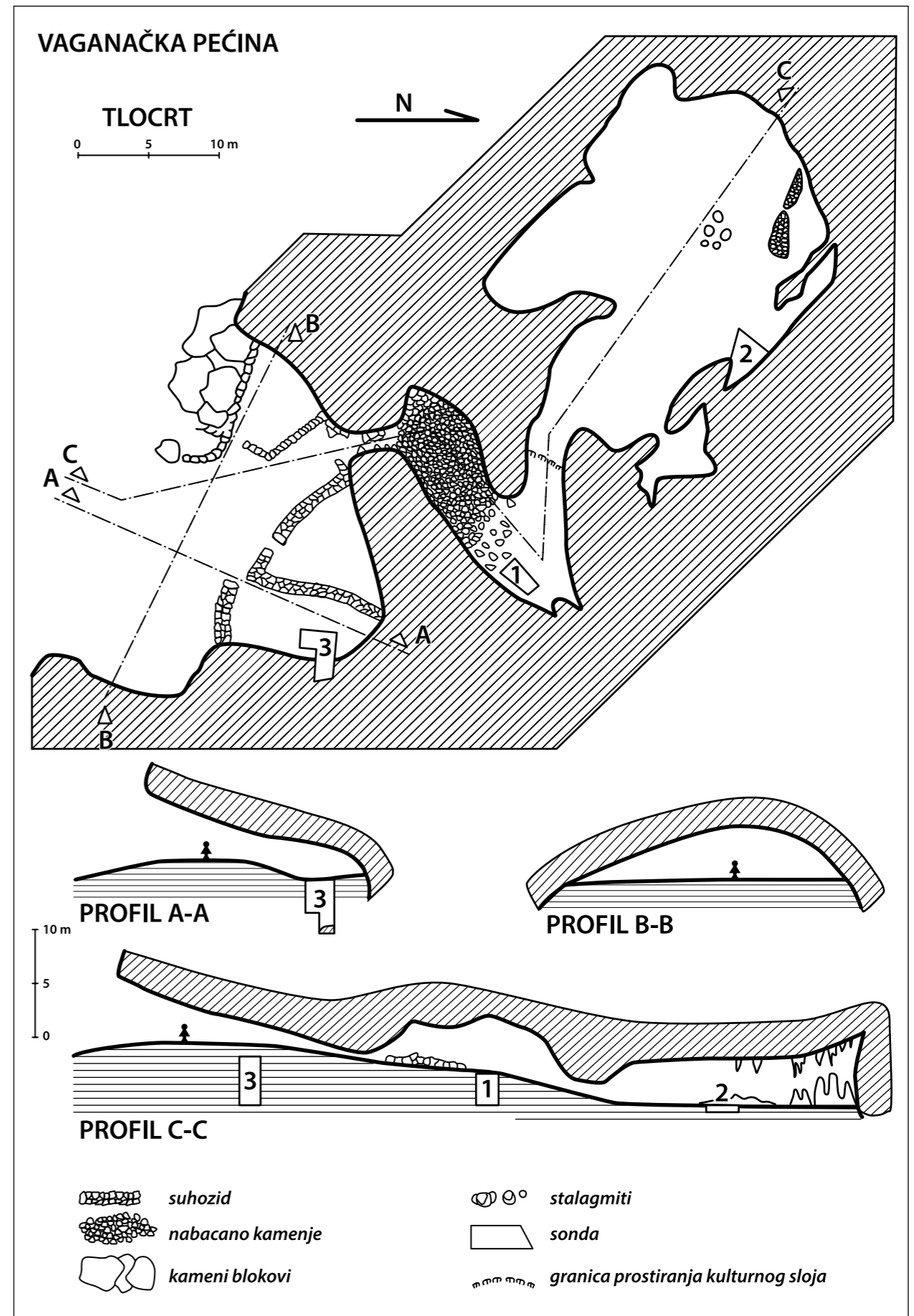
mrguric1@unizd.hr



“Bakreni” odsjaj pećine vjerojatno je inspirirao priču o bakrenom loncu koji sjaji kada sunce obasja pećinu pod određenim kutem (foto: M. Grgurić Srzentić; kazivač: Petar “Peka” Marasović)
The “copper” glow of the cave probably inspired the story of the copper pot that sparkles when the sun shines on the cave at a certain angle (photo: M. Grgurić Srzentić; teller: Petar “Peka” Marasović)

¹ Informacija je dobivena od Petra „Peke“ Marasovića iz Starigrada.

¹ The information was obtained from Petar “Peka” Marasović from Starigrad.



Speleološki topografski nacrt Vaganačke pećine (preuzeto od: S. Forenbaher i P. Vranjican, 1985.)
Speleological topographical plan of Vaganačka pećina (after: S. Forenbaher and P. Vranjican, 1985)





Fumier u sondi 2 (foto: M. Bodružić)
Fumier in trial trench 2 (photo: M. Bodružić)

ispod visoravni Velikog Rujna. Položaj pećine uz prastari put koji povezuje Primorje i Liku pokazao se kao povoljan i za pastire čiji su tragovi boravka u pećini vidljivi i danas. Pećina je pregrađena suhozidom koji površinu prednje prostorije dijeli na dva tora za držanje životinja, a jedan zidani zatvoreni objekt s vratima nalazi se uz zapadni zid na ulazu u pećinu.

Nakon što je definirana pozicija stare sonde određena je pozicija nove koja se pruža paralelno sa starom, ali odmaknuta u smjeru zapada oko 1 metar. Dakle, sonda 1 otvorena je u istočnom dijelu pećine, uz istočnu stranu pregradnog suhozida, u dužini od 3 metra i širine 1 metar.

Prvi sloj sačinjavale su nabijene „ploče“ sasušenog životinjskog izmeta, a nakon toga slijedi sloj rahle zemlje s nalazima keramike i kostiju koji vjerojatno pripada razini hodne površine zatečene 1984. te ostacima izbačenog sedimenta iz prvih istraživanja. Tek nakon toga kreće slijed intaktnih slojeva. Daljnji slijed sedimentnih facijesa jasno upućuje na *fumier*, tj. mješavinu stelje i životinjskog izmeta koja se raspala fermentacijom i djelovanjem mikroorganizama. Prepoznaje se po karakterističnim pravilnim nizovima naizmjeničnih crnih i bijelih horizonata koji nalikuju na slojevitu tortu (Gero-

el, below the Veliki Rujno plateau. The location of the cave next to the ancient road that connects Primorje and Lika proved to be favorable for shepherds, whose traces in the cave are still visible today. The cave is partitioned by a dry stone wall that divides the front room into two pens for stabling animals. A closed walled structure with a door is located next to the western wall at the entrance to the cave.

After the position of the old trench was defined, the position of the new one was determined, which runs parallel to the old one, but shifted in the western direction by about 1 meter. Thus, trial trench 1 was opened in the eastern part of the cave, along the eastern side of the partition dry stone wall, with a length of 3 meters and a width of 1 meter.

The first layer consisted of compacted “slabs” of dried animal excrement, followed by a layer of loose soil with pottery and bone finds, which probably belongs to the level of the walking surface found in 1984, and the remains of the sediment dug in the first investigations. Only after that does the sequence of intact layers begin. The further sequence of sedimentary facies clearly points to *fumier*, i.e. a mixture of litter and animal excrement that has been decomposed by fermentation and



... Pogled na istočni profil sonde 2 s pretpostavljenim ostacima suhozida (foto: M. Grgurić Srzentić)
... View of the eastern profile of trial trench 2 with presumed remains of dry stone wall (photo: M. Grgurić Srzentić)





metta, Boschian 2022). Slijed slojeva vrlo siromašnih pokretnim nalazima s obzirom na dosegnutu dubinu od 180 centimetara razumljiv je ako u obzir uzmemo da su se u ovom dijelu pećine zadržavale isključivo životinje. Uzorak zemlje s najdublje razine u sondi 1 smjestio je trenutačnu fazu istraživanja u srednji neolitik. Zanimljivo je da se na šezdesetak centimetara dubine pojavio sloj krupnijeg kamena, veće gustoće i kompaktnije taložen u istočnom profilu, što bi moglo sugerirati ostatke suhozida. Samo 30 centimetara od istočnog ruba sonde nalazi se masivan suhozid koji danas pećinu dijeli na dva dijela. Nažalost, uzorak poslan za datiranje starijeg suhozida nije uspio te će se morati ponoviti.

Sonda je u jednom trenutku istraživanja smanjena na samo jedan od triju kvadranta kako bi se ubrzalo spuštanje razine sedimenata te kako bi se dobilo više vremena za drugu sodu koja je dala znatno više materijala.

Sonda 2 otvorena je uz sjeveroistočni rub zida pećine, oko 1 metar udaljena od sonde 1, a od samog je početka pokazala potpuno drukčiji stratigrafski slijed i fond nalaza u odnosu na prethodnu. U ovoj sondi dosegnuta je dubina od 60 centimetara od današnje hodne površine. Od samog početka nalazilo se na veće ulomke prapovijesne lončarije i

the action of microorganisms. It is recognized by the characteristic regular series of alternating black and white horizons that resemble a layered cake (Gerometta, Boschian 2022). The sequence of layers, which are very poor in finds, given the reached depth of 180 centimeters, is understandable if we take into account that only animals stayed in this part of the cave. The soil sample from the deepest level in probe 1 dated the current phase of the research to the Middle Neolithic. It is interesting that at a depth of about sixty centimeters, a layer of larger stones appeared, denser and more compactly deposited in the eastern profile, which could suggest the remains of dry stone wall. Only 30 centimeters from the eastern edge of the trench, there is a massive dry stone wall that presently divides the cave into two parts. Unfortunately, the sample sent to date the older dry stone wall failed and will have to be repeated.

At one point in the excavation, the trench was reduced to only one of the three quadrants in order to speed up the lowering of the sediment level and to gain more time for the second trench, which yielded significantly more material.

Trial trench 2 was opened along the northeastern edge of the cave wall, about 1 meter away

kosti, ali i slojeve zapečene zemlje koji bi se mogli interpretirati kao ostatci nabijene podnice koja je „popravljana“ u više navrata. Otkriveni ostatci konstrukcije od zapečene zemlje kružne forme i podignutih rubova vjerojatno su ostatci ognjišta, a to sugerira i pepeo u blizini te ostatci pougljenjenih sjemenki. Veliki broj fragmenata grube i fine keramike u istoj sondi također ide u prilog tezi da je dio pećine uz istočni zid bio odvojen kao prostor za boravak ljudi, barem u nekom trenutku u povijesti korištenja ovog objekta. Nekoliko pronađenih pršljena moglo bi se interpretirati kao „vlasništvo“ pastirica, a bez sumnje potvrđuju izradu vunene pređe, odnosno tekstilnu proizvodnju. Keramički materijal pripada isključivo razdoblju prapovijesti, a fragmenti koje je bilo moguće preciznije odrediti upućuju na brončanodobnu zajednicu koja se ovdje zadržavala sa svojom stokom. Materijal poslan na radiokarbonsko datiranje potvrdio je ovu pretpostavku za sondu 2.

Dosadašnji rezultati upućuju na podjelu prostora pećine na dio namijenjen boravku ljudi te dio koji je bio odvojen isključivo za držanje životinja, barem u razdoblju kasnog brončanog doba. Preliminarna analiza životinjskih kostiju potvrdila je prisutnost ovikaprda i goveda, ali i lovnih životinja, poput jelena. S obzirom na to da je poznato da jelen voli boraviti u šumama, ta nam informacija može reći ponešto i o prapovijesnom krajoliku. Na pitanje kako je pećina bila korištena sezonski, odgovor bi trebale dati mikromorfološka analiza i analiza stabilnih izotopa koje tek slijede.

from trial trench 1, and from the very beginning it showed a completely different stratigraphic sequence and assemblage of finds compared to the previous one. In this probe, a depth of 60 centimeters was reached from present-day walking surface. From the very beginning, larger fragments of prehistoric pottery and bones were found, as well as layers of fired earth that could be interpreted as the remains of a rammed floor that was “repaired” on several occasions. The discovered remains of a structure made of fired earth with a circular shape and raised edges are probably the remains of a hearth, which is also suggested by the nearby ashes and the remains of charred seeds. The large number of fragments of coarse and fine pottery in the same trench also supports the thesis that the part of the cave along the eastern wall was separated as a place for humans to stay, at least at some point in the history of the use of this cave. Several found whorls could be interpreted as the “ownership” of shepherdesses, and they undoubtedly confirm the production of woolen yarn, i.e. textile production. The ceramic material belongs exclusively to the prehistoric period, and the fragments that could be determined more precisely indicate a Bronze Age community that stayed here with its livestock. Material sent for radiocarbon dating confirmed this assumption for trial trench 2.

The results so far suggest the division of the cave space into a part intended for human habitation and a part that was set aside exclusively for animal stabling, at least in the Late Bronze Age period. Preliminary analysis of animal bones confirmed the presence of ovicaprids and cattle, but also game animals, such as deer. Given that it is known that deer like to stay in forests, this information can also tell us something about the prehistoric landscape. The answer to the question of how the cave was used seasonally should be provided by the micromorphological and stable isotope analysis that will follow.



Prosijavanje sedimenta (foto: M. Lorenzo Blaslov)
Sieving of the sediment (photo: M. Lorenzo Blaslov)

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PODMORSKO
ARHEOLOŠKO
ISTRAŽIVANJE
NA LOKALITETU
SOLINE
(KORČULA)

Underwater
archaeological
research at the
Soline site (Korčula)



Ovo je treća sezona sustavnog istraživanja lokaliteta iz vremena kasnog neolitika¹ (Parica 2021; Parica, Radić 2022; Parica 2022.) Aktivnosti su bile fokusirane na definiranje odnosa nalazišta i obale otoka Korčule. Na morskom dnu jasno je vidljiva poligonalna obala potopljenog nalazišta, međutim, odnos između lokaliteta i obale nije bio prepoznatljiv na površini dna. Cijeli prostor između nalazišta i obale prekriven je pijeskom, a ovogodišnjom se kampanjom nastojala riješiti i ova nedoumica.

Između isturenog kuta lokaliteta i obale Korčule postavljeno je pet spojenih sondi 2 x 2 metra (označene su brojevima od 5 do 9) koje se pružaju u pravcu jugoistok-sjeverozapad. Na nekim dijelovima već nakon 25 centimetara od površine dna pronađen je vrh kamenog nasipa koji završava precizno postavljenim kamenom kojem je gornja ploha ravna. Riječ je o komunikaciji koja spaja lokalitet Soline s obalom, a hodna površina nalazi se na prosječnim 4,2 metra ispod današnje morske razine. Sonde su zapravo presjek komunikacije koja spaja nalazište s kopnom. Sonde 5, 6 i 7 relativno su brzo završene jer je debljina sedimenta oko 25 do 30 centimetara, te se brzo dolazi do popločenja ceste čija je pretpostavljena širina bila oko 4 metra.

Popločenje je izvedeno na način da je veće amorfno kamenje postavljeno s ravnijim dijelom prema gore. U sondi 7, na mjestu gdje fali jedna kamena ploča popločenja, temeljito je očišćen prostor ispod te je vidljivo da kamene ploče stoje na nasipu od manjeg (10 do 15 centimetara promjera) i većeg amorfno kamenja (20 do 30 centimetara promjera).

Komunikacijski nasip izvorno je napravljen nasipanjem amorfno kamenja, a hodna površina pažljivo je izvedena kamenim pločama, ili preciznim postavljanjem većeg kamenja ravne plohe prema gore. Sonda 8 nalazi se u zoni gdje popločenje ceste završava, te osipina od nepravilnog kamenja postupno pada prema dubini. U ovoj zoni pojavljuje se znatno više arheološkog materijala, neolitička keramika hvarske kulture,

This is the third season of systematic research of the Late Neolithic site¹ (Parica 2021; Parica, Radić 2022; Parica 2022). The activities were focused on defining the relation between the site and the coast of the island of Korčula. The polygonal coast of the submerged site is clearly visible on the seabed, however, the relationship between the site and the coast was not recognizable on the surface of the seabed. The entire area between the site and the coast is covered with sand, and this year's campaign was aimed at shedding more light on that situation as well.

Five connected trial trenches of 2 x 2 meters (marked with numbers 5 to 9) extending in a southeast-northwest direction were placed between the projecting corner of the site and the coast of Korčula. In some parts, already after 25 centimeters from the surface of the bottom, the top of the stone embankment was found, which ends with a precisely placed stone whose upper

surface is flat. It is a communication route that connects the site of Soline with the coast, and walking surface is located at an average of 4.2 meters below the current sea level. The trial trenches are actually a section of the communication route that connects the site with the mainland. Trial trenches 5, 6 and 7 were completed relatively quickly because the thickness of the sediment is about 25 to 30 centimeters, and the paving of the road, whose assumed width was about 4 meters, was quickly reached.

Paving was done in such a way that larger amorphous stones were placed with the flatter part facing up. In trial trench 7, where one paving stone slab is missing, the area below was thoroughly cleaned and it is evident that the stone slabs are standing on a fill of smaller (10 to 15 centimeters in diameter) and larger amorphous stones (20 to 30 centimeters in diameter).

The embankment was originally made of amorphous stones, and the walking surface was carefully made with stone slabs, or by precise placement of larger stones with flat surface upwards. Trial trench 8 is located in the zone where the paving of the road ends, and the debris from the irregular



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Označeni položaj sondi na zračnoj fotografiji (foto: D. Medvedev)
Marked position of the trial trenches in aerial photo (photo: D. Medvedev)

životinjske kosti, te kremenja sječiva.

Sonda 9 predstavlja zonu gdje više nema konstrukcije kamenog nasipa ceste. To je prostor koji je u vrijeme neolitika, dok je cesta bila u funkciji, bio plitko more u koje se taložio otpadni materijal. Uz mnoštvo sitnijeg kamena pojavljuje se i dobro očuvan neolitički materijal, finija sječiva, keramika, sjekira, strelica i koštani privjesak. Zbog velike količine arheološkog materijala u sondi, te zbog kraja istraživačke kampanje, istraživanje u sondi 9 nije završeno. Znači, nije se dosegno izvorni depozit plaže ili živa stijena. Unutar sloja pronađeni su očuvani ostatci ljuštura bajama i sitniji komadići ugljena.

Pronađenu komunikaciju možemo datirati isto kao i cjelokupni lokalitet, u vrijeme kasnoneolitičke hvarske kulture, a radiokarbonski datum preciznije određuje vrijeme 4938 do 4778 kal. prije Krista (90,4 % vjerojatnost).² Popločani komunikacijski nasip spaja se s obalom u obliku sedmerokuta koji okružuje lokalitet, te je integralni dio nalazišta. (Slika 5)

Osim istraživanja na lokalitetu Soline, dio istraživačke ekipe obavio je zaron i obilazak veće ka-

stone gradually falls towards the deep. This zone yielded significantly larger quantity of archaeological finds, Neolithic pottery of the Hvar culture, animal bones, and flint blades.

There is no stone embankment structure in trial trench 9. It is an area that in Neolithic times, while the road was still functional, was a shallow sea where waste material was deposited. In addition to the abundance of smaller stones, there is also well-preserved Neolithic material, finer blades, pottery, an axe, an arrow and a bone pendant. Due to the large amount of archaeological material in the trial trench and the end of the research campaign, the research in trial trench 9 has not been completed. Thus, the original deposit of beach or bedrock has not been reached. Preserved remains of almond shells and smaller pieces of charcoal were found within the layer.

We can date the communication route to the same period as the entire site, to the time of the Late Neolithic Hvar culture, and the radiocarbon date determines the time more precisely to 4938 to 4778 cal. year BC (90.4% probability).² The paved embankment connects to the heptagonal coast that surrounds the site, and is an integral part of the site.

¹ Od prosinca 2023. istraživačke aktivnosti na lokalitetu Soline financirane su iz sredstava projekta: HRZZ IP-2022-10-3893 „Potopljena neolitička nalazišta u podmorju hrvatskog dijela Jadrana/Under sea Neolithic sites in the Croatian Adriatic“.

¹ From December 2023, research activities at the Soline site have been financed from the project funds: HRZZ IP-2022-10-3893 „Potopljena neolitička nalazišta u podmorju hrvatskog dijela Jadrana/Undersea Neolithic sites in the Croatian Adriatic“.

² Analiza obavljena u laboratoriju Beta analytic, Beta-622299.

² Analysis performed in the Beta analytic laboratory, Beta-622299.



Fotografija popločenja komunikacijskog nasipa (foto: V. Katavić)
Embankment paving (photo: V. Katavić)



mene strukture u uvali Gradini na zapadnom dijelu otoka Korčule, kod Vele Luke. Na dubini od 4 do 5 metara ispod današnje morske razine primijećena je konstrukcija od amorfnog kamena koja čini krug od stotinjak metara promjera. Ima gotovo kružni oblik s manjim lomovima obalne linije. Srednji dio lokaliteta ispunjen je pješčanim sedimentom. Na mjestu gdje je konstrukcija najbliže obali nalazi se kameni humak oko 6 metara promjera. Pregledom površine dna cijele lokacije pronađen je pokretni arheološki materijal. Riječ je o nekoliko ulomaka prapovijesne ke-

In addition to research at the Soline site, part of the research team dived and surveyed a larger stone structure in Gradina bay, in the western part of the island of Korčula, near Vela Luka. At a depth of 4 to 5 meters below today's sea level, a structure made of amorphous stone was noticed, forming a circle with a diameter of about one hundred meters. It has an almost circular shape with minor breaks in the coastline. The middle part of the site is filled with sandy sediment. At the place where the structure is closest to the coast, there is a stone mound about 6 meters in diameter. By examining the surface of

Nekoliko nalaza iz sonde 9
(foto: E. Visković)
Several finds from trial trench 9
(photo: E. Visković)



ramike koja zbog istrošenosti nema dijagnostička obilježja, a osim toga pronađena su kremena sječiva, kamene kugle te jedan dio kamene sjekire. Okvirno, sav pronađeni materijal može se datirati u vrijeme neolitika. U ovom slučaju, definitivno



0
10
20
30
40
50
60
70
80
90
100

Tlocrt s označenim sondama (izradio: E. Visković)
Ground plan with marked trial trenches (made by: E. Visković)



... Fotografija pokretnih nalaza iz uvale Gradine (foto: D. Perkić)
... Small finds from Gradina bay (photo: D. Perkić)

je riječ o novom neolitičkom potopljenom lokalitetu koji ima vrlo slične karakteristike nalazišta u podmorju uvale Soline na drugom kraju otoka Korčule.



the bottom of the entire location, movable archaeological material was found comprising several fragments of prehistoric pottery which, due to wear, have no diagnostic features, and also, flint blades, stone balls and a part of a stone axe. All the material found can be broadly dated to the Neolithic period. In this case, it is definitely a new submerged site dating to the Neolithic that has very similar characteristics to the underwater site in Soline bay at the other end of the island of Korčula.

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PROBNO ARHEOLOŠKO ISTRAŽIVANJE U PODRUMU OSNOVNE ŠKOLE SILVIJA STRAHIMIRA KRANJČEVIĆA U SENJU

Archaeological trial excavations in the basement of Silvije Strahimir Kranjčević Elementary School in Senj

Godine 1972., tijekom izgradnje osnovne škole Silvija Strahimira Kranjčevića u Senju pronađeni su ostatci antičke vodospreme (SB2) koja je danas sačuvana *in situ* u podrumu škole (Glavičić 1973). Vodosprema SB2 jedna je od ukupno pet vodosprema koje su tijekom različitih građevinskih radova pronađene na ovom području i koje se vežu uz ostatke rimskodobnog kupališnog kompleksa (Glavičić 1973; Glavičić 1994/1995). Taj prostor na području današnje osnovne škole i školsko-sportske dvorane poznat je kao lokalitet Štela koji je od 40-ih godina 20. stoljeća pa sve do 1995.

In 1972, during the construction of Silvije Strahimir Kranjčević Elementary School in Senj, the remains of a Roman-era water reservoir (SB2) were found, which is presently preserved *in situ* in the basement of the school (Glavičić 1973). Water reservoir SB2 is one of a total of five water reservoirs that were found in this area during various construction works and which are associated with the remains of the Roman bathing complex (Glavičić 1973; Glavičić 1994/1995). That part of the area of today's elementary school and school sports hall is known as the Štela site, which was repeatedly devastated from



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Sjeverozapadni zid vodospreme (foto: V. Glavaš)
Northwestern wall of the water reservoir (photo: V. Glavaš)

godine u više navrata devastiran. Iako su podatci o postojanju antičkih kulturnih slojeva bili poznati, arheološka istraživanja nisu provedena u punom opsegu te su svi podatci koje danas imamo o Šteli prikupljeni tijekom arheološkog nadzora ili tijekom iskopavanja provedenih na manjim područjima zahvata. Upravo su zbog toga mnogi kulturno-kronološki podatci o ovom lokalitetu izostali (Konestra, Glavaš 2024).

Tijekom veljače 2023. godine na Šteli u podrumskim prostorijama Osnovne škole Silvija Strahimira Kranjčevića provedeno je probno arheološko istraživanje.¹ Istraživanje se sastojalo od dokumentiranja antičke vodospreme SB2 otkrivene tijekom izgradnje osnovne škole 1972. godine te probnog iskopavanja provedenog na dijelu poda vodospreme. Osnovni cilj ovog istraživanja bio je dokumentirati vodospremu suvremenijim dokumentacijskim tehnikama te probno sondirati pod vodospreme kako bi se utvrdila tehnika te kronološki okvir izgradnje.

Radovi koji su prethodili dokumentiranju postojećeg stanja vodospreme uključivali su uklanjanje

the 1940s until 1995. Although data on the existence of Roman-era cultural layers were known, archaeological research was not carried out in full, and all the information we have today about Štela was collected in archaeological monitoring or during excavations carried out in smaller areas. This is precisely why many cultural-chronological data about this site were missing (Konestra, Glavaš 2024).

During February 2023, archaeological trial excavations were conducted at the Štela site in Senj, in the basement of Silvije Strahimir Kranjčević Elementary School.¹ The excavation consisted of documenting the Roman-era water reservoir SB2 discovered during the construction of the elementary school in 1972, and trial excavation carried out on part of the floor of the water reservoir. The main goal of this research was to document the water reservoir using more modern documentation techniques and to open a trial trench under the water reservoir in order to determine the technique and the chronological framework of the construction.

The work that preceded the documentation of the current state of the water reservoir included

recentnog otpada koji se tijekom godina nakupio unutar vodospreme te čišćenje zidova vodospreme. Struktura vodospreme snimljena je fotogrametrijski za potrebe izrade nacrtna dokumentacije i 3d modela, a položaj fotočeka snimljen je totalnom stanicom.

Zidovi vodospreme građeni su od neobrađenih i grubo obrađenih kamenih blokova, a mjestimično i od većih oblutaka međusobno povezanih vodonepropusnom žbukom svijetle crvenkastosmeđe boje. Primjetna je i tendencija vodoravnog uslojavanja kamena. Zidovi vodospreme debljine su oko 50-55cm, ukopani su u tlo, i to, kako se čini, u sterilni sloj. Građeni su kao podzidi, bez vanjskog lica. Na vrhu sjeverozapadnog i jugozapadnog zida vodospreme vidljivi su tragovi elevacije zidova vodospreme koji se vjerojatno nalazio na tadašnjoj hodnoj razini. Zidovi vodospreme međusobno su i s podom vodospreme povezani debljim slojem vodonepropusne žbuke.

Dno vodospreme popločano je četvrtastim keramičkim pločama koje su međusobno povezane žbukom. Na mnogim pločama uočeni su životinjski tragovi (mačka, pas, srna?) te otisak cipele s potplatom s čavlicima. Na svim zidovima uočljivi su tragovi finije i grube vodonepropusne žbuke. Gru-

the removal of recent waste that had accumulated inside it over the years and cleaning of its walls. The structure of the water reservoir was recorded photogrammetrically for the purposes of design documentation and 3D models, and the position of the photopoints was recorded with a total station.

The walls of the water reservoir were built from undressed and rough-hewn stone blocks, and in some places from larger pebbles connected with waterproof mortar of light reddish-brown color. The tendency of horizontal layering of the stone is also noticeable. The walls of the water reservoir are about 50-55 cm thick, they are dug in the ground, in a sterile layer as it seems. They were built as retaining walls, without an outer face. At the top of the northwestern and southwestern walls of the water reservoir, traces of the elevation of its walls are visible, which was probably at the walking level at the time. The walls of the reservoir are connected to each other and to the floor of the reservoir with a thicker layer of waterproof plaster.

The bottom of the reservoir is paved with square ceramic tiles that are connected with mortar. Animal tracks (cat, dog, doe?) and the imprint of a shoe sole studded with nails were observed on a number of tiles. Traces of fine and coarse water-



Popločanje vodospreme (foto: V. Glavaš)
Water reservoir paving (photo: V. Glavaš)

¹ Istraživanje su u suradnji proveli Odjel za arheologiju Sveučilišta u Zadru i Institut za arheologiju u Zagrebu.

¹ The research was carried out in collaboration between the Department of Archeology of the University of Zadar and the Institute of Archeology in Zagreb.





ba je žbuka bila premazana na zidove vodospreme, a preko nje se na nekim mjestima nalaze premazi finije žbuke ružičasto-bijele boje.

Uz sjeverozapadni zid vodospreme ostao je pričvršćen i preostatak zapune koji nije uklonjen tijekom istraživanja 1972. godine. Tijekom njegova uklanjanja ustanovljeno je da je riječ o ostatku sedimenta i slijepljenih komada vodonepropusne žbuke raznih veličina. Na pojedinim ulomcima vidljivi su i tragovi profilacije što upućuje na to da je riječ o stropu cisterne koji je urušen i kao takav postao sadržaj njezine zapune. Zapuna je sadržavala i nešto amorfnih ulomaka većinom građevinske keramike, nekoliko ulomaka amfora, veće *tesserae* te fragmente zidne žbuke.

Jedan od ciljeva ovog istraživanja bio je i utvrditi kronološki kontekst izgradnje vodospreme. Iz tog razloga uklonjen je dio (1/3) jedne ploče poda cisterne kako bi se uvidjelo na čemu leži vodosprema i kako bi se dobili podatci o vremenu izgradnje. Ustanovljeno je da ploče poda vodospreme leže na sloju čvrste vodonepropusne žbuke debljine 17 cm. Ispod tog sloja ustanovljeno je postojanje ranije podnice vodospreme izrađene u tehnici *opus spicatum* koji također leži na više slojeva vodonepropusne žbuke.

proof plaster can be seen on all the walls. The walls of the reservoir were coated with coarse plaster, and over it, in some places, there are coatings of finer pinkish-white plaster.

The rest of the fill, which was not removed during the research in 1972, remained attached to the northwestern wall of the reservoir. During its removal, it was found that it consisted of the remains of the sediment and pieces of waterproof plaster of various sizes stuck together. Traces of molding are also visible on some fragments, which indicates that it is the ceiling of the cistern that collapsed and became the contents of its fill. The fill also contained some amorphous fragments, mostly ceramic building material, several fragments of amphorae, larger *tesserae* and fragments of wall plaster.

One of the goals of this research was to determine the chronological context of the construction of the water reservoir. For this reason, a part (1/3) of one tile of the cistern's floor was removed in order to see what the water reservoir lies on and to obtain data on the time of construction. It was found that the floor tiles of the water reservoir lie on a layer of solid waterproof plaster 17 cm thick. Below that layer, there was an earlier floor of the

Zbog ograničenog prostora istraživanja žbuka na kojoj leži ranija podnica nije mogla biti uklonjena u potpunosti te je na dubini od 77 cm ispod razine poda iskopavanje zaustavljeno. Po završetku iskopavanja sonda je zatrpana te je uklonjeni dio podne ploče vraćen na originalni položaj.

Istraživanjem je ustanovljeno postojanje najmanje dviju faza cisterne. U ranijoj fazi dno je cisterne bilo popločano keramičkim pločicama složenima u tehnici *opus spicatum* koje su ležale na debljem sloju vodonepropusne žbuke. Vrlo vjerojatno su već tada izgrađeni i zidovi cisterne koji su premazani grubom žbukom. U drugoj fazi, možda zbog propuštanja vode, raniji pod cisterne izrađen u tehnici *opus spicatum* prekriven je debelim slojem žbuke na koju je postavljen novi pod, a spoj poda i zidova dodatno je zaštićen debelim nanosom vodonepropusne žbuke. Tada su zasigurno i pojedini dijelovi zidova vodospreme zaglađeni finijim slojem žbuke kako bi se popravili dotrajali dijelovi.

Vodosprema na Šteli bila je u funkciji cisterne i bila je ukopana u zemlju. Njezin je strop bio ravan što potvrđuju ostatci žbuke pronađeni unutar ostatka zapune cisterne, a hodna površina iznad nje mogla je biti popločana većim mozaičkim tesseraama kakve su pronađene u ostatku zapune.

Dataciju cisterne moguće je smjestiti u šire ranorimsko razdoblje dijelom na temelju sadržaja cisterne koji, doduše, ne pruža siguran *terminus* svojeg nastajanja jer nije u potpunosti sačuvan, ali pruža *terminus ante quem* za gradnju cisterne, što bi odgovaralo razdoblju prije 3. stoljeća.

water reservoir made in the *opus spicatum* technique, which also rests on several layers of waterproof plaster.

Due to the limited research area, the plaster on which the earlier floor lies could not be completely removed, and the excavation was stopped at a depth of 77 cm below the floor level. At the end of the excavation, the trial trench was backfilled and the removed part of the floor tile was returned to its original position.

The excavations established the existence of at least two phases of the cistern. In the earlier phase, the bottom of the cistern was paved with ceramic tiles arranged in the *opus spicatum* technique, which lay on a thicker layer of waterproofing plaster. It is very likely that the walls of the cistern were already built then and coated with coarse plaster. In the second phase, perhaps due to water leakage, the earlier floor of the cistern, made in the *opus spicatum* technique, was covered with a thick layer of plaster on which the new floor was placed, and the joint between the floor and the walls was additionally protected with a thick layer of waterproof plaster. That is also when certain parts of the walls of the reservoir were surely smoothed with a finer layer of plaster in order to repair the worn parts.

The Štela water reservoir was in the function of a cistern and was dug in the ground. Its ceiling was flat, as confirmed by the remains of plaster found inside the remains of the cistern fill, and the walking surface above it could have been paved with larger mosaic *tesserae*, of the kind found in the rest of the fill.

It is possible to place the dating of the cistern in the broader early Roman period, partly based on the contents of the cistern, which, admittedly, does not provide a certain *terminus* of its creation because it is not fully preserved, but it does provide a *terminus ante quem* for the construction of the cistern, which would correspond to the period before the 3rd century.

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... Ostatak zapune vodospreme (foto: V. Glavaš)
 ... Remains of the water reservoir fill (photo: V. Glavaš)



ARHEOLOŠKA ISTRAŽIVANJA NA GRADINI SVETOG IVANA NA OTOKU KORČULI

Archaeological
excavations at
Gradina sv. Ivana on
the island of Korčula





Druuga godina provedbe institucionalnog znanstveno-istraživačkog projekta Sveučilišta u Zadru *Gradina i luka svetog Ivana – izolirana točka otočnih dodira* (GRIVA 2021-2023, IP.01.2021.02) donijela je i drugu kampanju iskopavanja na ovom, za razumijevanje dinamike naseljavanja zapadnog dijela otoka Korčule, iznimno važnom lokalitetu (Oreb 1972; Fisković 1984; Radić 2001; Borzić 2009; Mirošević, Faričić 2022). Rezultati iskopavanja prve kampanje iz 2022. godine (Borzić 2023), odnosno preliminarna analiza pokretnih i nepokretnih nalaza potvrdili su do tada samo pretpostavljenu arheološku višefaznost lokacije, precizirajući je u srednjobrončano, kasnoantičko te kasnosrednjovjekovno i novovjekovno doba.

Ovogodišnja istraživanja provedena od 28. travnja do 7. svibnja 2023.¹ organizirana su s namjerom da se spoznaje o navedenim isječcima iz povijesti ove lokacije dodatno prodube. Iskopavanja na prostoru Sonde 1a, položene kao sjeverno proširenje lanjske Sonde 1 smještene uz apsidu i sjeverni zid crkvice svetog Ivana, pružila su nešto drukčiju stratigrafsku situaciju. U potonjoj je, naime, lani izdvojen horizont urušenja ranokršćanske crkvice kao prethodnice one kasnosrednjovjekovne, što je izostalo prepoznati se u stratigrafiji ovogodišnjeg proširenja. Razlozi tomu mogu se tražiti i u, do matične stijene interpoliranjem, njemačkom prsobranu iz Drugog svjetskog rata, kakvih je, osim na istočnoj polovici Sonde 1a, na čitavom lokalitetu zabilježeno još desetak. Zapadna polovica sonde u stratigrafskom je smislu nešto složenija te je osim brončanodobnog naseobinskog sloja bogatog keramičkim i osteološkim materijalom C14 metodom datiranog u raspon od kraja 15. do početka 13. st. pr. Kr., zabilježen i višestruki ukop s kraja 11. i početka 12. stoljeća. Izdvajanje ovog horizonta od iznimne je važnosti za čitav otok Korčulu, koja je za razliku od ranijih i kasnijih razdoblja upravo u deficitu s materijalnim pokazateljima principa naseljenosti i korištenja prostora tijekom povijesno dosta turbulentnog ranog srednjeg vijeka (Foretić 1940; Dokoza 2009).

Druge dvije sonde, Sonda 4 i Sonda 5 položene su uz unutrašnje lice žbukom vezanog zida (bedema?), čija linija obilazi uokolo čitave glavice Gradi-

The second year of the implementation of the institutional scientific-research project of the University of Zadar *Hillfort and the port of St. John - an isolated point of insular contacts* (GRIVA 2021-2023, IP.01.2021.02) brought the second excavation campaign to this exceptionally important site for understanding the dynamics of the settlement of the western part of the island of Korčula (Oreb 1972; Fisković 1984; Radić 2001; Borzić 2009; Mirošević, Faričić 2022). The results of the excavation of the first campaign from 2022 (Borzić 2023), i.e. the preliminary analysis of small finds and archaeological features confirmed previously only assumed archaeological multiphase character of the site, pinpointing the periods: Middle Bronze Age, Late Antiquity, Late Middle Ages and Modern Era.

This year's excavations, conducted from April 28 to May 7, 2023,¹ were organized with the intention of further deepening the knowledge about the aforementioned fragments from the history of this location. Excavations in the area of trench 1a, laid out as a northern extension of last year's trench 1 lo-

cated next to the apse and the north wall of the small church of St. John, provided a slightly different stratigraphic situation. In the latter trench, the horizon of the collapse of the early Christian church was singled

out last year as the predecessor of the late medieval one, which was not recognized in the stratigraphy of this year's expansion. The reasons for this can also be found in the German parapet from the Second World War, interpolated to the bedrock, of which, apart from the eastern half of trench 1a, about a dozen more were recorded on the entire site. The western half of the trench is somewhat more complex in terms of stratigraphy and, apart from the Bronze Age settlement layer rich in ceramic and osteological material that offered C14 dates in the range from the end of the 15th to the beginning of the 13th century BC, multiple burials from the end of the 11th and the beginning of the 12th century were also recorded. Recognizing this horizon is extremely important for the entire island of Korčula, which, unlike earlier and later periods, is scarce with material indicators of the concepts of


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Sonda 1A, grob 3 tijekom istraživanja (foto: L. Bogdanić)
Trench 1A, grave 3 during excavations (photo: L. Bogdanić)



Grob 3, ranosrednjovjekovni ukop (foto: L. Bogdanić)
Grave 3, early medieval burial (photo: L. Bogdanić)

¹ Na istraživanju su sudjelovali Dinko Radić iz Centra za kulturu Vela Luka, Martina Čelhar, Josipa Baraka Perica, Luka Bogdanić i Igor Borzić s Odjela za arheologiju Sveučilišta u Zadru te studenti Mia Mandarić, Ivan Mašković i Miroslav Novak.

¹ Dinko Radić from the Cultural Center Vela Luka, Martina Čelhar, Josipa Baraka Perica, Luka Bogdanić and Igor Borzić from the Department of Archaeology of the University of Zadar, participated in the excavations as well as the students of the same university Mia Mandarić, Ivan Mašković and Miroslav Novak.





ne svetog Ivana. Otvaranjem obiju sondi na krajnjem zapadnom, odnosno južnom traktu strukture nastojalo se dobiti dodatne informacije o trenutku njegova zidanja, no, nažalost, stratigrafska situacija i popratni pokretni materijal to nisu omogućili. U oba je slučaja potvrđeno kako je zid, građen od većeg i manjeg amorfnog kamenja vezanog velikim količinama žbuke, utemeljen na matičnoj stijeni te da ga prati pojava izmiješanog novovjekovnog i kasnoantičkog, a u dubljim slojevima, posebice u okviru Sonde 4, i znatnije količine srednjobrončodobnog keramičkog materijala.

Ovogodišnji boravak na terenu iskorišten je i za obilazak obližnjeg otočića Gubeša na kojem se nalazilo rimsko imanje (Radić 2001), a čije se kasnoantičko zaposjedanje, istovremeno onom Gradine svetog Ivana, potvrdilo površinski sakupljenim keramičkim materijalom.

Ovogodišnjim angažmanom na Gradini svetog Ivana završen je dvogodišnji istraživački ciklus čiji će rezultati biti predstavljeni u pripremanom zborniku radova. Već i sada je jasno kako su terenske i laboratorijske aktivnosti projekta umnogome

settlement and use of space during the historically quite turbulent Early Middle Ages (Foretić 1940; Dokoza 2009).

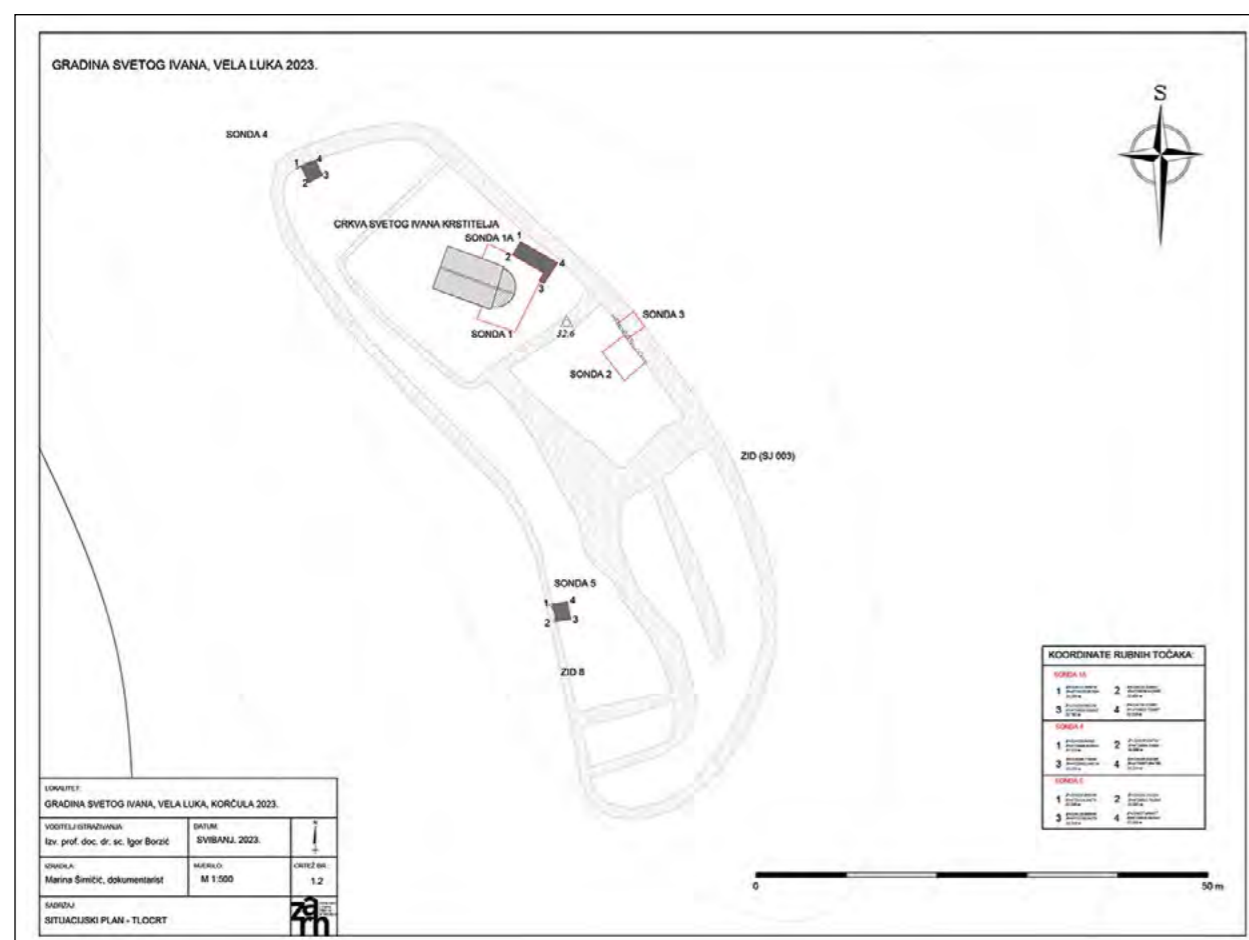
The other two trenches, 4 and 5, were placed along the inner face of the plastered wall (rampart?), whose line goes around the entire elevation of Gradina svetog Ivana. By opening both trenches on the extreme western and southern tract of the structure, we tried to obtain additional information about the time of its construction, but, unfortunately, the stratigraphic situation and the accompanying small finds did not allow this. In both cases, it was confirmed that the wall, built of larger and smaller amorphous stones bound with large amounts of mortar, was based on the bedrock and that it was accompanied by the appearance of mixed modern and late antique finds, and in deeper layers, especially within trench 4, also significant amounts of Middle Bronze Age ceramic material.

This year's excavation was also used for a tour of the nearby islet of Gubeša, where a Roman estate was located (Radić 2001), whose late antique occupation, synchronous with that of Gradina svetog

unaprijedile topografsko i kronološko stanje poznavanja ove iznimno bogate arheološke zone kontinuirano korištene još od prapovijesnih vremena. Nalazi kao što su lokalna i apeninska srednjobrončodobna keramika, starokršćanski crkveni inventar potencijalno povezan s postojanjem ranobizantske utvrde, srednjovjekovni i novovjekovni horizonti naseljavanja i ukapanja, svi skupa uvjetovani iznimnom maritimnom značenju uvala, poziv su utemeljenja nekih daljnjih projekata kojim bi se ova pozicija dodatno valorizirala u znanstvenom i kulturnom smislu.

Ivana, was confirmed by ceramic material collected on the surface.

This year's work at Gradina svetog Ivana marks a completion a two-year research cycle, the results of which will be presented in the miscellany which is forthcoming. It is already clear that the fieldwork and laboratory activities of the project have greatly improved the topographical and chronological understanding of this exceptionally rich archaeological zone, which has been continuously used since prehistoric times. Findings such as local and Apennine Middle Bronze Age pottery, early Christian church inventory potentially associated with the presence of an early Byzantine fort, medieval and modern horizons of occupation and burials, all conditioned by the exceptional maritime significance of the bay, are an invitation to the foundation of some further projects that would additionally valorize this position in scientific and cultural sense.



• Situacijski plan, Gradina svetog Ivana (izradila: M. Šimičić)
• Scale sketch, Gradina svetog Ivana (made by: M. Šimičić)

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EKSPERIMENTALNA OBNOVA TUMULA NA BIOKOVU

Experimental reconstruction of a tumulus on Biokovo

U znanstveno i stručno istraživanje prapovijesnih tumula na Biokovu, važan segment istraživanja je i obnova istraženih tumula da bi ih se vratilo u njihovo prvotno stanje, revitaliziralo, ali i prezentiralo i interpretiralo široj grupi korisnika. Općeniti cilj arheologije, rekonstruiranje života u prošlosti repertoarom metoda slabo dostupnih drugim povijesnim znanostima, bio bi perverzno elitistički i izoliran od društvene zajednice bez diseminacije široj publici. Golemi broj tumula pronađen na prostoru Biokova iznenadio je i dobre poznavatelje planine, pa je potrebno njihovim ponovnim oživljavanjem dati novi akcent u prirodnom pejzažu i onom artificialnom, kulturnom, polja grobnih humaka. Time bi bila stvorena i jedna nova, dodatna kulturološka i vizualna vrijednost. S tim idejama pristupilo se obnovi istraženih tumula, tako da su prilagođene svakom pojedinačnom spomeniku. Ovisno o sadržaju humaka, njihovoj sačuvanosti, mogućnostima rekonstrukcije i dostupnom građivnom materijalu, tumuli su obnovljeni i izloženi na različite, individualne načine.

Tijekom lipnja 2023. godine studenti i profesori Odjela za arheologiju i Odjela za povijest umjetnosti Sveučilišta u Zadru na planini Biokovu na lokalitetu Lokva održali su terensku nastavu iz kolegija Uvod u eksperimentalnu arheologiju. Sve prethodne terenske spoznaje primijenjene su u eksperimentu, a studenti su s njima upoznati kroz prezentaciju prije izlaska na teren koji je trajao tjedan dana.

Dva su glavna cilja ostvarena, rekonstrukcija procesa, tehnika i alata za izgradnju prapovijesnog grobnog humka te sama izgradnja i prezentacija. Eksperiment se provodio na temelju znanja stečenih u višegodišnjim arheološkim istraživanjima prapovijesnih grobnih humaka na prostoru Parka prirode *Biokovo* (položaji Lokva, Podglogovik i Prisika) kao i izvedenim rekonstrukcijskim i prezentacijskim zahvatima na četirima takvim tumulima. Na prvom takvom zahvatu iz 2018. godine na tumulu poviše prijevoja Staza, na spoju Rodičeve i Biokovske ceste obnovljen je obodni prsten humka promjera 12 metara te dva grobišna unutrašnja prstena u kojima je bila po jedna kamena škrinja za ukop pokojnika. U jednu od škrinja postavljena je kopija ljudskog kostura položenog u zgrčeni položaj. Dva manja sepulkralna tumula promjera oko 5

In addition to the scientific and professional research of prehistoric tumuli on Biokovo, an important segment of the research is the restoration of the investigated tumuli in order to return them to their original state, to revitalize them, but also to present and interpret them to a wider group of users. The general goal of archaeology, reconstructing life in the past with a range of methods poorly available to other historical sciences, would be perversely elitist and isolated from the social community without dissemination to a wider audience. The huge number of tumuli found in the area of Biokovo surprised even good mountain connoisseurs, so it is necessary to revive them to give a new accent in the natural landscape and in the artificial, cultural landscape of a field of burial mounds. This would create a new, additional cultural and visual value. With these ideas, the restoration of the investigated tumuli started, adapting to each individual monument. Depending on the contents of the mounds, their preservation, the possibilities of reconstruction and the available

building material, the tumuli were restored and displayed in different, individual ways.

During June 2023, students and professors of the Department of Archaeology and the Department of Art History of the University of Zadar



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had field lessons in the course Introduction to Experimental Archaeology on Biokovo mountain at the Lokva site. All previous field knowledge was applied in the experiment, and the students were introduced to it through a presentation before going to the site for a week.

Two main goals were achieved, the reconstruction of the process, techniques and tools for the construction of a prehistoric burial mound, and the actual construction and presentation. The experiment was carried out on the basis of knowledge gained in many years of archaeological research of prehistoric burial mounds in the Biokovo Nature Park (locations Lokva, Podglogovik and Prisika) as well as reconstruction and presentation interventions on four such tumuli. In the first such intervention in 2018, the perimeter ring of the mound with a diameter of 12 meters and two inner burial rings, each containing a stone cist for the burial of the deceased, were restored on the tumulus above the Staza pass, at the junction of Rodičeva and Biokovska roads. A copy of a human skeleton laid in



Segment grobnog polja tumula na Biokovu (foto: arhiv projekta *DisKont*)
Segment of the burial field of tumuli at Biokovo (photo: archive of the *DisKont* project)

Položaj tumula kod Lokve tijekom istraživanja (foto: arhiv projekta Diskont)
Location of the tumulus near Lokva during the research (photo: archive of the Diskont project)





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 Detalj obnovljenog tumula na Stazi s plastičnim anatomskim kosturom u grobu 1 (foto: arhiv projekta *DisKont*)

 Detail of the restored tumulus on Staza with a plastic anatomical skeleton in grave 1 (photo: archive of the *DisKont* project)

metara, istražena su 2020. na položaju Prisika, na istočnom podnožju kote 920, a rekonstruirana i prezentirana iduće godine. Preko puta Rodičeve ceste prezentiran je još jedan veći tumul, čiji promjer iznosi 12 metara i u koji je ugrađeno oko 20 kubika kamene građe.

Tumul koji je tema ovog priloga nalazi se na Lokvi, kraj Planinarske kuće *Slobodan Ravlić* i ima dvije ukopne faze, primarnu iz razvijenog eneolitika i sekundarnu iz 14. stoljeća, s grobovima koji su na većoj visini. Bilo bi ih nemoguće rekonstruirati zajedno s dublje ukopanim prapovijesnim grobom pa je odlučeno da će tumul biti obnovljen tako da se vide ukopi iz 14. stoljeća, a stariji, prapovijesni, bit će prikazan i protumačen na edukacijskoj signalizaciji koja će uskoro biti postavljena. Taj prvotni tumul cetinske kulture bio je kameno-zemljani za razliku

.....
 Studenti i profesori na eksperimentalno podignutom tumulu na položaju Prisika (foto: arhiv projekta *DisKont*)
 Students and professors on the experimentally erected tumulus at the location of Prisika (photo: archive of the *DisKont* project)





od ostalih brončanodobnih i željeznodobnih tumula na Podglogoviku i Prisiki koji su sagrađeni isključivo od kamena. Tako je i rekonstruiran s obodnim prstenom podignutim u visinu do četiri reda kamena, dva srednjovjekovna groba s masivnim poklopnicama i nasipom od krupnog kamena, šljunka i zemlje. Za potrebe provedbe eksperimenta pripremljen je jednostavni alat, čekić i drvena nosiljka tzv. tralje (lat. *ferculae*). Taj nosač za teške terete napravljen je od grubo obrađenih dasaka i dviju gredica za ručke, a nosi se u paru. Čekić se upotrebljavao za minimalne intervencije na kamenu ugrađenom u obodni zid tumula, da bi se odlomili manji segmenti i površine kamena međusobno bolje sljubile. Taj tumul, iznova eksperimentalno izgrađen oblika je nepravilnog kruga i podignut je u visini 30 cm do pola metra na obodu. Iz bolje sačuvanih tumula na prostoru Biokova vidi se da je originalna visina cjelovitog tumula odgovarajućeg promjera mogla biti i nekoliko metara. U strukturu eksperimentalno izgrađenog humka integralno su ugrađeni skromni preostatci postojećeg originalnog prapovijesnog tumula, a veći dio građe prikupljen je ručno s okolnog krševitog terena ili u manjoj mjeri, odlomljen iz površinskih slojeva.

a crouched position was placed in one of the cists. Two smaller sepulchral tumuli with a diameter of about 5 meters were explored in 2020 at the location of Prisik, at the eastern foot of the topographic point 920. They were reconstructed and presented the following year. Across the street from Rodičeva road, another larger tumulus is presented, whose diameter is 12 meters and which was built of about 20 cubic meters of stone.

The tumulus that is the subject of this paper is located in Lokva, near the Slobodan Ravlić mountain hut and has two burial phases, the primary one from the Advanced Eneolithic and the secondary from the 14th century, with graves that are at a bigger height. It would be impossible to reconstruct them together with the deeper buried prehistoric grave, so it was decided that the tumulus will be restored so that burials from the 14th century can be seen, and the older, prehistoric ones will be displayed and interpreted on educational signage that will be installed soon. This original tumulus of the Cetina culture was made of stone and earth, unlike the other Bronze Age and Iron Age tumuli in Podglogovik and Prisika, which were built exclusively of stone. This is how it was reconstructed with a perimeter ring raised to the height of four rows of



Students carry a heavy load in a litter (foto: arhiv projekta DisKont)
Students carry a heavy load in a litter (photo: archive of the DisKont project)



Podizanje obodnog zida tumula (foto: arhiv projekta DisKont)
Erecting the perimeter wall of the tumulus (photo: archive of the DisKont project)



Prijenos teških kamenih poklopnica za srednjovjekovne grobove (foto: arhiv projekta DisKont)
Transfer of heavy stone lids for medieval graves (photo: archive of the DisKont project)





Ipak, kamen se na Biokovu svakako trebao lomiti, obraditi i transportirati, barem za izgradnju grobnih škrinja s poklopicama, što je zahtijevalo poznavanje vještina obrade kamena.

Iako postoje općenite pretpostavke o društvenom raslojavanju tijekom brončanog doba, u ovom trenutku istraživanja teško je govoriti o raspodjeli djelatnosti među članovima biokovskih zajednica i o mogućnosti da je pojedincima primarni posao bio upravo izgradnja tumula. U sklopu eksperimenta koji smo u nekoliko istraživačkih kampanja proveli zajedno sa studentima arheologije Sveučilišta u Zadru pouzdano možemo reći da je za gradnju jednog tumula promjera oko 12

stones, two medieval graves with massive lids and an embankment made of large stones, gravel and earth. For the purposes of conducting the experiment, simple tools were prepared: a hammer and a wooden litter (Lat. *ferculae*). This heavy load carrier is made of rough-hewn planks and two billets for handles, and is carried in pairs. The hammer was used for minimal interventions on the stone embedded in the perimeter wall of the tumulus, in order to break off smaller segments and make the stone surfaces fit together better. This tumulus, experimentally built anew, has an irregular round shape and is raised at a height of 30 cm to half a meter on the perimeter. From the better-pre-



Tumul je predstavljen i kroz postavu prezentacijskog centra Parka prirode Biokovo u Župi (foto: arhiv projekta DisKont)
The tumulus is also presented through the display of the presentation center of Biokovo Nature Park in Župa (photo: archive of the DisKont project)

metara i visine do 3 metra, s jednim ukopom u tjemenu, uz pretpostavku da se sirovinom opskrbljujete iz neposredne blizine, trebalo petnaest dana intenzivnog rada grupe od šest ljudi. Takav eksperiment podrazumijevao je i primjenu starih alata te poznavanje principa slaganja kamena tehnikom suhozida. Dužina trajanja gradnje i pripreme grobnog mjesta za ukop pokojnika otvara

served tumuli in the area of Biokovo, it can be seen that the original height of a complete tumulus of the appropriate diameter could have been several meters. The modest remains of the existing original prehistoric tumulus were integrally incorporated into the structure of the experimentally built mound, and most of the material was collected by hand from the surrounding rugged terrain or, to a lesser extent, broken off from the surface layers. Nevertheless, the stone at Biokovo definitely had to be broken, shaped and transported, at least for the construction of burial cists with lids, which required certain stonemasonry skills.

Although there are general assumptions about social stratification during the Bronze Age, at this point in the research it is difficult to talk about the distribution of activities among the members of the Biokovo communities and the possibility that the primary job of individuals was the construction of tumuli. As part of the experiment that we conducted in several research campaigns together with the archaeology students of the University of Zadar, we can reliably say that for the construction

Planinari kraj eksperimentalno obnovljenog tumula kod Lokve (foto: arhiv projekta DisKont)
Mountaineers near the experimentally restored tumulus near Lokva (photo: archive of the DisKont project)





pitanje o kulturnoj praksi i pogrebnim ritualima koji su pratili cjelokupan proces sahrane, od trenutka smrti i pripreme pokojnika za polaganje u kame-
nu grobnu škrinju do slaganja kamenog grobnog humka. Odgovore na to pitanje može dati samo rekonstrukcija poznatih radnji povezanih s grad-
njom tumula te pokušaj odgonetanja njihova du-
bljeg transcendentalnog značenja.

Prikupljeni materijal sabirao se na gomile tamo gdje je prikupljan, tu se prekravao u tralje, preno-
sio i nasipao na rastuću gomilu. Tumul je obrubljen prstenom od krupnijeg neobrađenog ili grubo
obrađenog kamena koji je izgrađen u tehnici su-
hozida. Kamenje se pažljivo složilo tako da je ho-
rizontalna površina uvijek blago nagnuta prema
središtu gomile. Zahvaljujući tom nagibu, gravita-
cijskom pritisku gornjih slojeva kamena i trenju,
izbjegnuta je mogućnost klizanja kamena prema
van, tj. urušavanja obodnog zida. Struktura obod-
nog zida dodatno je učvršćena umetanjem sitnijeg
kamenja u šupljine između krupnijih stijena. Nasu-
to kamenje različitog je profila, prosječnog promje-
ra od 10 do 40 cm. Površina prezentiranog tumula
zasuta je slojem zemlje koji su kiše naknadno, kao
što smo i očekivali, sabile u kamenu nasip. Za poklo-
pnice dvaju srednjovjekovnih grobova prikuplje-

of one tumulus with a diameter of about 12 meters
and a height of up to 3 meters, with one burial in
the crown, assuming that the raw material is sup-
plied from the immediate vicinity, it took fifteen
days of intensive work by a group of six people.
Such an experiment included the use of old tools
and knowledge of the principles of stacking stone
using the dry stone wall technique. The duration of
the construction and preparation of the grave site
for the burial of the deceased raises the question
of the cult practice and funeral rituals that accom-
panied the entire burial process, from the moment
of death and the preparation of the deceased for
laying in the stone burial cist to the stacking of the
stone burial mound. The answers to these ques-
tions can only be given by the reconstruction of
the known actions connected with the construc-
tion of the tumulus and an attempt to figure out
their deeper transcendental meaning.

The material was gathered in piles where it was
collected, there it was loaded onto a litter, trans-
ported and unloaded onto the growing pile. The
tumulus is surrounded by a ring of larger un-
worked or rough-worked stones that was built us-
ing the dry stone wall technique. The stones were
carefully arranged so that the horizontal surface is

no je pločasto masivno kamenje težine i do 160 kg,
ručno preneseno s položaja udaljenih između 100
i 500 m.

Tumul se nalazi na izoliranom položaju, izvan
naselja, stoga je bilo potrebno pripremiti cijelu
logistiku kako bi se eksperimentalno obnovio i
prezentirao. Cijeli je proces fotografski dokumen-
tiran s površine i zračnim snimanjem iz drona.
Pripremljeni su tekstovi i fotografije za informa-
tivne ploče koje će postaviti Park prirode *Biokovo*,
a cijeli proces bit će opisan i objavljen u stručnoj
literaturi, tako da je cijeli eksperiment zaokruže-
na cjelina. Rekonstruirani tumul na Lokvi proširit
će kulturološku i turističku ponudu Parka prirode
Biokovo.

always slightly inclined towards the center of the
pile. This slope and the gravitational pressure of
the upper layers of stone and friction prevented
the possibility of the stone sliding outwards, i.e. the
collapse of the perimeter wall. The structure of the
perimeter wall was additionally strengthened by
inserting smaller stones into the cavities between
larger rocks. The loose stones are of different pro-
files, with an average diameter of 10 to 40 cm. The
surface of the presented tumulus is covered with a
layer of soil that the rains subsequently compacted
into a stone embankment, as we expected. Plate-
like massive stones weighing up to 160 kg were col-
lected for the lids of two medieval graves, manu-
ally transported from positions between 100 and 500
m away.

The tumulus is located in an isolated location,
outside the settlement, so it was necessary to pre-
pare the entire logistics in order to experimentally
restore and present it. The entire process was pho-
tographically documented from the surface and a
drone was used for aerial photography. Texts and
photos have been prepared for the information
boards that will be installed by Biokovo Nature
Park, and the entire process will be described and
published in professional literature, so that the en-
tire experiment is a unified whole. The reconstruct-
ed tumulus on Lokva will expand the cultural and
tourist offer of Biokovo Nature Park.



... Hrbat Vič s kamenim tumulima sačuvanim u visini do 7 metara (foto: arhiv projekta DisKont)
... Ridge Vič with preserved stone tumuli up to 7 meters high (photo: archive of the DisKont project)





ISTRAŽIVANJE TREĆEG ANTIČKOG BRODA NA TRSTENIKU U KAŠTEL SUĆURCU

Research of the third Roman ship at Trstenik in Kaštel Sućurac

UVOD

Na nalazištu Trstenik u Kaštel Sućurcu, u plitkom se moru nalaze ostatci gospodarskog kompleksa iz rimskog doba, datiranog u vremensko razdoblje od kasne Rimske Republike do kasnog Carstva. Arheološka istraživanja započela su 2002. godine, vađenjem cjelovitog prošupljenog dolija, a uz kraće prekide, još su uvijek u tijeku. Godine 2006. uz jugozapadni kraj antičke operativne obale uočen je namjerno potopljen brod (Trstenik 1), a tijekom istraživanja 2020. godine uz njega su otkriveni ostatci još dvaju brodova (Trstenik 2 i Trstenik 3), također namjerno potopljenih kako bi se učvrstila konstrukcija operativne obale te zaštitila od vjetrova iz južnih kvadranta. U vremenu od 2012. do 2020. godine istraženi su ostatci broda Trstenik 1. Ostatci bro-

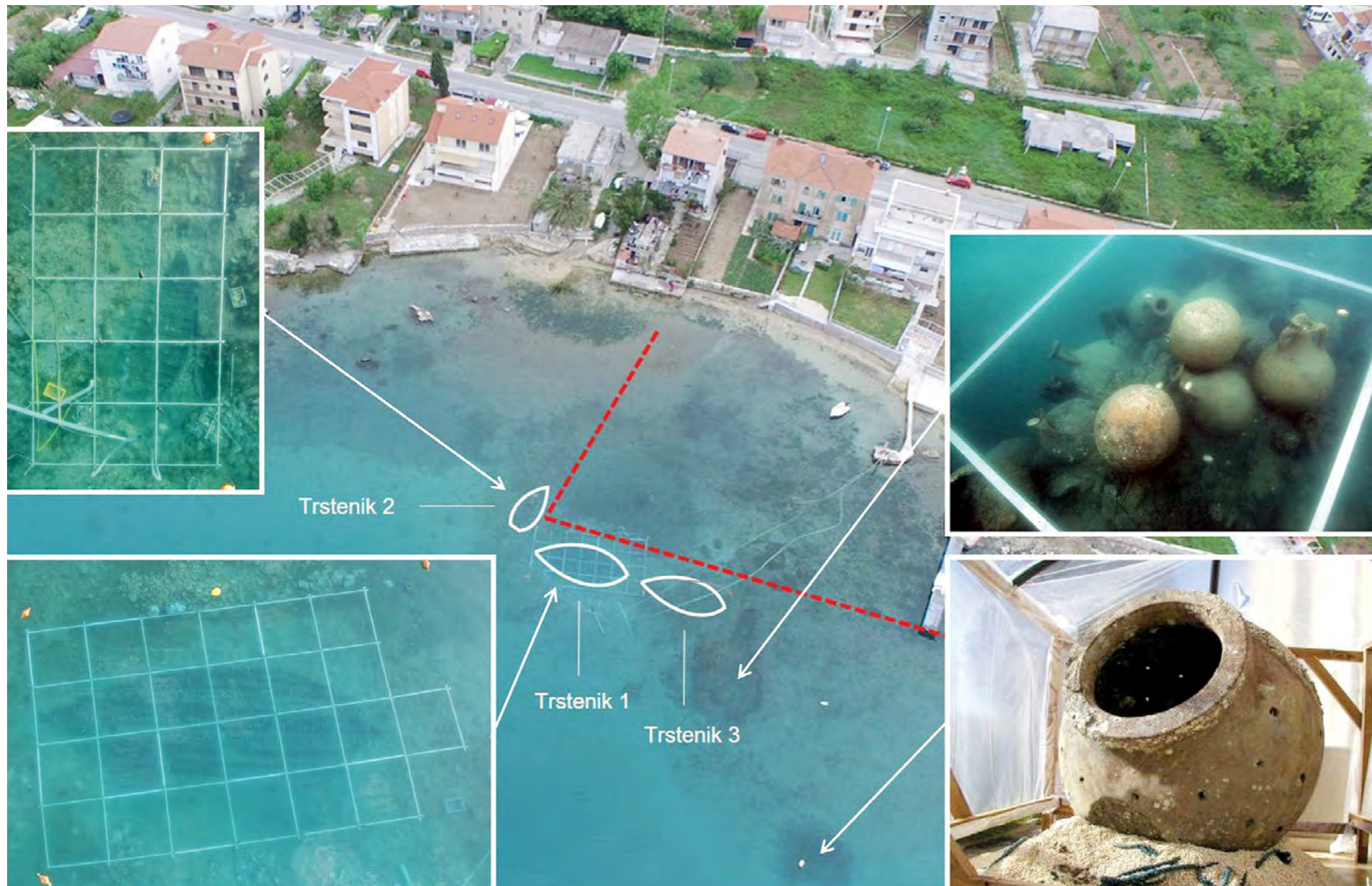
INTRODUCTION

Remains of a Roman-era agricultural estate dating from the late Roman Republic to the late Empire are noticeable in the shallow sea at the Trstenik site in Kaštel Sućurac. Archaeological research began in 2002, with recovering a complete perforated dolium, and it is still ongoing, with short interruptions. In 2006, a scuttled ship (Trstenik 1) was spotted near the southwestern end of the ancient operational waterfront, and during research in 2020, the remains of two more ships (Trstenik 2 and Trstenik 3) were discovered next to it, also scuttled in order to reinforce the construction of the operational waterfront and to protect it from the winds from the southern quadrants. Between 2012 and 2020, the remains of the ship Trstenik 1 were investigated.


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Položaj važnijih nalaza na nalazištu Trstenik u Kaštel Sućurcu (foto: I. Šuta)
Location of the most important finds at the Trstenik site in Kaštel Sućurac (photo: I. Šuta)

by the Ministry of Culture and Media of the Republic of Croatia, the Split-Dalmatia County, the Museum of the Town of Kaštela, the University of Zadar and the Maritime Heritage Institute ARS NAUTICA.¹ This year was marked by the beginning of systematic research of the ship Trstenik 3, and sampling of the wooden material of which the ship Trstenik 2 was made.

Systematic research of the ship Trstenik 3

The research began by stretching two ropes in the north-south and east-west directions, which marked the wooden structure of the operational waterfront. After that, the location of the ship Trstenik 3 and the places intended for the disposal of stones from the underwater excavation were marked with orange buoys. An auxiliary metal grid made of 2 x 6 squares, with overall dimensions of 4 x 12 m, was placed over the ship Trstenik 3. The temporary protection made with geotextiles, sediment and stones was removed from the ship, and then water dredges were placed over the grid.

The research of the ship Trstenik 3 began with the removal of large stones and sediment from its central part, lasting five working days. During the underwater excavation, visibility decreased significantly, which had a negative impact on the documentation of the work progress. After the stones were removed, the ship structure was roughly cleaned of the remaining sediment, partially marked and documented with photographs, photogrammetry, and drawing. The preserved length of the ship is about 11 m, and the largest preserved width is about 3.5 m.

For now, the keel, stern and sternpost, ship frames consisting of floor timbers or half frames

da Trstenik 2 istraženi su 2021. godine, a sljedeće godine provedeno je probno istraživanje broda Trstenik 3 (Radić Rossi, Šuta 2023). Ostaci broda tlocrtno su definirani i zaštićeni *in situ* do nastavka istraživanja.

The remains of the ship Trstenik 2 were investigated in 2021, and the following year a trial excavation of the ship Trstenik 3 was conducted (Radić Rossi, Šuta 2023). The remains of the ship were defined in ground plan and protected *in situ* until the research continues.

TIJEK I REZULTATI ISTRAŽIVANJA

Istraživačka kampanja 2023. provedena je u vremenu od 3. do 13. studenoga, a financirana je sredstvima Ministarstva kulture i medija RH, Splitsko-dalmatinske županije, Muzeja grada Kaštela,

THE COURSE AND RESULTS OF THE RESEARCH

The 2023 research campaign was conducted between November 3 and 13, and was financed

Sveučilišta u Zadru i Instituta za pomorsku baštinu ARS NAUTICA.¹ Ove je godine započelo sustavno istraživanje broda Trstenik 3, a na brodu Trstenik 2 provedeno je uzorkovanje drvene građe od koje je bila izrađena brodska konstrukcija.

¹ Uz autore teksta, u istraživanju su sudjelovali Alice Lucchini sa Sveučilišta u Zadru, Vedran Katavić i Dominik Žanić iz Muzeja grada Kaštela, Dušanka Romanović iz Arheološkog muzeja u Zadru, Deni Demetlika, Renata Zorkić i Helena Žigić, studenti Sveučilišta u Zadru, te profesionalni ronioci Vedran Dorušić i Marko Lete. Istraživanju su se pridružile i Afke van Zijverden, mag. arheologije iz Nizozemske te Jasmine Misfud i Mieke Kassulke, koje su arheologiju diplomirale na Sveučilištu na Malti.

¹ Along with the authors of the text, research team consisted of the following participants: Alice Lucchini from the University of Zadar, Vedran Katavić and Dominik Žanić from the Museum of the Town of Kaštela, Dušanka Romanović from the Archaeological Museum in Zadar, Deni Demetlika, Renata Zorkić and Helena Žigić, students of the University of Zadar, and professional divers Vedran Dorušić and Marko Lete. Afke van Zijverden, archaeologist from the Netherlands joined the research as well as Jasmine Misfud and Mieke Kassulke, who graduated in archeology from the University of Malta.





Čišćenje pramčanog dijela broda (foto: B. Vukičević)
Cleaning the bow part of the ship (photo: B. Vukičević)

Sustavno istraživanje broda Trstenik 3

Istraživanje je započelo razvlačenjem dvaju konopa u smjeru sjever-jug i istok-zapad, kojima je označena drvena konstrukcija operativne obale. Nakon toga, mjesto nalaza broda Trstenik 3 te mjesta predviđena za odlaganje kamenja iz podmorskog iskopa označena su narančastim bovama. Iznad broda Trstenik 3 postavljeno je pomoćno metalno mrežište sastavljeno od 2 x 6 kvadrata, sveukupnih dimenzija 4 x 12 m. S broda je uklonjena privremena zaštita napravljena pomoću geotekstila, sedimenta i kamenja, a potom su nad mrežište postavljene vodene sisaljke.

Istraživanje broda Trstenik 3 započelo je uklanjanjem velikog kamenja i sedimenta iz njegova središnjeg dijela, u trajanju od pet radnih dana. Za vrijeme podmorskog iskopa vidljivost se znatno smanjivala što je negativno utjecalo na dokumentiranje tijekom radova. Nakon uklanjanja kamenja brodska je konstrukcija grubo očišćena od preostalog sedimenta, djelomično označena i fotografski,

Ortogonalni prikaz broda Trstenik 3 iz virtualnog 3D modela (autor: A. van Zijverden)
Orthogonal view of the ship Trstenik 3 from a virtual 3D model (author: A. van Zijverden)



fotogrametrijski i nacrtno dokumentirana. Očuvana dužina broda iznosi oko 11 m, a najveća očuvana širina oko 3,5 m.

Za sada su posebnim oznakama označeni kobilica, pramčana i krmena statva, brodska rebra koja se sastoje od rebrenica ili polurebrenica i rebrenih nastavaka, proveze i bokoštavnice. Oplata broda nije označena jer će njezino označavanje uslijediti tijekom sljedeće istraživačke kampanje, kad bude provedeno detaljno čišćenje brodske konstrukcije. Osim toga, svjesno je izostavljeno i označavanje drvenih i metalnih čavala te drvenih čavlića koji pričvršćuju jezičce za platice brodske oplate, jer su zakovice kojima se oni označuju podložne koroziji pa bi do sljedeće godine izazvale veliku štetu na nalazištu. Tijekom istraživanja nalazište je u nekoliko navrata snimljeno iz zraka.

Od pokretnih nalaza pronađeno je tridesetak ulomaka amfora, tegula i keramičkog posuđa, među kojima vrijedi spomenuti jednu ručku hispanске amfore tipa Dressel 20. Te amfore prisutne su na nalazištu u većem broju, a vjerojatno su iskorištene za izgradnju manjeg mola namije-

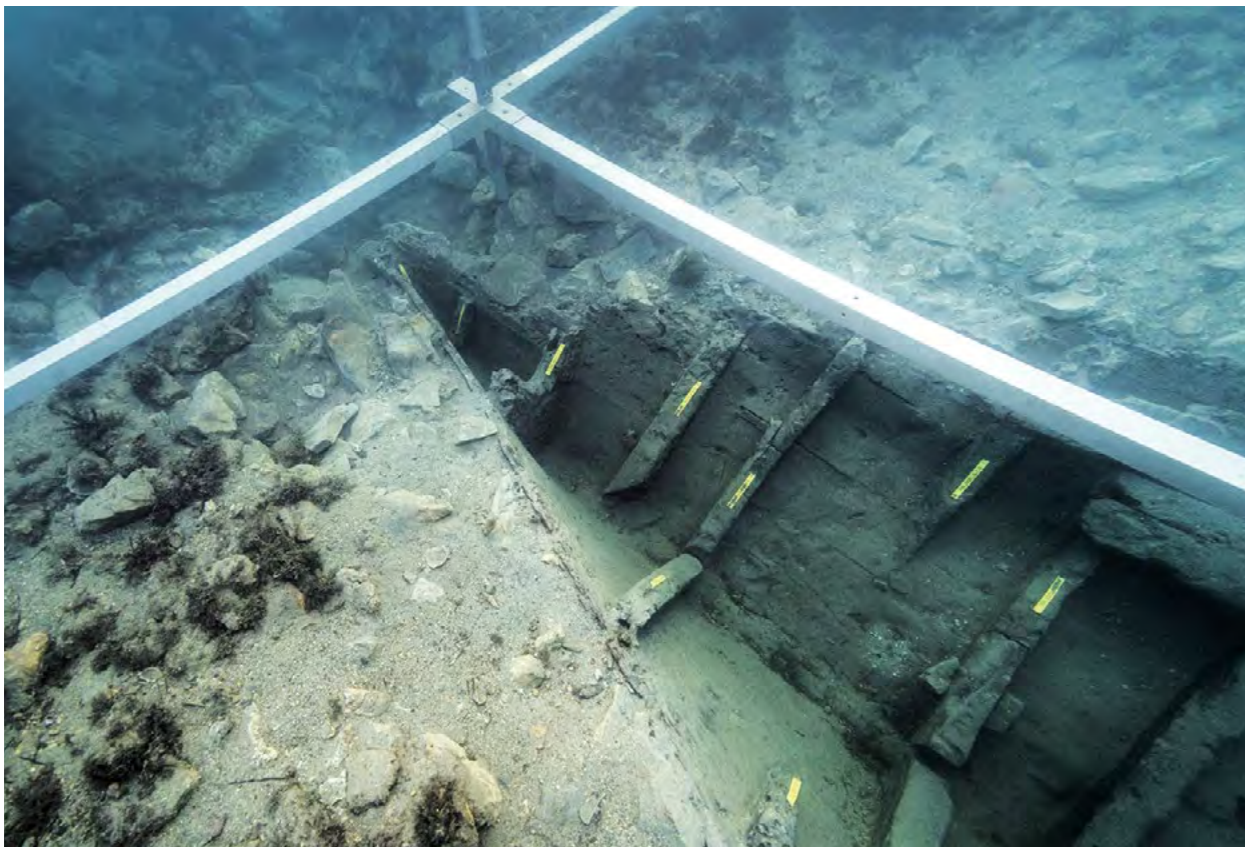
and futtocks, stringer and wale are marked with special markings. The planking was not marked, as it will be done during the next research campaign, when a detailed cleaning of the ship structure will be carried out. In addition, the marking of wooden and metal nails and wooden treenails that fasten the tenons to the planks was deliberately omitted, because the rivets used to mark them are subject to corrosion and would cause great damage to the site by the next year. During the research, the site was photographed from the air on several occasions.

Of the small finds, about thirty fragments of amphorae, tegulae and ceramic vessels were found, among which it is worth mentioning one handle of a Hispanic Dressel 20 amphora. These amphorae are present at the site in large numbers, and were probably used for the construction of a small pier intended for docking ships. There are also two fragments of a dolium rim, found in the northwestern part of the ship, that are particularly interesting. Unfortunately, it is not possible to conclude with certainty whether they were also used to fill the ship structure before sinking, or





Pogled iz zraka na nalazište tijekom istraživanja (foto: I. Šuta)
Aerial view of the site during research (photo: I. Šuta)



Pramčani dio broda (foto: B. Vukičević)
Bow part of the ship (photo: B. Vukičević)



Čišćenje središnjeg dijela broda (foto: B. Vukičević)
Cleaning the central part of the ship (photo: B. Vukičević)

njenog pristajanju brodova. Osim toga, ističu se i dva ulomka oboda dolija, pronađena u sjeverozapadnom dijelu broda. Nažalost, nije moguće sa sigurnošću zaključiti jesu li i oni iskorišteni za ispunu brodske konstrukcije prije potapanja ili su se na tome mjestu našli u sekundarnom položaju nakon napuštanja gospodarskog kompleksa.

Uzorkovanje broda Trstenik 2

Usporedno s istraživanjem broda Trstenik 3, ponovno su otkriveni ostatci broda Trstenik 2 koji je bio privremeno zaštićen na morskome dnu, u očekivanju odluke hoće li se izvaditi iz mora, konzervirati i izložiti u Muzeju grada Kaštela, ili ostaviti *in situ*. S obzirom na nedefiniranu situaciju, uzorkovanje elemenata drvene brodske konstrukcije nije provedeno tijekom sustavnog arheološkog istraživanja 2021. godine pa je odlučeno da se ono provede tijekom ovogodišnje istraživačke kampanje.

S broda je uklonjeno kamenje, sediment i geotekstil, a potom su izmještene i vrećice pijeska kojima je brodska konstrukcija bila u potpunosti prekrivena. Osim toga, iz mora su izvađeni svi elementi koji su 2021. godine bili dokumentirani na kopnu, nakon čega su umotani u geotekstil i pohranjeni uz ostatke broda. Svi su oni sustavno uzorkovani, nakon čega se pristupilo i sustavnom uzorkovanju elemenata brodske konstrukcije, ostavljenih *in situ*. Uzorkovana je kobilica, krmena statva, pramčano ogledalo, rebrenice i rebreni nastavci rebara od F1 do F14, platice od P1 do P34, razma i konstruktivni element nad razmom te četiri neidentificirana elementa. Osim toga, uzorkovani su i jedan jezičac, jedan drveni čavlič te jedna daska konstrukcije operativne obale. Analize uzoraka provest će Alice Lucchini u Laboratoriju za dendrokronologiju Instituta za bioekonomiju talijanskog Nacionalnog centra za znanstvena istraživanja (CNR).

Ponovno oslobođen pristup brodu iskorišten je za dokumentiranje kobilice i još nekoliko zanimljivih detalja. Po završetku uzorkovanja brodska je konstrukcija zasuta sedimentom i prekrivena vrećicama s pijeskom, nakon čega je nad nju postavljen geotekstil, pokriven slojem većeg kamenja koje prati oblik potopljenog broda. Čitav posao obavljen je tijekom prvog dijela istraživanja broda Trstenik 3.

they ended up in that place in a secondary position after abandonment of the agricultural estate.

Sampling of the ship Trstenik 2

Parallel to the research of the ship Trstenik 3, the remains of the ship Trstenik 2, which was temporarily protected on the seabed, were uncovered, pending a decision on whether to recover it, preserve it and display it in the Museum of the Town of Kaštela, or leave it *in situ*. Due to the undefined situation, the sampling of the elements of the wooden ship structure was not carried out during the systematic archaeological research in 2021, so it was decided to do it during this year's research campaign.

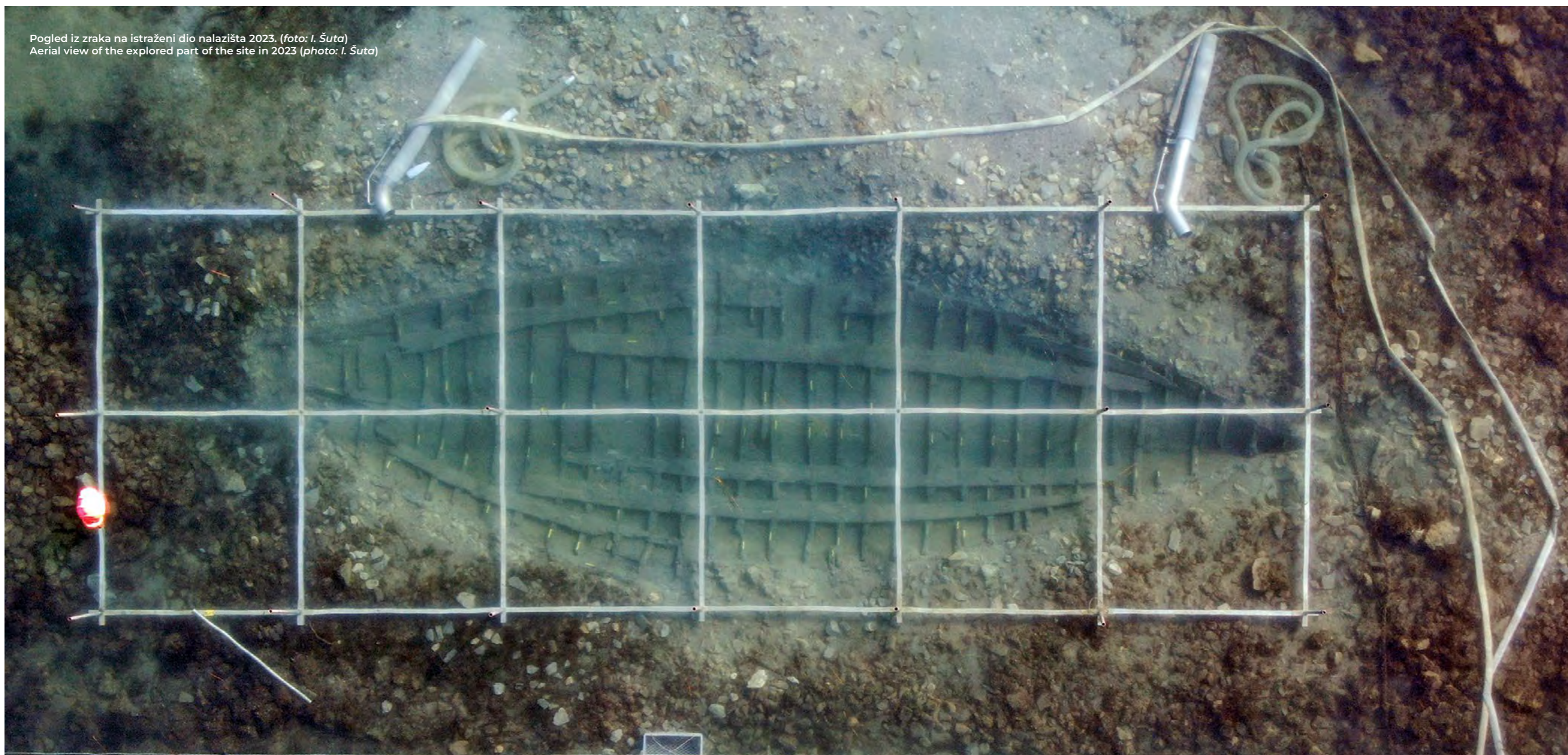
Stones, sediment and geotextile were removed from the ship, and then sandbags were moved, which completely covered the ship structure. In addition, all the elements that were documented on land in 2021 were taken out of the sea, after which they were wrapped in geotextile and stored next to the remains of the ship. All of them were systematically sampled, after which systematic sampling of the ship structure elements, left *in situ*, started. The keel, sternpost, transom bow, floor timbers and futtocks of frames from F1 to F14, planks from P1 to P34, sheer strake and structural element above the it and four unidentified elements were sampled. Furthermore, one tenon, one wooden nail and one board of the operational waterfront structure were also sampled. Sample analyses will be conducted by Alice Lucchini at the Laboratory of Dendrochronology of the Bioeconomy Institute of the Italian National Center for Scientific Research (CNR).

Once again, the free access to the ship was used to document the keel and a few other interesting details. At the end of the sampling, the ship structure was filled with sediment and covered with sandbags, after which geotextile was placed over it, covered with a layer of larger stones that outline the contours of the sunken ship. The entire work was done during the first part of the research of the ship Trstenik 3.

CONCLUSION

Although it lasted only eleven days, the research campaign in 2023 resulted in the discov-





Pogled iz zraka na istraženi dio nalazišta 2023. (foto: I. Šuta)
Aerial view of the explored part of the site in 2023 (photo: I. Šuta)

ZAKLJUČAK

Iako je trajala samo jedanaest dana, istraživačka kampanja 2023. rezultirala je otkrivanjem cjelokupnih ostataka broda Trstenik 3. Iz broda je izvađeno kamenje kojim je bio ispunjen prije potapanja, a potom je uklonjen i ostatak sedimenta. Kako detaljno čišćenje nije provedeno, označeni su samo kobilica, statve, rebra, proveze i bokoštitnice, a ostatak oznaka postaviti će se tijekom iduće istraživačke kampanje. Za sljedeću godinu planira se detaljnije očistiti i označiti brodska konstrukcija, proučiti njezini detalji, a potom ukloniti proveze kako bi se dokumentirala i situacija bez tih elemenata koji mjestimično

ery of the complete remains of the ship Trstenik 3. The stones with which it was filled before sinking were removed from the ship, and then the rest of the sediment was removed. As detailed cleaning was not carried out, only the keel, posts, frames, stringers and wales were marked, and the rest of the tags will be placed during the next research campaign. For the next year, it is planned to clean and mark the ship structure more thoroughly, to study its details, and then to remove the stringers to document the situation without these elements, which in places cover the joints of the frame components. The research definitely needs to be continued because the re-

prekrivaju spojeve sastavnih dijelova brodskih rebara. Istraživanje je svakako potrebno nastaviti jer su ostatci broda tek privremeno zaštićeni geotekstilom i slojem kamenja, a dugoročna zaštita postaviti će se kad brod bude istražen u cijelosti.

mains of the ship are only temporarily protected with geotextile and a layer of stones, and long-term protection will be installed when the ship is fully explored.

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KOZJA PEĆ





Kozja peć je imponozantan speleološki objekt koji se nalazi na vrhu središnjeg dijela Dugog otoka, u blizini radarske postaje na Veloj straži. Objekt jednostavnog ovalnog oblika s dvanom dužine 40 m pod velikim otvorom, zapravo urušenim svodom pećine, krije ostatke ljudskih aktivnosti koje se u gotovo neprekinutoj stratigrafskoj sekvenciji mogu pratiti od antičkih sve do ranih prapovijesnih razdoblja (Vujević, Bodružić 2023). Tekuća godina označila je nastavak sustavnih istraživanja u pećini, a kao i kod protekle kampanje ona su provedena u sklopu projekta EpiC Hrvatske zaklade za znanost (IP-2019-04-6115).

U prošloj kampanji dosegnuta je dubina od 90 cm i definirano je 12 razina. U ovoj smo kampanji definirali još 11 različitih hodnih površina koje se u gotovo pravilnom nizu tankih slojeva gareži i zemlje protežu sve do 135-140 cm dubine. Facijesi tzv. „slojevitih torta“ koji se po sastavu mogu interpretirati kao posljedica cikličkog spaljivanja stajskog otpada nižu se bez vidljivog hijatusa u stratigrafiji (Boschian 2006: 157). Ovakva sedimentologija slojeva, uz nalaze kostiju ovicaprida, govori da se Kozja peć još od prapovijesnih razdoblja sezonski upotrebljavala

Kozja peć is an impressive speleological structure located on the top of the central part of the island of Dugi otok, near the radar station on Vela straža. A simple oval-shaped structure with a 40 m long hall under a large opening, actually a collapsed cave vault, hides the remains of human activities that can be traced in an almost uninterrupted stratigraphic sequence from ancient times to the early prehistoric periods (Vujević, Bodružić 2023). The current year marked the continuation

of systematic research in the cave, and as with the previous campaign, they were carried out as part of the EpiC project of the Croatian Science Foundation (IP-2019-04-6115).

In the last campaign, a depth of 90 cm was reached and 12 levels were defined. In this campaign, we have defined another 11 different walking surfaces, which in an almost regular series of thin layers of soot and soil extend up to a depth of 135-140 cm. The so-called “layer-cake” facies that can be interpreted as a consequence of the cyclic burning of stable waste shows no visible hiatus in the stratigraphy (Boschian 2006: 157). This type of sedimentology of the layers, together with the findings of ovicaprid bones, in-



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Arheološko iskopavanje (foto: M. Grgurić Srzentić)
Archaeological excavation (photo: M. Grgurić Srzentić)

gotovo uvijek za istu namjenu, tj. za čuvanje stada ovaca i koza.

Nakon što smo u prošloj kampanji istražili antičke razine, došlo je vrijeme da zavirimo malo u prapovijesne slojeve. Unatoč velikom otvoru, niska stopa sedimentacije zadržala je teren gotovo u stanju kakvom smo ga ostavili, izuzev mahovine koja je prekrila istočni profil i veći dio površine te pčela samica koje su, srećom za nas, za svoja gnijezda izbušile isključivo površinski sloj.

Arheološki se konteksti nastavljaju kao u protekloj kampanji. Većinu hodnih površina čini sloj pepela ili tanki sloj narančaste zemlje isprekidan brojnim manjim mrljama tamnosmeđe zemlje koje nastaju kao posljedica gorenja površine. Svaka razina, svaka kratkotrajna ljudska aktivnost u pećini, u stratigrafiji je izražena na gotovo identičan način. Pa ipak, pećina nije korištena bez intervencija. Ostatci rupa za kolce ili kamenje u nizu svjedoče o postojanju struktura koje su dijelile ili ogradile određeni prostor. Jedna od takvih pronađena je na dubini od 105 cm. Tanki sloj narančaste zemlje isprekidan brojnim manjim mrljama tamnosmeđe zemlje na sjevernom je rubu prekinut kanalom

širine 50-70 cm ispunjenim crvenicom i amorfnim kamenjem. Veći dio tog kamenja posljedica je urušavanja suhozidne konstrukcije koja je ostala vidljiva u profilu. Struktura je sačuvana u dužini od 130 cm i visini od 45 cm, slagana u najmanje dva reda kamena. Samo slaganje nije najidealnije pa struktura nema izraženo lice. No sudeći po recentnijim suhozidima u pećini, to nije bilo ni

dicates that Kozja peć was used seasonally almost always for the same purpose, i.e. for penning flocks of sheep and goats, since prehistoric time.

After we had investigated the levels dating to antiquity in the last campaign, it was time to take a peek into the prehistoric layers. Despite the large opening, the low rate of sedimentation kept the

terrain almost as we left it, except for the moss that covered the eastern profile and most of the surface, and the mason bees that, luckily for us, drilled only the surface layer for their nests.

Archaeological contexts continue as in the previous campaign. Most of the walking surfaces consist of a layer of ash or a thin layer of orange soil interspersed with numerous smaller patches of dark brown soil that are formed as a result of burning the surface. Each level, each short-term human activity in the cave, is expressed in the stratigraphy in an almost identical way. And yet, the cave was not used without interventions. Remains of post-holes or stones in a row testify to the existence of structures that divided or fenced off a certain space. One of these was found at a depth of 105 cm. A thin layer of orange soil interspersed with numerous smaller

patches of dark brown soil on the northern edge is interrupted by a channel, 50-70 cm wide, filled with red clay and amorphous stones. Most of these stones are the result of the collapse of the dry stone wall construction, which remained visible in profile. The structure has been preserved in a length of 130 cm and a height of 45 cm, arranged in at least two rows of stones. The stacking itself is far from per-



Prapovijesne razine Kozje peći (foto: M. Grgurić Srzentić)
Prehistoric levels of Kozja peć (photo: M. Grgurić Srzentić)





potrebno da bi struktura uspješno stajala. U crvenici je pronađeno nekoliko ulomaka grube, brončanodobne keramike, kao i komad kozjeg roga s tragovima rezanja.

Slična situacija nalazi se i na posljednjoj istraženoj razini, samo što struktura nije vidljiva isključivo u profilu sonde, nego se njezini obrisi jasno vide unutar istraživačkog prostora. Suhozidni objekt četvrtastog tlocrta, s ulazom na zapadnoj strani ograđuje podnicu od nabijene zemlje koja se jasno razlikuje od sloja izvan objekta, kojeg većinom čini pepeo. Objektu možemo pripisati jamu ispunjenu pijeskom, kružnog tlocrta promjera 70 cm, sačuvanu uz istočni profil, a koja bi dimenzijama i sastavom zapune mogla odgovarati jamama za skladištenje hrane po sistemu trapa.

U navedenom nizanju gotovo identičnih hodnih površina odstupanja se događaju samo uz rub pećine gdje se već konstantno pojavljuje uska traka rahle smeđe zemlje. Ona je posljedica blizine ruba pećine i zakošenosti njezinih zidova što vjerojatno ne dopušta da se sloj formira na način kakav je u ostatku istraživačkog prostora. Voda koja je formirala obližnji stalagmit također je utjecala na ovakvo stanje. U rahlom sloju pronalazimo malu količinu nalaza koji karakteristikama ne odstupaju od onih na ostatku istraživačkog prostora. Većinom je riječ o ulomcima brončanodobne keramike uključujući nekoliko ulomaka fine, crnoglačane keramike s tankim stijenjkama koje pripadaju manjim posudama S-profila. No pronađeni su i nalazi koje rjeđe pronalazimo na arheološkim nalazištima ovog vremena; keramički kalem i keramička žlica.

Stratigrafski slijed, kao i arheološki materijal, već je na prvi pogled upućivao na kasna razdoblja prapovijesti, a dijagnostički ulomci pokazuju da je riječ o brončanom dobu. Iznenaduje nedostatak arheoloških konteksta iz željeznog doba, prije svega što nema vidljivih hijatusa u stratigrafiji. No to se može objasniti već spomenutom niskom stopom sedimentacije pri čemu su čak i duže faze nekorištenja pećine ostavljale malo tragova u uslojavanju, koji su se lako stopili s fazama paljenja i čišćenja površine tijekom vremena ljudskog boravka u pećini kada je sedimentacija ipak izraženija.

Nalazima dominiraju keramički ulomci i kosti domaćih životinja. Unatoč fragmentiranosti ke-

fect, so the structure does not have a distinct outer face. But judging by the more recent dry stone walls in the cave, this was not even necessary for the structure to stand successfully. Several sherds of coarse Bronze Age pottery were found in terra rossa, as well as a piece of goat horn with cutmarks.

ramičkog korpusa, preliminarna analiza lončarije upućuje na dominaciju posuđa zaobljenog profila s vratom koji je katkad u profilu naglašeno odvojen i zaobljenim obodom izvijenim prema van te kalotastih zdjelica sa zaravnanim obodom. Posude su gotovo isključivo imale vertikalne ručke,

A similar situation is also found at the last investigated level, only that the structure is not visible only in the profile of the trench, but its outlines are clearly visible within the research area. A dry stone wall structure with a square floor plan, and an entrance on the west side, encloses a floor made of



Pregledavanje depozita (foto: M. Grgurić Srzentić)
Screening the deposit (photo: M. Grgurić Srzentić)





i to one trakaste ili trokutaste. Ukrašavanje je za-
bilježeno rijetko, na manjem postotku posuda, i
izvedeno urezivanjem/udubljivanjem, plastičnim
oblikovanjem ili kombinacijom navedenih tehni-
ka. Istovremeno treba naglasiti da je u većoj mjeri
primjetna pažljiva obrada površina posuda koje

rammed earth that is clearly different from the lay-
er outside the structure, which mostly consists of
ash. We can attribute to the structure a pit filled
with sand, with a circular plan with a diameter of
70 cm, preserved along the eastern profile, and the
dimensions and composition of the fill could cor-

su često pažljivo glačane ili čak polirane do viso-
kog sjaja. Makroskopskim uvidom uočljiva je veća
količina i ravnomjerna prisutnost usitnjenih mine-
ralnih inkluzija u glinovitoj smjesi. Sve navedene
dijagnostičke karakteristike uobičajene su za ke-
ramografiju kasnog brončanog doba što se pokla-

respond to pits for storing food in accordance with
the root cellar system.

In the aforementioned sequence of almost iden-
tical walking surfaces, deviations occur only along
the edge of the cave, where a narrow strip of loose
brown soil constantly appears. It is a consequence
of the proximity of the edge of the cave and the
slope of its walls, which probably does not allow
the layer to form in the way it does in the rest of the
research area. The water that formed the nearby
stalagmite also influenced this state. In the loose
layer, we find a small amount of finds that do not
differ in characteristics from those in the rest of the
research area. Most of them are sherds of Bronze
Age pottery, including a few sherds of fine, black-
glazed, thin-walled pottery belonging to small-
er S-profile vessels. However, there were also rare
finds at archaeological sites dating to this period; a
ceramic spoon and a ceramic spoon.

The stratigraphic sequence, as well as the archae-
ological material, already at first glance suggested
the late periods of prehistory, and the diagnostic
fragments indicated the Bronze Age. The lack of ar-
chaeological contexts from the Iron Age is surpris-
ing, above all because there are no visible hiatuses
in the stratigraphy. But this can be explained by
the already mentioned low rate of sedimentation,
where even longer phases when the cave was out
of use left few traces in the stratification, which eas-
ily merged with the phases of burning and cleaning
the surface during the time of human stay in the
cave when sedimentation was more pronounced.

The finds are dominated by pottery sherds and
bones of domestic animals. Despite the fragmenta-
tion of the ceramic finds, a preliminary analysis of
the pottery suggests the predominance of vessels
with a rounded profile, a neck that is sometimes
distinctly separated in profile and a rounded rim
curved outwards; and calotte-shaped bowls with
a flattened rim. The vessels almost exclusively had
vertical handles, the strap or triangular ones. Deco-
ration was recorded rarely, on a smaller percentage
of vessels, and was performed by incising/impress-
ing, plastic modeling or a combination of the afore-
mentioned techniques. At the same time, it should
be emphasized that the careful treatment of the
surfaces of the vessels is noticeable in a number
of examples, which are often carefully smoothed



Zapadni profil (foto: M. Grgurić Srzentić)
Western profile (photo: M. Grgurić Srzentić)





... Izrada terenske dokumentacije (foto: M. Grgurić Srzentić)
... Documenting the excavation (photo: M. Grgurić Srzentić)

pa s kronološkim okvirom (1380-1120 kal. god. pr. Kr.) dobivenim radiokarbonskim analizama na većem broju uzoraka izdvojenih iz nekoliko depozita istraženih u ovoj kampanji.

or even polished to a high gloss. A macroscopic inspection reveals a larger amount and uniform presence of crushed mineral inclusions in the clayey mixture. All the mentioned diagnostic characteristics are common for the Late Bronze Age pottery, which corresponds to the chronological framework (1380-1120 cal. years BC) obtained by radiocarbon analyses on a large number of samples taken from several deposits investigated in this campaign.

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SVETI IVAN U STIVANJEM POLJU NA DUGOM OTOKU

Church of St. John in Stivanje polje on Dugi otok

Potopljena sinklinala na jugoistočnoj strani Dugog otoka predstavlja uvalu koja se gotovo osam kilometara uvukla u kopno i tako, u igri kopna i mora, uzvisina i udolina, stvorila predivan krajolik koji je zaštićen 1980. godine u okviru NP-a *Kornati*, a osam godina poslije proglašen je Parkom prirode *Telašćica*. Uz tu jedinstvenu prirodnu uvalu, koja je pružala sigurnost ribarima u prošlosti i nautičarima u sadašnjosti, tu je tektonskim rasjedima i abrazijom mora oblikovan strmace slano jezero Mir, koji predstavljaju temeljne fenomene parka prirode. No ljepote i zanimljivosti ovog dijela Dugog otoka sigurno se ne zaustavljaju samo na njima.

U davna i ne tako davna vremena, kada turizam nije bio osnovna gospodarska grana jadranske Hrvatske, Stivanje polje izgledalo je sasvim drukčije od krške udoline prekrivene mediteranskom makijom kakva se danas prostire pred nama, i s tla i iz zraka. Uz sjeveroistočni rub polja, između lokve na sredini polja i suhozidnih objekata na padini brda Mrcinjaka (Orlić), na položaju Gruh, nalazi se crkva sv. Ivana po kojoj je polje i dobilo ime.

Arheološka istraživanja ovog sakralnog sklopa započeo je Ivo Petricioli 1951. godine, kada je proveo pokusno iskopavanje, a crkva je najvećim dijelom istražena 1956. i 1957. godine, dok su rezultati detalj-

The submerged syncline on the southeastern side of Dugi otok represents a bay that has made its way almost eight kilometers into the land and thus, in the play of land and sea, hills and valleys, created a beautiful landscape that was protected in 1980 within the Kornati National Park, and eight years later it was declared Telašćica Nature Park. In addition to this unique natural bay, which provided safety to fishermen in the past and boaters in the present, there is a cliff formed by tectonic faults and sea abrasion, and saltwater

lake Mir, which represent the main phenomena of the nature park. But the beauty and interesting things of this part of Dugi otok certainly do not stop there.

In ancient and not so ancient times, when tourism was not the main economic branch of Adriatic Croatia, Stivanje polje looked quite different, both from the ground and from the air, compared to the karst valley covered with Mediterranean maquis that stretches before us today. The church of St. John, after whom the field got its name, is located along the northeastern edge of the field, between the karst pond in the middle of the field and the dry stone wall structures on the slope of Mrcinjak (Orlić) hill, at the Gruh position.

Ivo Petricioli began the archaeological research of



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Telašćica i crkva sv. Ivana u prednjem planu, pogled sa sjeverozapada (foto: J. Šućur)
Telašćica and the church of St. Ivan in the foreground, view from the northwest (photo: J. Šućur)





this sacral complex in 1951, when he conducted a trial excavation, and the church was mostly explored in 1956 and 1957, while the results were published in more detail thirty years later (Petricoli 1987). Since then, the site has been cleared of vegetation several times in the volunteer actions of the local pastor and the parishioners, and conservation works were carried out on the church ruins in 1990, 1995 and 1996. Still, there is no report nor publication, so the scope of these works is not entirely clear.

In 2016, systematic research began in collaboration between the Telašćica Nature Park and the Department of Archaeology of the University of Zadar. For the most part, the research was financed by the Telašćica Nature Park, supported by Sali Municipality and the Tourist Board of Dugi otok. At the same time, the conservation and the 2018 archaeological campaign were funded by the Ministry of Culture. So far, six campaigns have been undertaken (the first three under the leadership of Josipa Baraka Perica, and the following three were led by Jure Šučur). In the first campaign, the research covered the area northwest of the church and the vestibule, and resulted in the discovery of parts of the Roman farming complex under the church and next to it, and two burial horizons - late antique/early medieval and late medieval. The investigation of one room of the ancient complex in that part was completed in 2017, and the area of the vestibule, mostly containing the remains of the hypocaust, was investigated almost completely. The arrangement of the columns, two ways of building the columns and two types of covering suggest two phases of functioning of the hypocaust, i.e. tepidarium above it. An opening was observed in the eastern wall, so it was assumed that there was a furnace that heated the air (*praefurnium*), which was confirmed in the 2018 campaign. That year, the front of the building was also explored, and the excavation was extended to the north and northwest. In 2019, the research campaign focused on two parts: the area of the nave and apse of the church and the area on the outside to the northwest of the church. Outside the church, a part of the necropolis was investigated, a total of 27 graves from the upper layer of the late medieval necropolis. After a two-year break, systematic archaeological research continued in 2022. That is when three more medieval graves were excavated as well

Stivanje polje s jugoistoka 2019. godine (foto: J. Šučur)
Stivanje polje from the southeast in 2019 (photo: J. Šučur)





nije objavljeni tridesetak godina poslije (Petricioli 1987). Lokalitet je više puta od tada čišćen od vegetacije u volonterskim akcijama lokalnog župnika i vjernika, a na ostacima crkve su tijekom 1990., 1995. i 1996. godine obavljani konzervatorski radovi, ali ne postoji izvještaj kao ni objava, pa nije posve jasan opseg tih radova.

Godine 2016. započela su sustavna istraživanja u suradnji Parka prirode *Telašćica* i Odjela za arheologiju Sveučilišta u Zadru. Većinom su financirana sredstvima Parka prirode *Telašćica*, uz potporu Općine Sali i TZ-a Dugi otok, dok je konzervacija obavljena sredstvima Ministarstva kulture (i arheološka kampanja 2018. godine). Dosad je poduzeto šest kampanja (prve tri pod vodstvom Josipe Barake Perice, a sljedeće tri Jure Šućura). U prvoj kampanji istraživanje je obuhvatilo prostor sjeverozapadno od crkve i predvorja, a rezultiralo je otkrićem dijelova rimskog gospodarskog sklopa ispod crkve i pored nje te dva vremenska horizonta ukopa – kasnoantičkog/ranosrednjovjekovnog i kasnosrednjovjekovnog. Istraživanje jedne prostorije antičkog kompleksa na tom dijelu dovršeno je 2017. godine, a gotovo u cijelosti je istražen prostor predvorja gdje veći dio zauzimaju ostatci hipokausta. S obzirom na raspored stupova, dva načina gradnje stupova i dvije vrste pokrova, pretpostavljene su dvije faze funkcioniranja hipokausta, odnosno tepidarija iznad njega. U istočnom zidu uočen je otvor pa je na tom dijelu pretpostavljeno postojanje peći koja je grijala zrak (*praefurnium*) što je potvrđeno u kampanji 2018. godine. Te godine istraživalo se i pred pročeljem objekta te se proširio i iskop prema sjeveru i sjeverozapadu. Godine 2019. istraživačka se kampanja usredotočila na dva dijela: prostor broda i apside crkve te prostor s vanjske strane sjeverozapadno od crkve. Tada je izvan crkve istražen dio nekropole, ukupno 27 grobova gornjeg sloja kasnosrednjovjekovne nekropole. Nakon dvogodišnje pauze sustavna arheološka istraživanja nastavljena su 2022. godine. Tada su istražena još tri srednjovjekovna groba te su definirane tri strane i pod jedne od prostorija rimskog gospodarskog sklopa, one sjeverozapadno od crkve, a u posljednjoj kampanji usredotočili smo se upravo na potpuno definiranje te prostorije, odnosno definiranje njezina sjeveroistočnog zida.

Istraživačke kampanje Odjela za arheologiju (izrada: J. Šućur)
Research campaigns of the Department
of Archaeology (made by: J. Šućur)

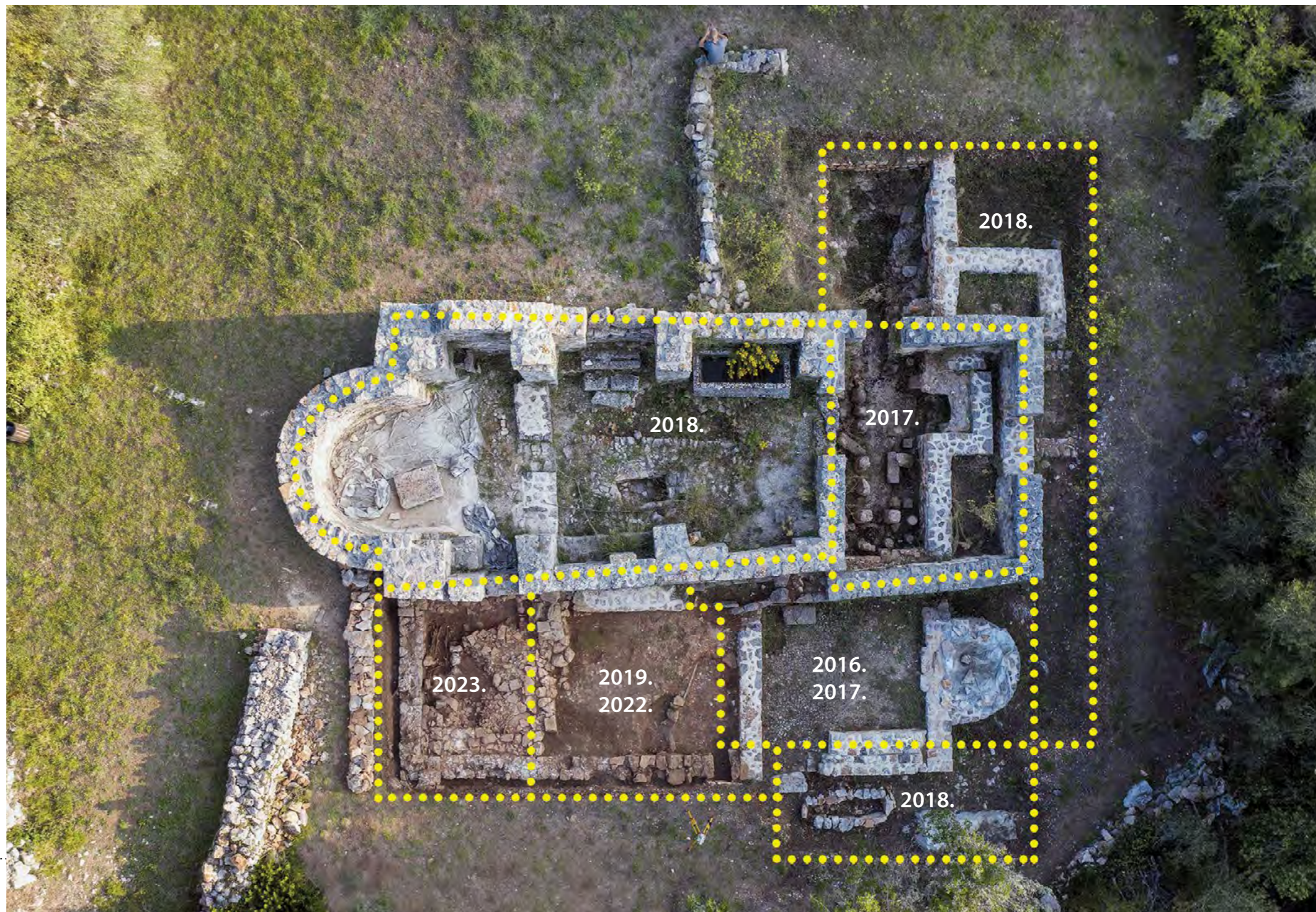
as three sides and the floor of one of the rooms of the Roman farming complex, the one northwest of the church. In the last campaign we focused on the complete definition of that room, i.e. the definition of its northeastern wall.

The 2023 campaign took place on two occasions: from August 31 to September 3, and from October 5 to 7. In addition to the leader of the research, the members of the expert team included Marina Šimičić, documentalist of the Department of

Kampanja 2023. godine odvijala se u dva navrata: od 31. kolovoza do 3. rujna, te od 5. do 7. listopada. Uz voditelja istraživanja, članove stručne ekipe činili su Marina Šimičić, dokumentaristica Odjela za arheologiju Sveučilišta u Zadru, te Jona Petešić, dipl. arheolog i prof. engleskog jezika i književnosti. Dio stručnih, kao i fizičke radove, obavili su studenti Sveučilišta u Zadru Ivana Josić, Agata Karan, Kristina Valjan, Martin Kuzman, Barbara Vujković uz manju pomoć volontera (Eugen Fritz Prgomet i Luka Rožek).

Archaeology of the University of Zadar, and Jona Petešić, archaeologist and professor of English language and literature. Part of the professional, as well as physical work, was done by the students of the University of Zadar Ivana Josić, Agata Karan, Kristina Valjan, Martin Kuzman, Barbara Vujković with a little help from volunteers (Eugen Fritz Prgomet and Luka Rožek).

We started the campaign to completely define the already mentioned room of the Roman farm-





... Istraživanje u teškim uvjetima (foto: J. Šučur)
 ... Excavation in difficult conditions (photo: J. Šučur)

U kampanju smo krenuli s namjerom potpunog definiranja već spomenute prostorije rimskog gospodarskog zdanja sjeverozapadno od broda crkve sve do razine žbukane podnice koja je vidljiva na prije istraženom dijelu. Istražena je površina prvotno zahvatila prostor sve do ramena apside, a kako je točno na rubu iskopa uočen sjeveroistočni zid prostorije, naknadno je proširena za još jedan metar. Istraživanje je provedeno na ukupno 16 m². Pri dizanju slojeva unutar prostorije dokumentirali su se slojevi i građevni elementi koji svjedoče o naknadnim promjenama nad razinom poda i dijelom zidova prostorije, a samo se mjestimično uočavao vapneni pod. Dio naknadnih intervencija neobrađenim kamenom unutar prostorije nije se zasad

ing complex northwest of the nave of the church up to the level of the plastered floor which is visible in the previously explored part. The investigated area initially covered the space up to the apse shoulder, and since the northeastern wall of the room was observed right at the edge of the excavation area, it was subsequently expanded by another meter. The research covered an area of 16 m². Prior to removing the layers inside the room, the layers and building elements were documented, which testify to the subsequent changes above the floor level and part of the walls of the room, and the lime floor was observed only in places. Some of the subsequent interventions with unworked stone inside the room have not been removed yet,

uklonio, no oni prekrivaju manji dio prostorije.

U svim su slojevima, od zatečene površine do podnice, uočeni ukopi, bez grobne arhitekture ili uz nemarno slaganje kamena oko pokojnika, kakvi su istraženi i na ostatku prostora sjeverozapadno od broda crkve. Ukupno je u ovoj kampanji istraženo pet grobova (dovršeno istraživanje groba 46, te novouočeni grobovi 49, 50, 51 i 52). Stratigrafski viši horizont grobova pripada kasnom srednjem vijeku, a na osnovi radiokarbonske analize više uzoraka možemo ih datirati u 14. stoljeće, dok rjeđi grobovi u nižim slojevima pripadaju razvijenom srednjem vijeku. Tako je pokojnik iz groba 52, koji je položen na podnicu uz sjeveroistočni zid prostorije, radiokarbonskom analizom datiran u vrijeme između 1042. i 1219. godine. Grob 49 predstavlja ukop djeteta, ali je loše očuvan. U preostalim grobovima ukopana je jedna (grobovi 50 i 52) ili više odraslih osoba (grobovi 51 i 46).

Pokretni nalazi sastoje se od brojnih ulomaka kasnoantičke keramike, školjaka, fragmenata ljudskih i životinjskih osteoloških ostataka, manje brojnih ulomaka stakla i metalnih predmeta (čavli, igla). Među njima izdvajaju se nalazi D-kopče, dviju karičica, krune prstena te dviju kovanica pronađenih izvan istraživanog prostora. Onu bolje očuvan

but they cover a smaller part of the room.

In all layers, from the surface to the floor, burials were observed, without grave architecture or with careless stacking of stones around the deceased, of the kind investigated in the rest of the area northwest of the nave of the church. In total, five graves were investigated in this campaign (completed investigation of grave 46, and newly observed graves 49, 50, 51 and 52). The stratigraphically higher horizon of the graves belongs to the Late Middle Ages, and based on the radiocarbon analysis of several samples we can date them to the 14th century, while scarcer graves in the lower layers belong to the High Middle Ages. Thus, the deceased from grave 52, who was laid on the floor next to the northeastern wall of the room, was dated between 1042 and 1219 by radiocarbon analysis. Grave 49 represents the burial of a child, but it is poorly preserved. One (graves 50 and 52) or more adults (graves 51 and 46) were buried in the remaining graves.

Small finds consist of numerous fragments of late antique pottery, shells, fragments of human and animal osteological remains, less numerous fragments of glass and metal objects (nails, needles). Among them, particularly interesting are the



... Dio grobova istražen u ovogodišnjoj kampanji (foto: J. Šučur)
 ... Some of the graves explored in this year's campaign (photo: J. Šučur)





... Završna situacija na kraju ovogodišnje kampanje (foto: J. Šučur)
... Final situation at the end of this year's campaign (photo: J. Šučur)

bilo je moguće determinirati u vrijeme Flavija Viktora (387. – 388.), a iskovana je u *Lugdunumu*, na prostoru današnjeg Lyona u Francuskoj.

Osim novih podataka o srednjovjekovnoj nekropoli, kampanja je donijela i nove podatke o rimskodobnom zdanju. U potpunosti je definiran opseg još jedne prostorije rimskog gospodarskog sklopa. Prostorija je funkcionirala na višoj razini od prostorije jugozapadno od nje, što odgovara padu terena od sjeveroistoka prema jugozapadu.

Sasvim će se sigurno istraživanja na ovom višeslojnom lokalitetu i dalje nastaviti, otkrivajući nove detalje iz prošlosti Telašćice i iznoseći na svjetlo dana opipljive tragove nekadašnjeg života na ovom dijelu Dugog otoka, stvarajući na taj način sponu između prošlosti i sadašnjosti.

finds of a D-buckle, two circlets, a ring bezel and two coins found outside the investigated area. The better-preserved one could be dated to the time of Flavius Victor (387-388), and it was minted in *Lugdunum*, in the area of present-day Lyon in France.

In addition to new information about the medieval necropolis, the campaign also brought new data about the Roman-era building. The scope of another room of the Roman farming complex is fully defined. The room functioned at a higher level than the room to the southwest of it, which corresponds to the fall of the terrain from the northeast to the southwest.

It is quite certain that research on this multi-layered site will continue, revealing new details from the past of Telašćica and bringing to light tangible traces of former life on this part of Dugi otok, thus creating a link between the past and the present.

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NASTAVAK ISTRAŽIVANJA BRODOLOMA KOD OTOČIĆA GNALIĆA (*GAGLIANA GROSSA*, 1583.)

Continuation of research
of the shipwreck at the islet
of Gnalić
(*Gagliana grossa*, 1583.)

UVOD

Otočić Gnalić nalazi se na jugoistočnom kraju otoka Pašmana, pred južnim ulazom u Pašmanski kanal. Godine 1967. u podmorju otočića službeno su evidentirani ostatci potonulog broda koji je tijekom istraživanja koja su uslijedila neposredno po otkriću datiran u kraj 16. stoljeća. Na nalazištu su provedena zaštitna istraživanja 1967., 1668., 1972. i 1973. godine, kad su s morskog dna podignute velike količine nalaza koji pripadaju brodskom teretu, naoružanju i opremi broda. Svi nalazi pohranjeni su u Zavičajnom muzeju Biograd na Moru. Godine 1996. istraživanje je

INTRODUCTION

The islet of Gnalić is located at the southeastern end of the island of Pašman, in front of the southern entrance to the Pašman Channel. In 1967, the remains of a sunken ship were officially recorded on the seabed off the islet. The ship was dated to the end of the 16th century, during the research that followed immediately after the discovery. Rescue research was carried out at the site in 1967, 1668, 1972 and 1973, when large quantities of finds belonging to the ship cargo, armament and equipment were raised from the seabed. All finds are stored in the Local Heritage Museum of



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nakratko obnovljeno, što je rezultiralo daljnjim otkrivanjem i vađenjem predmeta iz brodskog tereta. Nakon probnog istraživanja provedenog 2012. godine, kad je potvrđeno postojanje odlično očuvanih ostataka brodske konstrukcije i veće količine nalaza iz brodske opreme i tereta, istraživanje je poprimilo sustavni karakter i nastavilo se do danas (Radić Rossi 2023).

Tijekom dosadašnjih radova istražena je stražnja polovica broda, od krme prema središnjem dijelu u kojem se nalazi glavno rebro. Iskop po boku broda dosegao je razinu od oko 1 m nad prvom palubom. Prilikom uklanjanja većeg balastnog kamenja, uz kobilicu je otkriven kaljužni zdenac i donji dio kaljužne pumpe. U iskopu se i dalje pronalazi velika količina ingota olovnog bjele lila (olovni karbonat), pakiranog u male bačve, te brojni predmeti iz brodskog tereta, a u površinskom sloju na istočnom kraju nalazišta vidljiva je i

Biograd na Moru. In 1996, the survey was briefly renewed, resulting in further discovery and recovery of items from the ship cargo. After the trial research carried out in 2012, when the existence of well-preserved remains of the ship structure and a large quantity of finds of ship equipment and cargo was confirmed, the research became systematic and continued until today (Radić Rossi 2023).

So far, the rear half of the ship has been investigated, from the stern towards the central part where the main frame is located. The excavation along the side of the ship reached a level of about 1 m above the first deck. During the removal of larger ballast stones, the bilge pump well and the lower part of the bilge pump were discovered next to the keel. In the excavation, a large quantity of ingots of lead white (lead carbonate), packed in small barrels, and numerous items from the ship

velika količina predmeta koji su pripadali opremi broda.

TIJEK I REZULTATI ISTRAŽIVANJA

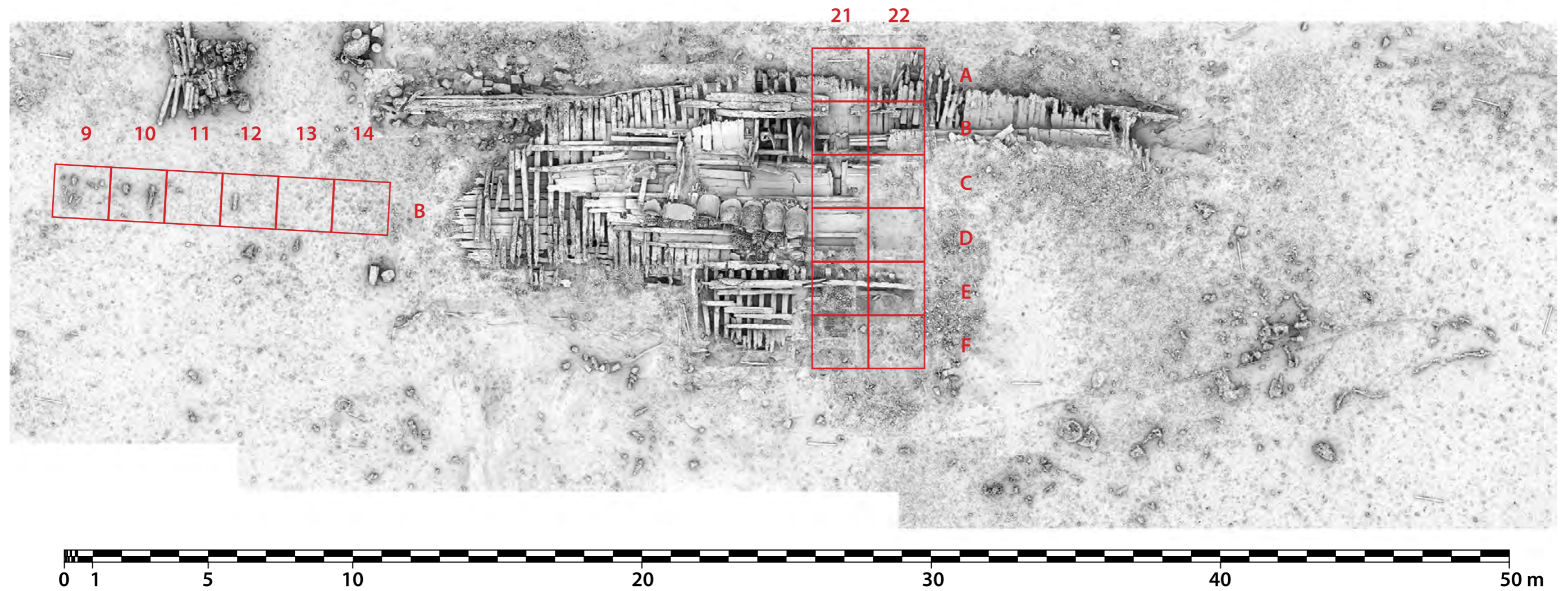
Istraživačka kampanja provedena je od 1. do 31. kolovoza 2023. Nekoliko dana prije započeli su pripremni radovi, a nakon terenskog istraživanja utrošena su još dva dana na sređivanje izvađenih nalaza i njihov upis u inventarnu listu. Istraživanje je započelo otkrivanjem središnjeg dijela broda, u kojem se nalazi glavno rebro koje se sastoji od rebrenice i dvaju parova rebrenih nastavaka. Nad istraživani dio nalazišta postavljeno je pomoćno metalno mrežište koje se sastojalo od dva puta šest kvadrata, sveukupnih dimenzija 4 x 12 m. Mrežište je postavljeno poprečno na brodsku konstrukciju, od kobilice na sjeveru do zone iznad prve palube

cargo are still found, and in the surface layer at the eastern end of the site, a number of items belonging to ship equipment are also visible.

THE COURSE AND RESULTS OF THE RESEARCH

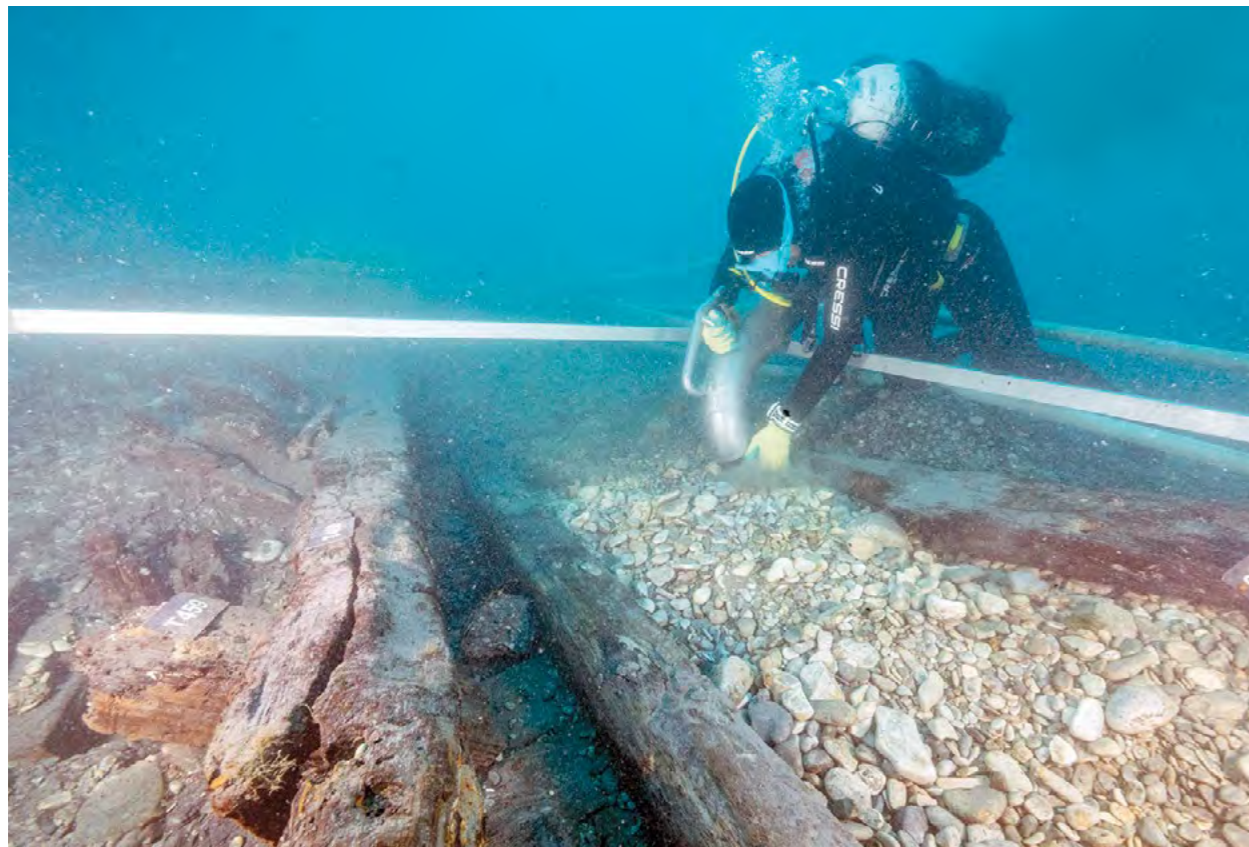
The research campaign was carried out from August 1 to 31, 2023. A few days before, preparatory work began, and after the field research, two more days were spent arranging the recovered finds and entering them into the inventory list. The research began with the discovery of the central part of the ship, which contains the main frame consisting of a floor timber and two pairs of futtocks. An auxiliary metal grid was placed over the investigated part of the site, which consisted of two sets of six squares, with overall dimensions of 4 x 12 m. The grid was placed trans-

Položaj arheoloških sondi 2023. (podloga: K. Yamafune)
Location of archaeological trenches in 2023 (background: K. Yamafune)



Čišćenje središnjeg dijela broda (foto: A. van Zijverden)
Cleaning the central part of the ship (photo: A. van Zijverden)





Situacija u kvadratu E21; s desne strane fotografije vide se oblutci korišteni kao balast (foto: A. van Zijverden)
 Situation in square E21; pebbles used as ballast on the right (photo: A. van Zijverden)

na jugu.

U većem dijelu kvadrata A–C ponovljeno je fino čišćenje brodske konstrukcije, a u krajnjem istočnom dijelu kvadrata A 22–C 22 nastavljeno je uklanjanje sedimenta. Dio uz kobilicu do treće proveze bio je već ranijih godina oslobođen od poprečnih elemenata koji su priječili pristup glavnom rebro. Ove je godine iskop nastavljen u smjeru juga, na mjestu gdje je zaustavljen 2022. godine. U kvadratima D–F nastavljeno je uklanjanje sedimenta i vađenje arheoloških nalaza, s krajnjim ciljem potpunog otkrivanja drvenih ostataka broda. Tijekom iskopa istražene su i izvađene dvije djelomično očuvane male bačve ispunjene ingotima olovnog bjelila (bačva 54 i bačva 55), koje su se nalazile južno od posljednje velike bačve ispunjene hematitom (željezni oksid), gledano u smjeru istoka. Na očuvanoj glavi bačve 55 uočen je pečat u obliku muške glave u profilu s inicijalima trgovca. U čitavom prostoru malih bačava nalazila se veća količina izrazito žutog praha na bazi arsenova sulfida, koji je možda bio prevožen u istoj ambalaži, povrh ingota olovnog bjelila. Ukoliko je to doista tako, bačve su s gornje strane morale biti prekrivene nekim organskim materijalom koji se tijekom vremena raspao.

versely on the ship structure, from the keel in the north to the area above the first deck in the south.

Fine cleaning of the ship structure was repeated in the greater part of squares A–C, and removal of sediment continued in the easternmost part of squares A 22–C 22. The part next to the keel up to the third stringer had already been cleaned from the transverse elements that prevented access to the main frame in earlier years. This year, the excavation continued in the direction of the south, at the place where it was stopped in 2022. In squares D–F, the removal of sediment and collecting of archaeological finds continued, with the ultimate goal of fully uncovering the wooden remains of the ship. During the excavation, two partially preserved small barrels filled with lead white ingots (barrel 54 and barrel 55) were investigated and taken out, which were located south of the last large barrel filled with hematite (iron oxide), looking towards the east. A seal in the form of a male head in profile with the merchant's initials was observed on the preserved head of the barrel 55. In the entire area of small barrels, there was a large amount of bright yellow arsenic-sulfide based powder, which may have been transported in the same packaging, on top of the ingots of lead white. If this is indeed the case, the barrels must have been covered

U kvadratu D 22 nastavljeno je istraživanje cjelovito očuvane male bačve (bačva 69), s koje su tijekom rada uklonjeni obruči jer su se počeli raspadati. Po završetku istraživanja bačva je u dijelovima izvađena iz mora, dokumentirana i pohranjena na desalinizaciju. Na jednoj glavi primijećen je pečat u obliku križa s inicijalima trgovca, a na drugoj već spomenuti pečat u obliku muške glave u profilu, ali prekriven pomoću dvaju križno postavljenih ureza. Čini se da je bačvu sekundarno iskoristio drugi trgovac. Osim toga, jugozapadno od bačve 69 izvađeni su loše očuvani ostatci bačve 70, na čijoj su glavi također zamijećeni tragovi spomenutog pečata s križem.

U kvadratima E 21, E 22 i F 21, F 22 pronađena je velika količina oblutaka koji su činili dio broskog balasta, a sustavno su uklanjani kako bi se stiglo do brodske konstrukcije. U sjeveroistočnom kutu kvadrata E 22 uočen je dio košare izrađene od prepletenog pruča, koji je za sada ostavljen na morskom dnu.

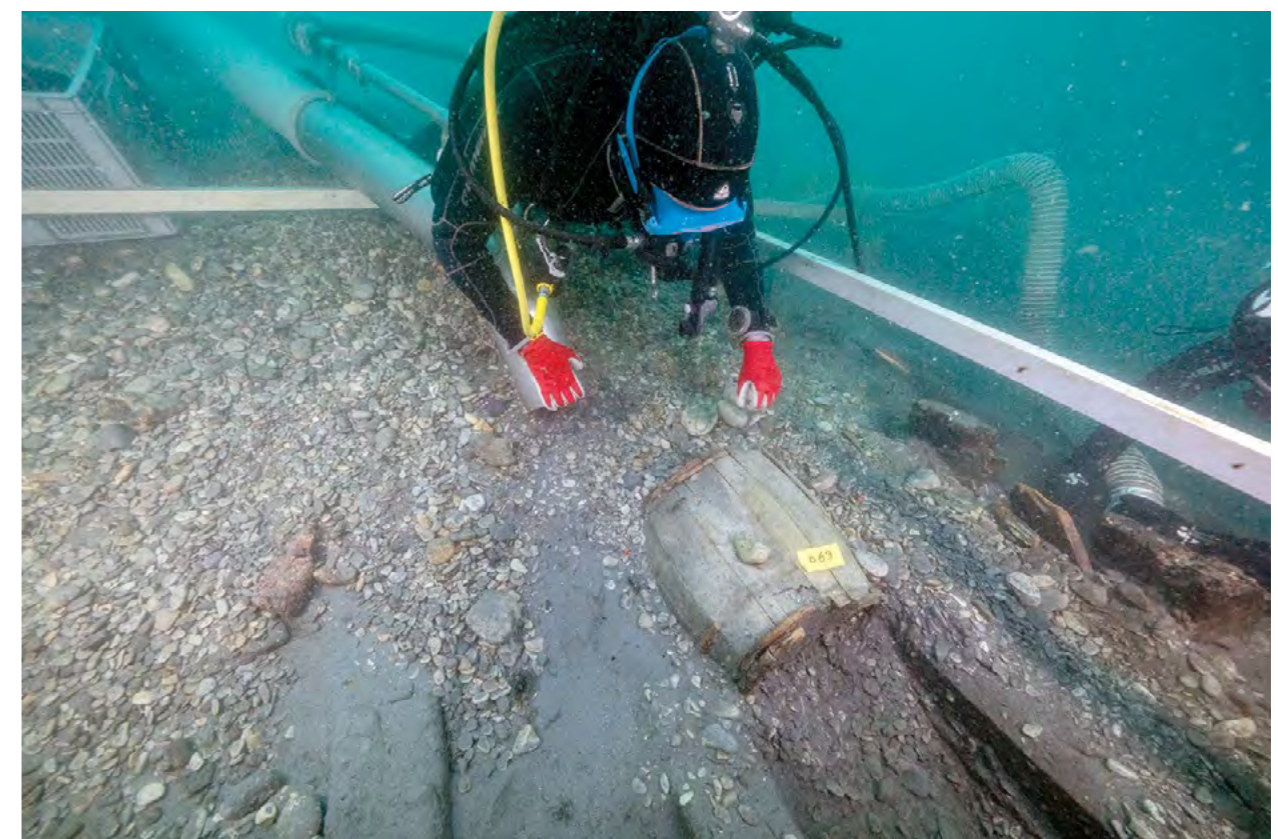
Posljednji tjedan istraživanja bio je usmjeren na izradu fotogrametrijske dokumentacije postojećeg stanja središnjeg dijela nalazišta te na uklanjanje elemenata uzdužne čvrstoće broda nad rebrenim nastavcima uz glavno brodsko rebro,

on the upper side with some organic material that decomposed over time.

In square D 22, research was continued on a completely preserved small barrel (barrel 69), from which the hoops were removed during the excavation because they had begun to disintegrate. At the end of the research, the barrel was recovered in parts, documented and stored for desalination. On one head, a seal in the form of a cross with the merchant's initials was noticed, and on the other, the already mentioned seal in the form of a male head in profile, but crossed by two incised lines. The barrel appears to have been secondarily used by another merchant. In addition, to the southwest of barrel 69, poorly preserved remains of barrel 70 were recovered, on the head of which traces of the aforementioned seal with a cross were also noticed.

In squares E 21, E 22 and F 21, F 22, a number of pebbles were found, which were part of the ship ballast, and were systematically removed in order to reach the ship structure. In the northeastern corner of square E 22, a part of a basket made of woven wicker was observed, which was left on the seabed for the time being.

The last week of the research was focused on creating photogrammetric documentation of the current



Čišćenje cjelovito očuvane bačve 69 u kvadratu D22 (foto: A. van Zijverden)
 Cleaning of fully preserved barrel 69 in square D22 (photo: A. van Zijverden)





kako bi se taj dio konstrukcije tijekom idućih godina pokušao izvaditi iz mora. Iako je operacija tekla relativno sporo, uklonjena je većina dijelova proveza, a započeto je i uklanjanje dijela debele palubne grede. Zbog složenosti zadatka posao još nije priveden kraju.

Tijekom pregleda površinskog dijela nalazišta uz kobilicu u središnjem dijelu broda uočena je medalja u obliku rimskog sestercija s prikazom cara Hadriana na aversu i galijom pod jedrima, s Neptunom na pramcu na reversu. Takve medalje kovao je u Padovi Giovanni di Cavino tijekom treće četvrtine 16. stoljeća (Lawrence 2024). Predmet je zasigurno pripadao nekom od putnika ili članova posade koji su se u trenutku potonuća nalazili na brodu.

Pokušaj preklapanja svih ortogonalnih prikaza rezultata istraživanja od 2013. do 2023. rezultirao je zaključkom da se model niza metalnih elemenata očuvanih u krmenom dijelu broda, koji je 2021. izradila Andrea Kiss, ne uklapa savršeno u opću sliku nalazišta. Stoga je zaključeno da se ta zona ponovno očisti i dokumentira pa je, nakon uklanjanja sedimenta i geotekstila, nad nju postavljeno metalno mrežište sastavljeno od šest kvadrata u nizu.

Čišćenje na prostoru mrežišta započelo je za zapadne strane, a napredovalo je u smjeru istoka. Korodirani metalni elementi, označeni oznakama SC1-SC30 (SC = stern concretion, tj. krmena inkrustacija), sustavno su očišćeni od nabačenog sedimenta. Već tijekom istra-



Padovanska medalja, imitacija sestercija cara Hadrijana, Giovanni di Cavino (1500. – 1570.) (foto: D. Doračić)
Paduan medal, imitation of Emperor Hadrian's sestertius, Giovanni di Cavino (1500 – 1570) (photo: D. Doračić)



Prekriženi pečat na glavi bačve 69 (foto: S. Šušnjara)
Crossed stamp on the head of barrel 69 (photo: S. Šušnjara)

state of the central part of the site and on the removal of the elements of the ship's longitudinal stiffness above the futtocks along the main frame, in order to try to remove that part of the structure from the sea in the coming years. Although the operation was relatively slow, most parts of the stringers were removed, and the removal of a part of the thick deck beam has also been started. Due to the complexity of the task, the work has not been completed yet.

During the inspection of the surface part of the site, a medal in the form of a Roman sestertius was found next to the keel in the central part of the ship. The medal bears a depiction of Emperor Hadrian on the obverse and a galley under sail, and Neptune on the bow is portrayed on the reverse. Such medals were minted in Padua by Giovanni di Cavino during the third quarter of the 16th century (Lawrence 2024). The object certainly belonged to one of the passengers or crew members who were on board at the time of sinking.

An attempt to overlap all orthogonal views of research results from 2013 to 2023 resulted in the conclusion that the model of a series of metal elements preserved in the stern part of the ship, which was made in 2021 by Andrea Kiss, does not fit perfectly into the general picture of the site. Therefore, it was concluded that this zone should be cleaned and documented again, so, after removing the sediment and geotextile, a metal grid composed of six squares in a row was placed over it.

Cleaning in the area of the grid began from the western side, and progressed in

živanja provedenog 2021. godine zaključeno je da su se nekada nalazili na krmenoj statvi i služili za prihvat broskog kormila. Krmena statva očigledno se, nakon brodoloma, odvojila od ostatka brodske konstrukcije i srušila u smjeru zapada, ali se, nažalost, nije očuvala. Tragovi njezina sekundarnog položaja ostali su zabilježeni zahvaljujući rasporedu metalnih elemenata. Godine 2015. s morskog je dna podignut metalni predmet koji je vjerojatno bio pričvršćen na samo kormilo i ulazio u jedan od elemenata pričvršćenih na krmenu statvu (Radić Rossi 2015: Sl. 24). Kako u njegovoj blizini nisu primijećeni ostali elementi koji bi mogli imati sličnu funkciju, pretpostavka je da se u trenutku potonuća kormilo odvojilo i potonulo dalje od mjesta brodoloma.

Terensko istraživanje završilo je prekrivanjem središnjeg dijela broda geotekstilom i vrećama s pijeskom te postavljanjem dodatne zaštite na preostale otkrivene dijelove nalazišta. Svi su izvađeni nalazi uvedeni u inventarnu listu, a veća količina slomljenog ravnog stakla, po završetku pregleda i sumarnog dokumentiranja, vraćena je na nalazište, umotana u geotekstil i zapakirana u plastične kutije.

ZAKLJUČAK

Uzimajući u obzir repertor nalaza, odlično očuvanu brodsku konstrukciju te izni-

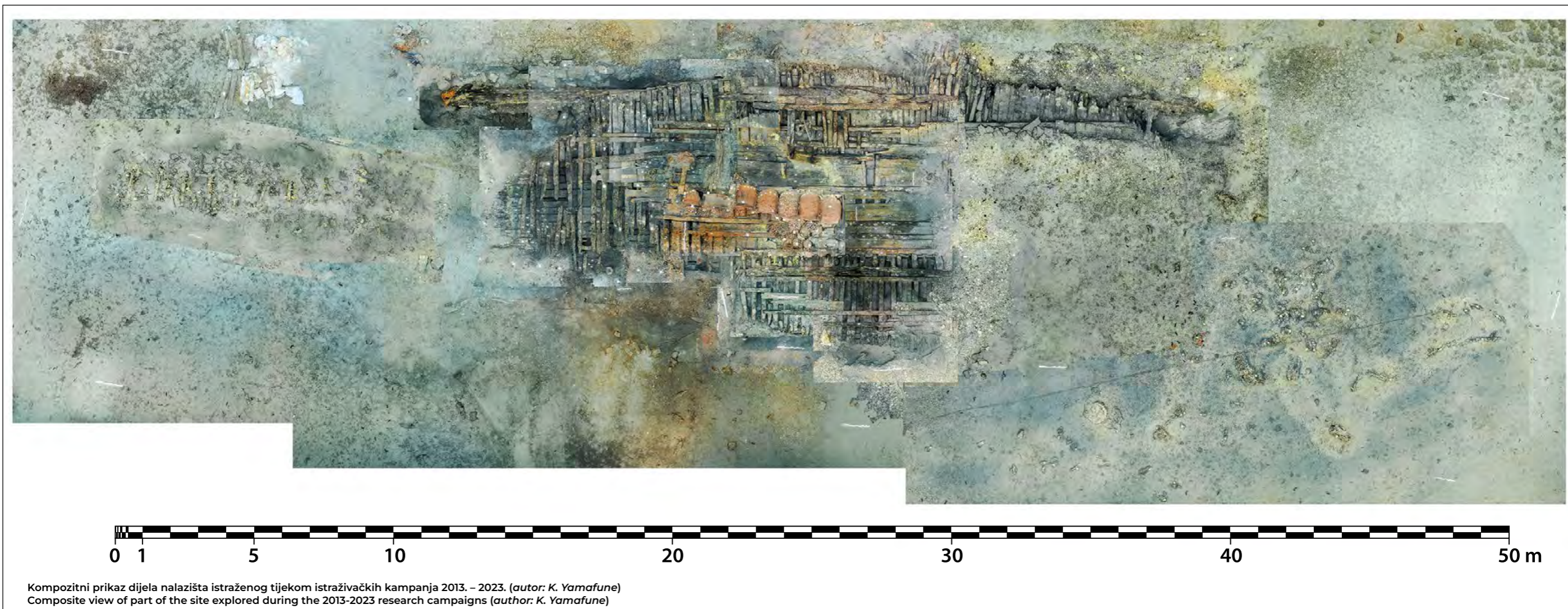


Ortogonalni prikaz modela središnjeg dijela broda s označenim položajem rebrenice i rebrenih nastavaka koji čine glavno brodsko rebro, nakon uklanjanja dijelova temeljnice jarbola i proveza (autor: A. van Zijverden)
Orthogonal view of the model of the central part of the ship with the marked position of the floor timber and futtocks that constitute the main frame of the ship, after removing parts of the mast step and stringers (author: A. van Zijverden)

the eastern direction. The corroded metal elements, marked SC1-SC30 (SC = stern concretion), were systematically cleaned of the deposited sediment. Already during the research carried out in 2021, it was concluded that they were once located on the sternpost and were used to hold the rudder. After the shipwreck, the sternpost apparently separated from the rest of the ship structure and collapsed in the western direction, but, unfortunately, it was not preserved. Traces of its secondary position have been recorded owing to the arrangement of metal elements. In 2015, a metal object was lifted from the seabed, which was probably attached to the rudder and belonged to the elements attached to the sternpost (Radić Rossi 2015: Fig. 24). Since no other elements that could have a similar function were observed in its vicinity, it is assumed that at the moment of sinking the rudder separated and sank further from the shipwreck site.

The field research ended by covering the central part of the ship with geotextile and sandbags and placing additional protection on the remaining uncovered parts of the site. All the retrieved finds were included in the inventory list, and a larger amount of broken flat glass, after the inspection and brief





Kompozitni prikaz dijela nalazišta istraženog tijekom istraživačkih kampanja 2013. – 2023. (autor: K. Yamafune)
Composite view of part of the site explored during the 2013-2023 research campaigns (author: K. Yamafune)

mno bogatu i raznoliku povijesnu priču, brodolom kod otočića Gnalića jedan je od najznačajnijih brodoloma iz 16. stoljeća u svijetu. Ta je činjenica višestruko potvrđena tijekom svake dosadašnje istraživačke kampanje. Posebnu vrijednost projektu donijela su detaljna arhivska istraživanja, koja su se već davno odmaknula od proučavanja samog broda, te usmjerila pozornost prema proučavanju šireg kulturno-povijesnog i gospodarsko-političkog konteksta.

S obzirom na to da su, zahvaljujući sustavnom pristupu, izmijenjene neke ranije predodžbe o tipu broda, njegovoj orijentaciji na morskom dnu i ostalim važnim pojedinostima, istraživanje ostataka drvene brodske konstrukcije od velike je važnosti za konačnu interpretaciju nalaza kao cjeline. Nužnost istraživanja očituje se i u degradaciji drvene građe koja je neizmjereno vrijedan izvor za proučavanje mletačke brodogradnje u 16. stoljeću, pa se istraživanjem sprječava nestanak bitnih informacija. S obzirom na navedene činje-

documentation, was returned to the site, wrapped in geotextile and packed in plastic boxes.

CONCLUSION

Taking into account the repertoire of finds, exceptionally well preserved ship structure and the extremely rich and diverse historical story, the shipwreck at the islet of Gnalić is one of the most significant 16th-century shipwrecks in the world. This fact has been repeatedly confirmed during every research campaign so far. Special value to the project was brought by the detailed archival research, which had long ago outgrown the study of the ship itself, and focused on the study of the wider cultural-historical and economic-political context.

Considering that some earlier notions about the type of ship, its orientation on the seabed and other important details were altered owing to the systematic approach, the research of the remains of the wood-

nice, istraživanje brodoloma kod Gnalića i njegovu prezentaciju široj javnosti potrebno je nastaviti u sustavnom obliku.

en ship structure is of great importance for the final interpretation of the finds as a whole. The research is also necessary with regard to the degradation of wood, which is an extremely valuable source for the study of Venetian shipbuilding in the 16th century, so research prevents the disappearance of essential information. Considering the above facts, the research of the Gnalić shipwreck and its presentation to the general public should be continued in a systematic way.

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PEĆINA VLAKNO NA DUGOM OTOKU

Vlakno cave on Dugi otok

U već standardnom ritmu projekta EpiC Hrvatske zaklade za znanost (IP-2019-04-6115) rujan je razdoblje predviđeno za arheološka iskopavanja u pećini Vlakno na Dugom otoku. Dijelom je to nastavak prošlogodišnje kampanje (Vujević et al. 2023), no vrijeme se iskoristilo i za druge istraživačke aktivnosti s ciljem pribavljanja dodatnih informacija važnih za interpretaciju nalazišta. Konkretno uzimanje uzoraka za različite analize; geoarheološke i radiokarbonske. Možemo reći da su se ovogodišnja istraživanja odvijala u tri etape.

Prvu je činilo čišćenje zapadnog profila i uzimanje uzoraka sedimenta za geoarheološke analize, među ostalim i uzoraka kojima bi se utvrdilo prisustvo mikrotefre, tj. mikroskopskih tragova različitih vulkanskih erupcija koje su obilježile posljednje dijelove pleistocena. Iz pećine Vlakno već je poznat desetak centimetara debeo sloj NYT tefre (Vujević, Parica 2009), koji je posljedica velike vulkanske erupcije na Flegrejskim poljima u Napuljskom zaljevu koja se dogodila prije $14,9 \pm 0,4$ tisuće godina (Deino et al. 2004). Cilj je novog uzorkovanja detektirati tragove drugih erupcija koje nisu ostavile prostim okom vidljive tragove u depozitima Vlakna. Druge bi analize na osnovi sedimentologije i mikromorfologije uzoraka trebale pojasniti podrijetlo depozita i utjecaj ljudi na njihovo formiranje. Uzorkovanje je provodio Giovanni Boschian (Dipartimento di

In the already standard rhythm of the EpiC project of the Croatian Science Foundation (IP-2019-04-6115), September is the period scheduled for archaeological excavations in Vlakno cave on Dugi otok. Part of it is a continuation of last year's campaign (Vujević et al. 2023), but the time was also used for other research activities with the aim of obtaining additional information important for the interpretation of the site, specifically sampling for geoarchaeological and radiocarbon analyses. We can say that this year's research took place in three stages.



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The first stage consisted of cleaning the western profile and taking sediment samples for geoarchaeological analysis, including samples to determine the presence of microtephra, i.e. microscopic traces of various volcanic eruptions that characterized the last parts of the Pleistocene. A ten-centimeter-thick layer of NYT tephra is already known from Vlakno cave (Vujević, Parica 2009), which is the result of a large volcanic eruption on the Phlegraean fields in the Gulf of Naples that occurred 14.9 ± 0.4 thousand years ago (Deino et al. 2004). The goal of the new sampling is to detect traces of other eruptions that did not leave traces visible to the naked eye in the Vlakno deposits. Other analyses based on sedimentology and micromorphology of the samples should clarify the origin of the deposits and the influence of human activity on their formation. Sampling was carried out by Giovanni Boschian (Di-

Biologia Universita' di Pisa) uz pomoć studentice Ane Jagić (Odjel za arheologiju Sveučilište u Zadru).

Druga etapa podrazumijevala je širenje istraživačkog prostora na zapadni dio s ciljem preciznijeg utvrđivanja stratigrafije. Naime, izrazito praškast i suh sediment u površinskim slojevima utjecao je na teško izdvajanje čvrste hodne površine i zamaglio prijelaz iz Stratuma 1 u Stratum 2 na prethodno istraženim kvadratima. Naknadne devastacije prostora dodatno su utjecale na miješanje nalaza, što se pak odrazilo na varijacije u radiokarbonskim datumima. Bilo je potrebno utvrditi točan kronološki slijed različitih faza okupacije kao i dobiti preciznije objašnjenje za navedene varijacije. Novim iskopavanjima utvrđene su dvije razine u površinskom sloju (Stratum 1) od kojih bi gornja predstavljala kratkotrajne posjete povezane s držanjem stoke u nekom od recentnijih perioda, dok je druga nastala negdje u prapovijesno vrijeme, vjerojatno u ranom neolitiku, sudeći po ulomcima keramike s *impresso* ukrašom. Pa ipak, postojanje keramičkih ulomaka koji odgovaraju tradiciji brončanog doba upućuje na to da je i između definiranih faza u pećini bilo posjeta tijekom više vremenskih razdoblja koji mož-

partimento di Biologia Universita' di Pisa) with the help of student Ana Jagić (Department of Archaeology, University of Zadar).

The second stage included the expansion of the research area to the western part with the aim of determining the stratigraphy more precisely. Namely, the extremely powdery and dry sediment in the surface layers affected the difficult detection of the solid walking surface and blurred the transition from Stratum 1 to Stratum 2 in the previously investigated squares. The subsequent devastations of the area further influenced the mixing of finds, which in turn was reflected in the variations in the radiocarbon dates. It was necessary to determine the exact chronological sequence of the different phases of the occupation, as well as to obtain more precise explanation for the mentioned variations. New excavations revealed two levels in the surface layer (Stratum 1), of which the upper one would represent short-term visits connected with animal stabling in one of the more recent periods, while the other one was created sometime in prehistoric times, probably in the Early Neolithic, judging by fragments of pottery with the *impresso* decoration. And yet, the presence of pottery sherds that correspond to the Bronze Age tradition indicates that



Geoarheološko uzorkovanje (foto: M. Grgurić Srzentić)
Geoarchaeological sampling (photo: M. Grgurić Srzentić)



Čišćenje zapadnog profila (foto: M. Grgurić Srzentić)
Cleaning the western profile (photo: M. Grgurić Srzentić)

da nisu ostavili vidljivih tragova u stratigrafiji ili su isti poništeni kasnijim aktivnostima. Na jednu od takvih upućuje i ostatak suhozidne strukture koja je ostala vidljiva u zapadnom profilu. Struktura se može pratiti kako skreće prema istoku i nastavlja dalje prema područjima istraženim u prethodnim kampanjama. Očito je riječ o objektu četvrtastog tlocrta koji je na ovom dijelu pregrađivao pećinu. Ovakva konstrukcija ukopana u površinske slojeve objasnila bi možda zašto su intaktni slojevi sačuvani tek u manjem opsegu, dok je ostatak sloja poremećen.

U istraženim slojevima Stratuma 1 pronalazimo iste nalaze kao i kod Stratuma 2; ljušture puževa vinogradara, kamenice i malo faune. Uz njih rijetki litički nalazi i jedna probušena *Columbella rustica* svjedoče da su naknadne intervencije zahvatile i poremetile mezolitičke slojeve. To se poklapa s tvrdnjom da je Stratum 1 konglomerat više faza boravka iz različitih razdoblja s osnovom mezolitičkog karaktera na koju se nadovezuju nalazi iz mlađih razdoblja (Vujević, Bodružić 2012).

Radiokarbonskim analizama dobiven je i kronološki okvir za Stratum 2 koji ga smješta u usko vremensko razdoblje samog početka holocena, točni-

even between the defined phases in the cave there were visits in different periods that may not have left visible traces in the stratigraphy or were erased by later activities. The remains of the dry stone wall structure visible in the western profile suggests one of these visits. The structure can be followed turning to the east and continuing towards the areas explored in the previous campaigns. It is obviously a structure with a square floor plan, which in this part used to partition the cave. This kind of construction dug into the surface layers would perhaps explain why the intact layers were preserved only to a smaller extent, while the rest of the layer was disturbed.

In the investigated layers of Stratum 1 we find the same findings as in Stratum 2; shells of Burgundy snails (*Helix pomatia*), oysters and some fauna. Along with them, rare lithic finds and one pierced *Columbella rustica* testify that subsequent interventions affected and disturbed the Mesolithic layers. This corresponds to the claim that Stratum 1 is a conglomerate of several phases of occupation from different periods with a base of Mesolithic character, which is followed by finds from younger periods (Vujević, Bodružić 2012).

Radiocarbon analyses also provided a chronological framework for Stratum 2, which places it in



Prosijavanje depozita (foto: M. Grgurić Srzentić)
Sieving of deposits (photo: M. Grgurić Srzentić)



Iskopavanje razine Stratuma 9 (foto: M. Grgurić Srzentić)
Excavation of Stratum 9 (photo: M. Grgurić Srzentić)

je u kraj 10. i početak 11. tisućljeća prije sadašnjosti.¹ Na datume se izvrsno nastavljaju oni dobiveni za otkrivene ljudske ostatke (Vujević, Bodružić 2012; Cristiani et al. 2018) koji su pokopani ili na kraju ili neposredno nakon završetka ove faze boravka u pećini.

Posljednji segment ovogodišnjih istraživanja u

a narrow period of time at the very beginning of the Holocene, more precisely at the end of the 10th and the beginning of the 11th millennium before the present.¹ These dates correspond well to the ones obtained for the discovered human remains (Vujević, Bodružić 2012; Cristiani et al. 2018) which were buried either at the end or immediately after

pećini obilježen je nastavkom iskopavanja Stratum 9 na razini na kojoj smo stali u prošloj kampa-nji (Vujević et al. 2023). Gotovo identični depoziti pokazuju da smo i dalje u istom stratumu, a u to se uklapaju i datumi koji ove razine smještaju u razdoblje prije 17 tis. god. Slabo izražena, kratko-trajna vatrišta i dalje se pojavljuju na središnjem dijelu, no većinu prostora zauzima sloj masne, izrazito kompaktne i gotovo sterilne glinaste zemlje koja se tek povremeno gubi uz rubove gdje

the end of this phase of the stay in the cave.

The last segment of this year's research in the cave was marked by the continuation of the excavation of Stratum 9 at the level at which we stopped in the last campaign (Vujević et al. 2023). Almost identical deposits show that we are still in the same stratum, which is further corroborated by the dates that place these levels in the period 17 thousand years ago. Barely recognizable, short-lived hearths still appear in the central part, but most of the space is occupied by a layer of greasy, extremely compact and almost sterile clayey soil, which is only occasionally lost along the edges, where there is a loose layer full of calcite that crumbles from the cave walls. The composition and texture of the compacted clayey soil indicate great influence of natural processes, and the cultural remains found in the layer indicate only occasional human visits to the cave. Individual animal bones found in an almost vertical position could also support the assumption of natural processes as well as the action of water that affects sedimentation.

Compact clayey soil can hardly be excavated, and it is even more difficult to sieve. Large amounts of water were used for each sieve so that only a few small stones and even fewer archaeological finds remained in the sieve from the entire deposit. Most of them are animal bones (including larger fragments of ruminant bones, as well as bones of small rodents) with the occasional lithic finds. And yet, along with a small amount of debitage, we find typical examples of tools – backed bladelets, end-scrapers, points, fragments of retouched blades, etc. At first glance, most of them were made of raw materials of Italian origin. The entire inventory corresponds to the short-term stays of human communities for the purpose of performing specialized activities, whereby already prepared lithic inventory is brought to the site. Finds of jewelry also correspond to this situation: a pierced sea shell from the genus *Glycymeris* and a pierced sea snail of the species *Luria lurida* (Linné 1758). A small specimen of a pierced sea shell, the type of which is difficult to determine precisely due to the poor state of preservation, belongs to the genus *Glycymeris*, and in the Croatian language it is known as *čaška*. This shell is a frequent find in the Upper Palaeolith-

¹ Beta677951 9300 +/- 30 BP, (95,4 %) 8179-7773 cal BC (10128-9722 cal BP); Beta669609 9010 +/- 30 BP, (94,2 %) 8291-8206 cal BC (10240-10155 cal BP)

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je umjesto njega prisutan rahli sloj prepun kalci-
ta koji se trusi sa zidova pećine. Sastav i tekstura
nabijene glinaste zemlje ukazuje na veliki utjecaj
prirodnih procesa, a kulturni ostatci pronađeni u
sloju na tek povremene posjete ljudi u pećini. U
prilog prirodnim procesima kao i djelovanju vode
koja utječe na sedimentaciju mogle bi ići i pojedine
životinjske kosti koje nalazimo u gotovo okomi-
tom položaju.

Kompaktna glinasta zemlja jedva se iskopava, a
još teže prosijava. Za svako sito utrošene su velike
količine vode da bi od cijelog depozita u situ osta-
lo malo sitnog kamenja i još manje arheoloških
nalaza. Većinom je riječ o životinjskim kostima
(uključujući veće ulomke kostiju preživača, kao i
kosti malih glodavaca) uz povremeni nalaz litike.
Pa ipak, uz malu količinu lomljevine pronalazimo
školske primjere oruđa – pločice s hrptom, gre-
bala, šiljci, ulomci sječiva s obradom i sl. Na prvi
pogled većina je izrađena na sirovini talijanskog
podrijetla. Cjelokupni inventar odgovara kratko-
trajnim boravcima ljudskih zajednica radi obavlja-
nja specijaliziranih radnji, pri čemu se na lokalitet
donosi već pripremljeni litički inventar. U ovakvo
stanje uklapaju se i nalazi nakita: probušena mor-
ska školjka iz roda *Glycymeris* i probušeni morski
puž vrste *Luria lurida* (Linné 1758). Mali primjerak
probušene morske školjke, čiju je vrstu teško toč-
no odrediti zbog lošeg stanja očuvanosti, pripada
rodu *Glycymeris*, a u hrvatskom jeziku poznate
su pod nazivom čaška. Ova školjka čest je nalaz
gornjopaleolitičkih slojeva Vlakna te se uklapa
u opću sliku ukrašavanja onodobnih populacija
ovih prostora. Međutim, morski puž *Luria lurida*,
u lokalnom govoru poznat kao zupka ili kauri,
vrlo je važan nalaz. Kao ukras korišten je još od
razdoblja gornjeg paleolitika pa sve do današnjih
dana kada ga možemo vidjeti, primjerice, kao
ures svečanih nošnji dalmatinskog zaleđa. Iako je
ovaj morski pužić, prije svega cijenjen zbog svoje
ljepote, rado korišten kao ukras još od vremena
naših predaka, u arheološkom je kontekstu izni-
mno rijedak i vrijedan nalaz. Primjerak iz Vlakna
s rezom i perforacijom na vrhu koji sugerira da se
vezivao i vjerojatno nosio kao privjesak trenutač-
no je najstariji i jedini nalaz ovog morskog puža
iz razdoblja gornjeg paleolitika na području istoč-
nog Jadrana.

Pećina Vlakno (foto: M. Grgurić Srzentić)
Vlakno cave (photo: M. Grgurić Srzentić)

ic layers of Vlakno and fits into the general picture
of the decoration of the populations of these areas
at that time. However, the sea snail *Luria lurida*, lo-
cally known as *zupka* or *kauri*, is a very important
find. It has been used as an ornament since the
Upper Palaeolithic until today, when we can see
it, for example, as an ornament in the ceremoni-
al folk costumes of the Dalmatian hinterland. Al-
though this sea snail, primarily valued for its beau-
ty, has been used as an ornament since the time
of our ancestors, in an archaeological context it is
an extremely rare and valuable find. The specimen
from Vlakno with a cut and perforation on the top,
which suggests that it was tied and probably worn



Do kraja kampanje uspjeli smo dosegnuti razinu
sljedećeg stratuma (Stratum 10). Već na prvi po-
gled depoziti su u potpunosti drukčiji. Rahli sloj
prepun je nalaza i tragova gareži, što je sasvim
suprotno od stanja u slojevima iznad. U arheološ-
kom skupu nalaza većinom je riječ o usitnjenim
ulomcima životinjskih kostiju (od kojih velik po-
stotak ima na sebi tragove gorenja). Veća je i za-
stupljenost litičkih izrađevina uz veću prisutnost
tehnoloških kategorija što se poklapa sa slojevi-
ma iz probne sonde. U litičkom skupu možemo
istaknuti veću prosječnu veličinu oruđa i veći po-
stotak iskorištenosti lomljevine u odnosu na pret-
hodne stratume. Šiljci, grebala, pločice/sječiva s

as a pendant, is currently the oldest and only find
of this sea snail from the Upper Palaeolithic period
in the area of the eastern Adriatic.

By the end of the campaign, we managed to reach
the level of the next stratum (Stratum 10). At first
glance, the deposits are completely different. The
loose layer is full of finds and traces of soot, which
is quite the opposite of the condition in the layers
above. In the archaeological group of finds, there
are mostly crushed fragments of animal bones (a
large percentage of which show traces of burning).
There is also a larger share of lithic artifacts with a
greater presence of technological categories, which
corresponds to the layers from the trial trench. In





... Litički nalazi iz Stratuma 9 (foto: M. Grgurić Srzentić)

... Lithic artifacts from Stratum 9 (photo: M. Grgurić Srzentić)

obradom ili tragovima upotrebe i pločice s hrp-
tom pokazuju da smo još uvijek u epigravetijenu,
ali s inventarom koji bi više odgovarao njegovoj ra-
noj fazi. U ovaj prijelaz uklapaju se i radiokarbonski
datumi koji smještaju gornju razinu Stratuma 10 u
razdoblje prije 17,5 tisuća godina.

the lithic assemblage, we can highlight the larger
average size of the tools and the higher percentage
of use of debitage compared to the previous strata.
Points, endscrapers, bladelets/blades with retouch
or traces of use and backed bladelets show that we
are still in the Epigravettian, but with an inventory
that would be more suitable for its early phase. The
radiocarbon dates that place the upper level of Stra-
tum 10 in the period 17.5 thousand years ago also
correspond to this transition.

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U POTRAZI ZA CRKVOM SV. ALEKSANDRA: ISTRAŽIVANJE LOKALITETA TKON – POLJANE

In search of the Church of St. Alexander: Investigation of the Tkon - Poljane Site

IN SITU - 2/1 (2023)

Područje Tkona, najjužnijeg naselja na otoku Pašmanu, iznimno je bogato arheološkom i povijesnom baštinom, a zasigurno najpoznatiji kulturno-povijesni spomenik u Tkonu je muški benediktinski Samostan sv. Kuzme i Damjana na Čokovcu (za najrecentniji prilog o Čokovcu s popisom starije literature vidi Baraka Perica, Maletić 2023).

Prostor Poljana nalazi se oko 1,5 km JI od centra mjesta, a vrlo je bogat plodnom zemljom i vodom. Poljane su u literaturi prepoznate kao *ualle Pagnana* što je toponim koji se spominje krajem 11. stoljeća, kada je Petar, opat benediktinskog samostana u Biogradu, tu kupio zemlju *supra ecclesiam sancti Alexandri* (Jakić-Cestarić 1983: 25–30). Već krajem 19. stoljeća Bulić spominje nalaze rimskih zidova i grobova nedaleko od zdenca Šipnata na području Poljana, a zanimljivo je i „iskopavanje“ lokalnog župnika na obližnjoj kamenoj gomili kada je nađen „križ“ (Jakić-Cestarić

The area of Tkon, the southernmost settlement on the island of Pašman, is exceptionally rich in archaeological and historical heritage. Certainly the most famous cultural and historical monument in Tkon is the male Benedictine Monastery of Sts. Cosmas and Damian on Čokovac (for the most recent article on Čokovac with a list of older literature, see Baraka Perica, Maletić 2023).

The area of Poljana is located about 1.5 km SE from the town center, and is very rich in fertile land and water. Poljane are mentioned in the literature as *ualle Pagnana*, which is a toponym mentioned at the end of the 11th century, when Petar, the abbot of the Benedictine monastery in Biograd, bought the land *supra ecclesiam sancti Alexandri* (Jakić-Cestarić 1983: 25–30). Already at the end of the 19th century, Bulić mentions the finds of Roman walls and graves not far



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1983: fusnota 35). Prema usmenoj predaji i recentnijim povijesnim istraživanjima pretpostavilo se da se upravo pod tom gomilom kriju ostatci crkve sv. Aleksandra pape (rimski biskup od 105. do 110.), čije se relikvije uz to čuvaju u župnoj crkvi sv. Tome u Tkonu (Jakić-Cestarić 1983: 27–29). U literaturi se navodi i mogućnost da je riječ o ranokršćanskom lokalitetu (Hilje 2006: 82) što se potkrepljuje i nalazima ranokršćanske kamene plastike koji se čuvaju na Čokovcu, a koji, navodno, potječu s Poljana (Vežić 2005: 107).

Zahvaljujući iznesenom, kao i s obzirom na površinske nalaze antičke/kasnoantičke keramike, ali i zbog povećanih građevinskih aktivnosti na okolnim terenima, sustavna istraživanja gomile na Poljana (k. č. 4812, k. o. Tkon) započela su 2015. pod vodstvom Tomislava Fabijanića te su trajala do 2019. (Fabijanić 2015; 2016; 2017). Prije istraživanja gomila je imala nepravilni izduženi oblik dužine oko 23 m, na najširem je dijelu imala širinu od oko 9 m, a na najvišem je dijelu bila visoka oko 2,5 m. Orijentirana je u pravcu SI-JZ. Spomenutim istraživanjima ustanovljeno je postojanje nekoliko prostorija koje se mogu pripisati antičkoj i/ili kasnoantičkoj vili, ali ne i crkvi.

Istraživanja su nastavljena od 9. do 23. listopada 2023. (voditelj: Tomislav Fabijanić; zamjenik vodite-

from the Šipnata well in the Poljana area, and the “excavation” of the local priest on a nearby stone mound when a “cross” was found is also interesting (Jakić-Cestarić 1983: footnote 35). According to oral tradition and more recent historical research, it was assumed that exactly this mound hides the remains of the church of Pope St. Alexander I (Roman bishop from 105 to 110), whose relics are also kept in the parish church of St. Thomas in Tkon (Jakić-Cestarić 1983: 27–29). The literature also mentions the possibility that it is an early Christian site (Hilje 2006: 82), which is also supported by the finds of early Christian stone sculpture preserved in Čokovac, which allegedly originates from Poljana (Vežić 2005: 107).

Thanks to the above, and with regard to the surface finds of Roman/late antique pottery, but also due to increased construction activities in the surrounding areas, systematic research of the stone mound in Poljana (cadastral plot 4812, cadastral municipality Tkon) began in 2015 under the leadership of Tomislav Fabijanić and continued until 2019 (Fabijanić 2015; 2016; 2017). Before the excavation, the mound had an irregular elongated shape, about 23 m long, about 9 m wide at the widest part, and about 2.5 m high



..... Gomila prije početka istraživanja 2015. (foto: T. Fabijanić)
..... The mound before the beginning of investigations in 2015 (photo: T. Fabijanić)



..... Drenažni kanal u koji je ugrađen dio antičkog (?) stupa (foto: T. Fabijanić)
..... Drainage channel with an embedded part of a Roman-era (?) column is (photo: T. Fabijanić)



lja: Luka Bogdanić). U istraživanjima su sudjelovali studenti Domagoj Marić, Monika Špoljarić, Lucija Topolko i Josip Sučić. Financijska sredstva osiguralo je Ministarstvo kulture i medija RH.

Sama istraživanja započela su u južnom dijelu *prostorije 1*. Na tom je mjestu iz prethodnih kampanja ostao neiskopani dio urušenja, a pri njegovu uklanjanju potvrđeno je da objekt ima najmanje dvije faze. Naime, ispod sloja žbuke koji se doima poput podnice nalazi se sloj gareži pomiješan s ostatcima tegula. Ispod tog se sloja nalazi sloj smeđe zemlje bogat sitnim ulomcima antičke i kasnoantičke keramike, a na tom je mjestu otkriven i

at the highest part. It was oriented in the NE-SW direction. The aforementioned investigation established the existence of several rooms that can be attributed to a Roman-era and/or late antique villa, but not to a church.

The excavations continued from October 9 to 23, 2023 (leader: Tomislav Fabijanić; deputy leader: Luka Bogdanić). Students Domagoj Marić, Monika Špoljarić, Lucija Topolko and Josip Sučić participated in the excavations. Financial resources were provided by the Ministry of Culture and Media of the Republic of Croatia.

The research began in the southern part of *room*



Rimska uljanica (foto: L. Bogdanić)
Roman oil-lamp (photo: L. Bogdanić)



nastavak drenažnog kanala čiji je dio bio i ostatak tijela antičkog (?) stupa. Teza o najmanje dvjema fazama lokaliteta potvrđena je i istraživanjem u *prostoriji 3*. Na dubini od cca 20-30 cm ispod prethodno otkrivene podnice zabilježeni su ostatci one starije, a ujedno je otkriven i sjeverni zid *prostorije 3* koja je bila reducirana na način da je na stariji zid bio „prilijepljen“ novi. Na ovom je mjestu uz sam temelj zida pronađena rimska uljanica iz 1. stoljeća.

7. In that place, an unexcavated part of the collapse layer remained from previous campaigns, and when it had been removed, it was confirmed that the structure has at least two phases. Namely, under the layer of plaster, which looks like a floor, there was a layer of gravel mixed with the remains of tegulae. Below that layer was a layer of brown soil rich in small fragments of Roman and late antique pottery, and in that place a continuation of the drainage channel was discovered, part of which was a fragment of the shaft of a Roman-era (?) column. The thesis of at least two phases of the site was also confirmed by investigation in *room 3*. At a depth of approx. 20-30 cm below the previously discovered floor, the remains of the older floor were recorded, and at the same time, the northern wall of *room 3* was also discovered, which was reduced in such a way that a new wall was “glued” on the older one. In this place, next to the foundation of the wall, a Roman oil lamp from the 1st century was found.

After defining the situation in *room 3*, excavation of the mound continued in the direction of the sea where the terrain obviously descends towards the sea, so at the moment it is not clear whether the villa extends in that direction as well. In that part of the site, a series of dry stone wall constructions were found, which are most likely the remains

Pogled na lokalitet po završetku istraživanja (brojke su radne oznake prostorija koje se spominju u tekstu) (foto: L. Bogdanić)
View of the site after the completion of the investigations (numbers are the working designations of the rooms mentioned in the text) (photo: L. Bogdanić)





Nakon definiranja situacije u *prostoriji 3* nastavilo se s iskopom gomile u pravcu mora. U tom se pravcu teren očito spušta prema moru pa u ovom trenutku nije najjasnije prostire li se vila i u tom pravcu. U tom dijelu lokaliteta utvrđen je niz suhozidnih konstrukcija koje su najvjerojatnije ostatci zidova koji su tijekom povijesti mogli omeđivati samu gomilu.

Od pokretnog materijala pronađenog 2023., osim mnoštva ulomaka keramike antičkih i kasnoantičkih odlika među kojima je posebno zanimljiv ulomak tegule s natpisom koji započinje slovima LE[--], ističe se šest komada antičkih brončanih novčića preliminarno datiranih od 2. do kraja 5. stoljeća (vremensku atribuciju numizmatičkih nalaza

of walls that could have bounded the mound throughout history.

Small finds found in 2023 include numerous fragments of pottery dating to Roman period and Late Antiquity, among which a particularly interesting fragment of a tegula with an inscription beginning with the letters LE[--], but also six pieces of ancient bronze coins preliminarily dated from the 2nd to the end of the 5th century (chronological attribution of numismatic finds was determined by Mato Ilkić).

As part of the research, a field survey of the wider area around the remains of the villa was also carried out. No traces were observed on the sur-

odredio je Mato Ilkić).

U sklopu istraživanja obavljen je i terenski pregled šireg prostora uokolo ostataka vile. Na okolnim parcelama nisu uočeni tragovi koji bi indicirali postojanje arhitektonskih objekata, a na svježe uzoranoj zemlji vrlo su rijetki sitni ulomci keramike. Međutim, na položaju udaljenom cca 70 m od vile, uz samo more, otkriveni su ostatci zidanih struktura koji se doimaju poput kasnoantičkih grobova. Nažalost, nikakva iskopavanja na tom mjestu trenutno nisu moguća jer bi uklanjanjem zemlje i raslinja došlo do urušavanja profila i uništenja arhitektonskih ostataka. S obzirom na postojanje grobova te u skladu s navodima u literaturi (Nedved

rounding plots that would indicate the existence of architectural structures, and there are few tiny pottery sherds on the freshly plowed land. However, at a location approximately 70 m from the villa, next to the sea, the remains of stone-built structures were discovered, which look like late antique graves. Unfortunately, no excavations are currently possible at that location, because the removal of soil and vegetation would cause the profile to collapse and the architectural remains to be destroyed. Considering the existence of graves and in accordance with the references in the literature (Nedved 1990: footnote 97), perhaps the church of St. Alexander could



Šire područje lokaliteta s označenim mjestom istraživanja (žuto) i položajem na kojem se uočavaju grobovi i ostatci arhitekture (crveno) (foto: L. Bogdanić)
Wider area of the site with marked research area (yellow) and the position where graves and architectural remains can be seen (red) (photo: L. Bogdanić)





... Istraživačka ekipa (foto: T. Fabijanić)
... Research team (photo: T. Fabijanić)

1990: fusnota 97), možda se upravo na ovom mjestu nalazila crkva sv. Aleksandra, ali o tome se ne može ništa pouzdanije reći bez dodatnih istraživanja.

have been located here, but nothing more about it can be said with certainty without additional research.

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VELA PEĆINA KOD KALI

Vela Pećina near Kali

Vela pećina smještena je na jugozapadnom dijelu otoka Ugljana, na području Općine Kali, između uvale Vele Lamjane na jugu i uvale Svitle na sjeveru. Na topografskim kartama ovaj dio nosi naziv Podgora, a čine ga danas obrasle i pošumljene jugozapadne padine brda Kobiljka, s vidljivim ostatcima masivnih suhozida koji svjedoče da je prostor do recentnih vremena bio korišten u poljoprivredne svrhe. Do pećine danas vodi pješaka staza uz morsku obalu iz pravca juga, koja potom skreće u padinu brda prekrivenu kamenom sipinom do male terase pred ulazom sačinjene od nekoliko urušenih kamenih blokova.

Ulaz je visok gotovo 2, a širok oko 4,5 metara. U tlocrtu pećina ima oblik jedinstvenog hodnika dugog oko 35 metara. Međutim, pri sredini pećine nalazi se suženje, na dijelu kojem je dno prekriveno slojevima sige u formi velikih kristala kalcita, a nakon suženja stražnji se dio opet pretvara u širi hodnik te završava nakupinom kamenja i većih urušenih blokova. Dno u prednjem dijelu pećine prekriveno je većinom sitnim kamenim kršljem i rahlom zemljom. Na manjem proširenju pri kraju prvog dijela vidljivi su tragovi recentnih boravaka u vidu otpada i ostataka vatrišta, dok su strop i zidovi prekriveni čađom.

Pećina je bila poznata u stručnoj literaturi od 1955. godine, kada M. Malez objavljuje kratak izvještaj s opisima Vele i obližnje Male pećine (Malez 1955: 74–77). Slijedom toga u srpnju 2022. godine, tijekom rekognosciranja speleoloških objekata otoka Ugljana i Pašmana, provedenih u sklopu projekta Hrvatske zaklade za znanost *Epigravetijenske zajednice sjeverne Dalmacije*

Vela Pećina is located on the southwestern part of the island of Ugljan, in the territory of Kali Municipality, between Vela Lamjana cove in the south and Svitle cove in the north. On topographic maps, this part is called Podgora, and today it consists of the overgrown and afforested southwestern slopes of Kobiljak hill, with visible remains of massive dry stone walls, which testify that the area was used for agricultural purposes until recent times. Today, a footpath leads to the cave along the sea coast from the south, which then turns into a hillside covered with stone scree to a small terrace in front of the entrance made of several collapsed stone blocks.

The entrance is almost 2 meters high and 4.5 meters wide. In the ground plan, the cave has the shape of a corridor about 35 meters long. However, near the middle of the cave there is a narrowing, where the bottom is covered

with layers of dripstone in the form of large calcite crystals, and after the narrowing, the back part again turns into a wider corridor and ends with an accumulation of stones and larger collapsed blocks. The bottom in the front part of the cave is mostly covered with small stone debris and loose soil. On the smaller extension at the end of the first part, traces of recent visits are visible in the form of waste and the remains of the hearth, while the ceiling and walls are covered with soot.

The cave has been known in professional literature since 1955, when M. Malez published a short report with descriptions of Vela Pećina and nearby Mala Pećina (Malez 1955: 74–77). Consequently, in July 2022, during the reconnaissance of speleologi-



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je (IP-2019-04-6115), pregledana je i Vela pećina. Tom prigodom, na samoj površini i u manjoj testnoj sondi pronađeno je nekoliko litičkih artefakata koje je na temelju morfoloških osobina bilo moguće datirati u kasni gornji paleolitik. Na tragu ovih nalaza provedena su u listopadu 2023. probna iskopavanja.

Probna sonda, dimenzija 1 x 1,5 m, smještena je

cal structures on the islands of Ugljan and Pašman, carried out as part of the project of the Croatian Science Foundation *Epigravetian Communities of Northern Dalmatia* (IP-2019-04-6115), Vela Pećina was also inspected. On that occasion, several lithic artifacts were found on the surface and in a smaller trial trench, which, based on morphological features, could be dated to the late Upper Palaeolith-

na samom kraju prednjeg kanala pećine, prije suženja koje ga dijeli od stražnjeg kanala. Gornji dio stratigrafskog slijeda, do oko 40 cm relativne dubine, bio je sačinjen od nekoliko sastavom nehomogenih slojeva, koji su sadržavali pokretne nalaze iz različitih perioda te vjerojatno predstavlja sekundarne depozite djelomično nastale i depozicijom materijala iskopanog iz recentne jame otkrivene

ic. These finds incited trial excavations carried out in October 2023.

The trial trench, measuring 1 x 1.5 m, is located at the very end of the front channel of the cave, before the narrowing that separates it from the back channel. The upper part of the stratigraphic sequence, up to a relative depth of about 40 cm, was made up of several compositionally inhomogeneous layers, which contained small finds from different periods and probably represent secondary deposits partly formed by the deposition of material excavated from a recent pit discovered along the eastern profile. This pit was encompassed by the trench up to 30 cm wide, and during the excavation it was possible to follow it to a depth of about 70 cm. Judging by the remains of recent waste from the upper layer of filling, it can be dated to the 20th century.

The lower part of the stratigraphic sequence consisted of a total of 12 superimposed cultural layers, of different composition and consistency, mostly made of compact to hard clay loam with inclusions of coal, amorphous stone fragments (sometimes with a visible oxide patina) and dripstone. At a depth of about 50 cm, a hearth layer was documented with the rest of the floor made of cleaner rammed clay around it, and both layers were cut by digging of a shallow channel (possible bioturbations).

Two new layers of reddish clay were documented under the floor with the hearth, and a hard clay formation began to appear in the northeast corner. Their removal revealed a new layer of grayish soil with a lot of small stones in the deposit, and outcrops of the bedrock began to appear in some parts of the trench. Further research revealed that the hardened clay formations continue in depth in two more levels, while cultural layers complementary to them were documented on the rest of the surface. Due to the narrow area of research, it is difficult to say how these layers were formed. All three levels of the hardened formation could have been created naturally, by the action of water and the formation of catchment in the clayey matrix of mostly naturally formed cave sediment. This is supported by the fact that the complementary cultural layers were mostly created by natural sedimentation with rare remains of anthropogen-



Zračna snimka ulaza u pećinu (foto: M. Bodružić)
Aerial view of the entrance to the cave (photo: M. Bodružić)





uz istočni profil. Ova jama ulazila je u sondu do 30 cm širine, a tijekom iskopa bilo ju je moguće pratiti do oko 70 cm dubine. Sudeći prema ostacima recentnog otpada iz gornjeg sloja zapune moguće ju je datirati u prošlo stoljeće.

Donji dio stratigrafskog slijeda činilo je ukupno 12 supraponiranih kulturnih slojeva, različitog sastava i konzistencije, većinom sačinjenih od kompaktne do tvrde glinaste ilovače s primjesama ugljena, amorfnih ulomaka kamena (katkad s vidljivom oksidnom patinom) i sige. Na dubini od oko 50 cm dokumentiran je sloj vatrišta s ostatkom podnice od čišće utabane gline oko njega, a oba sloja bila su presječena ukopom plitkog kanala (moguće bioturbacije).

Ispod podnice s vatrištem dokumentirana su

ic factors (pieces of coal and small archaeological finds). By removing them, the bedrock in the trial trench was reached at a relative depth of 1 to 1.2 m, made of white rudist limestones, within which the entire cave was formed. Several lithic artifacts were also found in the reddish earth between the cracks of the bedrock, including two larger retouched blades with traces of use and fragments of animal bones.

The movable archaeological inventory collected during the research consisted mostly of artifacts made of knapped stone, animal bones and few pottery fragments. One diagnostic sherd of an ovoid vessel can be tentatively dated to the Neolithic period, originating from the upper layers.

The lithic collection of finds consists of a total of

dva nova sloja od crvenkastije gline, a u sjeveroistočnom kutu počela pojavila se formacija od tvrde gline. Njihovim uklanjanjem javio se novi sloj od sivkastije zemlje s mnogo više sitnih kamenčića u depozitu, a na pojedinim dijelovima sonde počeli su se javljati i izdanci matične stijene. Daljnjim istraživanjem utvrđeno je da se stvrđnute glinaste formacije nastavljaju u dubinu u još dvije razine, dok su na ostatku površine dokumentirani njima komplementarni kulturni slojevi. Zbog uske površine istraživanja teško je reći kako su ovi slojevi formirani. Sve tri razine stvrđnute formacije mogle su nastati prirodno, djelovanjem vode i formiranjem kaptaže u glinastom matriksu većinom prirodno nastalog pećinskog sedimenta. U prilog tomu ide i činjenica da su njima komplementarni kulturni slojevi većinom nastali prirodnom sedimentacijom s rijetkim ostacima antropogenih faktora (komadići ugljena i pokretni arheološki inventar). Njihovim uklanjanjem dosegnuta je matična stijena u sondi na relativnoj dubini od 1 do 1,2 m, sačinjena od bijelih rudistnih vapnenaca unutar kojih je i formirana cijela pećina. U crvenkastoj zemlji između procijepa matične stijene također je pronađeno nekoliko litičkih rukotvorina među kojima dva veća sječiva s obradom i tragovima uporabe te ulomci životinjskih kostiju.

Pokretni arheološki inventar prikupljen tijekom istraživanja činile su većinom rukotvorine od lomljenog kamena, zatim životinjske kosti te malobrojni ulomci keramike. Jedan dijagnostički ulomak posude jajolike forme može se preliminarno datirati u razdoblje neolitika, a potječe iz gornjih slojeva.

Litički skup nalaza čini ukupno 171 predmet od lomljenog kamena od čega većina (70 %) potječe iz donjeg dijela stratigrafskog slijeda, koji je na osnovi sastava bilo moguće opisati kao nedisturbirane slojeve. Najbrojniji inventar imali su slojevi ispod podnice s dokumentiranim vatrištem. Preliminarnim pregledom materijala nije utvrđena razlika između nalaza iz gornjeg i donjeg dijela slijeda u pogledu sirovinke zastupljenosti, tehnoloških ni tipoloških karakteristika te se može pretpostaviti kako litičke rukotvorine iz gornjih slojeva potječu iz stratigrafski starijih slojeva, a ovdje su dospjele iskopom materijala iz duboke jame uz istočni profil. Među proizvodima lomljenja najzastupljeniji su odbojci (n = 65), odmah zatim pločice (n = 53) te sječiva (n = 13). Od tehnoloških komada prisutna su krijestasta sječiva (n = 4) i jedan okrušak. Jezgre su



... Jedan šiljak i pogled prema zapadu (foto: M. Bodružić)
... One point and a look to the west (photo: M. Bodružić)



... Ostatak vatrišta na sloju podnice (gore) i gornjopaleolitički sloj ispod njega (foto: M. Bodružić)
... The remains of the hearth on the floor layer (above) and the Upper Palaeolithic layer below it (photo: M. Bodružić)





Dio litičkog inventara iz najstarijeg sloja (foto: M. Bodružić)
Part of the lithic inventory from the oldest layer (photo: M. Bodružić)

većinom miješane (n = 3) uz jedan primjerak jezgre za pločice. Tipološki, zamjetan je visok udio komada transformiranih u alatke – njih 66 ili 50 % od ukupnog broja proizvoda. U inventaru dominiraju pločice s obradom među kojima su dominantne pločice s hrptom, a zatim različito obrađena sječiva. Evidentno je i preferiranje pločica i sječiva za oblikovanje formalnih oruđa jer su takvi proizvodi većinom obrađeni.

Osnovne tehnološke i tipološke karakteristike litičkog materijala odgovaraju kasnoj fazi epigravettijenskog tehnokompleksa. Inventar Vele pećine u glavnim obilježjima pokazuje sličnosti s određenim slojevima iz pećine Vlakna na Dugom otoku, smještene svega 10-ak km zračne udaljenosti prema zapadu. Ondje je tipološka dominacija pločica s hrptom, uz tehnološku dominaciju pločica općenito, zabilježena u donjem dijelu Stratuma 6 i 7 te (Sloj 2 i 3 u: Bodružić 2011: 22–25), Stratumi 7 i 8; (Horizont I u: Malnar 2017: 23–26), prema rezultatima obrade materijala iz probne sonde. Određene tehnotipološke sličnosti postoje i pri usporedbi s materijalom iz najstarijih slojeva Vlakna (Stratumi 9-10, odnosno Horizont II u: Malnar 2017: 31–34), ali je u tim slojevima iz Vlakna zabilježena i jednaka zastupljenost pločica s hrptom i većih šiljaka izrađenih na sječivima, a sječiva su općenito češće obrađena u formalne alatke Stratumi 7 i 8 iz probne sonde u Vlaknu, radiokarbonski su datirani u rasponu od oko 17 500 do oko 15 500 godina pri-

es, there are crested blades (n = 4) and one core tablet. The cores were mostly mixed (n = 3) with one sample of a core for bladelets. Typologically, a high proportion of pieces transformed into tools is noticeable - 66 of them or 50% of the total number of objects. The inventory is dominated by bladelets with retouch, among which backed bladelets are dominant, followed by differently retouched blades. The preference for bladelets and blades for shaping formal tools is also evident, as such products are mostly retouched.

The basic technological and typological characteristics of the lithic material correspond to the late phase of the Epigravettian technocomplex. The inventory of Vela Pećina shows similarities in its main characteristics with certain layers from Vlakno cave on the island of Dugi otok, located only about 10 km aerial distance to the west. There, the typological dominance of backed bladelets, along with the technological dominance of bladelets in general, was recorded in the lower part of Strata 6 and 7 and (Strata 2 and 3 in: Bodružić 2011: 22–25), Strata 7 and 8; (Horizont I in: Malnar 2017: 23–26), according to the results of processing the material from the trial trench. Certain techno-typological similarities can also be noticed when comparing the material from the oldest layers of Vlakno (Strata 9-10, i.e. Horizont II in: Malnar 2017: 31–34), but in these layers from Vlakno there was also an equal share of backed bladelets and larger points made

je sadašnjosti (Vujević et al. 2024: 6), dakle u razdoblje kasnog glacijala, kada su otoci zadarskog arhipelaga još uvijek činili kopno, te su ova dva nalazišta mogla funkcionirati istovremeno odnosno biti korištena unutar mreže naseljavanja istih zajednica.

on blades, and blades are generally more often retouched into formal tools. Strata 7 and 8 from the trial trench in Vlakno yielded radiocarbon dates in the range from about 17,500 to about 15,500 years before the present (Vujević et al. 2024: 6), so in the Late Glacial period, when the islands of the Zadar archipelago still formed the mainland, and these two sites could function simultaneously, that is, they could be used within the settlement network of the same communities.

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ARHEOLOŠKA ISTRAŽIVANJA GRADINE U VRANI

Archaeological
investigations of
Gradina in Vrana



Na položaju Gradina u Vrani nalaze se ostatci utvrđenog srednjovjekovnog i novovjekovnog naselja. Prostor Vrane od iznimnog je značenja za hrvatsku povijesnu i kulturnu baštinu. Tijekom srednjeg vijeka Vrana je bila u posjedu hrvatskih kraljeva, pape, viteških redova templara i ivanovaca, a od 15. stoljeća Mletačke Republike (Gušić 1971, Kolanović 1971, Peričić 1971). Osmanlije je osvajaju 1537. i u njihovoj vlasti ostaje sve do 1647. godine nakon čega se izmjenjuju razdoblja mletačke i osmanske uprave sve do Velikog bečkog rata krajem 17. stoljeća kada je Osmanlije definitivno napuštaju (Traljić 1971).

Sustavna arheološka istraživanja navedenog položaja koja su započeta 2017. i koja provodi Javna ustanova Agencija Han Vrana u suradnji s Odjelom za arheologiju Sveučilišta u Zadru, nastavljena su tijekom listopada i studenoga 2023. godine. Vrana se sastoji od utvrđene jezgre i predgrađa koji su utvrđeni bedemima i opkopom, dok se na više mjesta oko njih nalazilo podgrađe.

Dosadašnja istraživanja usmjerena su na prostor ulaza u kompleks koji se nalazi na jugoistočnom uglu predgrađa. Prostor je sa svih strana omeđen zidovima različitih objekata, a na jugoistočnoj strani nalaze se ostatci gotičke crkve čija se gradnja povezuje s viteškim redom ivanovaca.

U istraživanjima od 2017. do 2019. godine pronađeni su različiti slojevi koji pripadaju vremenu intenzivnih sukoba Mlečana i Osmanlija. Otkrivena je i hodna površina koja se sastoji od kaldrme i pločnika. Na zapadnom i istočnom zidu nalaze se ostatci konstrukcije koja je pripadala vratima, a na istočnom dijelu prostora očuvano je više jama koje su vjerojatno tragovi drvenih konstrukcija smještenih ispred pročelja crkve te su uz sjeveroistočni zid nađeni tragovi ognjišta. Osim arhitektonskih ostataka pronađena je i veća količina sitne arheološke građe među kojom su nabrojniji keramički, zatim metalni, kameni, stakleni i koštani nalazi. Unutar keramičke građe javlja se građevinska keramika (kupe kanalice, opeke), gruba kuhinjska keramika domaće proizvodnje, kao i importirani nalazi glazirane kuhinjske i stolne keramike. Olovno glazirana, engobirana keramika i majolika potječu iz zapadnoeuropskih, a *fritware* iz orijentalnih radionica. Željezni, brončani i olovni nalazi pripadaju raznim predmetima svakodnevnne upotrebe. Među njima se javljaju predmeti

The ruins of a fortified medieval and post-medieval settlement are situated at the location of Gradina in Vrana. The area of Vrana is of exceptional importance for Croatian historical and cultural heritage. During the Middle Ages, Vrana was owned by Croatian kings, the pope, the Knights Templar and Knights Hospitaller, and from the 15th century by the Republic of Venice (Gušić 1971, Kolanović 1971, Peričić 1971). The Ottomans conquered it in 1537 and it remained in their possession until 1647. Then periods of Venetian and Ottoman administration alternated until the Great Turkish War at the end of the 17th century, when the Ottomans finally left (Traljić 1971).

Systematic archaeological research of the mentioned location, which began in 2017 and has been carried out by the Public Institution Han Vrana Agency in cooperation with the Department of Archaeology of the University of Zadar, continued during October and November 2023. Vrana consists of a fortified core and inner bailey, which were fortified with ramparts and a moat, while in several places around them there were parts of outer bailey (suburbium).

Research so far has been focused on the area of the entrance to the complex, which is located in the southeastern corner of the inner bailey. The area is bounded on all sides by the walls of various buildings, and on the southeastern side there are the remains of a Gothic church, the construction of which is associated with the Knights Hospitaller. In investigations from 2017 to 2019, different layers were found that belong to the time of intense conflicts between the Venetians and the Ottomans. A walking surface consisting of cobblestones and pavement was also discovered. On the western and eastern walls are the remains of a structure that belonged to the door, and on the eastern part of the space, several pits have been preserved, which are probably traces of wooden structures located in front of the front of the church. Traces of a hearth were found along the northeastern wall. In addition to the architectural remains, a large number of small archaeological finds were also recovered, including ceramic, metal, stone, glass and bone artifacts. Ceramic finds include ceramic building material (curved roof tiles, bricks), coarse kitchenware of local production, as well as imported finds of glazed kitchenware and tableware. Lead-glazed earthenware, as well as pottery with engobe and



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Ulazni kompleks prije početka istraživanja (foto: J. Šučur)
Entrance complex before the beginning of the investigations (photo: J. Šučur)



Lokalitet nakon završenih radova (foto: J. Šučur)
Site after the completion of works (photo: J. Šučur)



Istraživačka ekipa na terenu (foto: M. Šimičić)
Research team at the site (photo: M. Šimičić)





Ulomci arhajskog majoličkog vrča (foto: K. Gusar)
Fragments of an archaic majolica jug (photo: K. Gusar)

građevinske namjene (čavli, klinovi, okovi prozora i vrata), alat (škare, britve), jahaća i konjska oprema (ostruge, konjske potkove), oružje (projektili), dijelovi nošnje (kopče, potkove za obuću), nakit i novac. Stakleni predmeti zastupljeni su uglavnom posuđem, dok su među kamenim nalazima prisutni dijelovi arhitektonske plastike te projektili raznih dimenzija. Otkriveni nalazi pripadaju vremenu od 14. do 18. stoljeća i svjedoče o intenzivnom korištenju lokaliteta na što upućuju i povijesni izvori.

Ovogodišnja, četvrta istraživačka kampanja odvijala se na prostoru površine oko 50 m² koji je smješten između gotičke crkve i poligonalnog bedema s pokosom. Sa sjeverne strane omeđen je južnim zidom crkve, sa zapadne zidom smještenim istočno od kaldrme istražene tijekom prethodnih kampanja, a s istočne i južne strane bedemom koji je izvana poligonalan, a iznutra polukružan. Unutar ovog prostora istraženo je više različitih slojeva koji su nastali kao posljedica namjernog nasipavanja prostora početkom novog vijeka radi amortizacije udara vatrenog oružja, tj. topova na vanjski poligonalni zid. Osim nasipavanja ojačanje poligonalnog zida vidljivo je s njegove unutarnje strane gdje je na njega dolijepljen polukružni zid koji nema ute-

majolica come from western European workshops, and fritware from oriental workshops. Iron, bronze and lead finds belong to various objects of daily use. Among them are items for construction purposes (nails, wedges, window and door fittings), tools (scissors, razors), riding and horse equipment (spurs, horseshoes), weapons (projectiles), dress accessories (buckles, shoe fittings), jewelry and coins. Glass artifacts are mainly represented by dishes, while among the stone finds there are parts of architectural sculpture and projectiles of various dimensions. The discovered finds belong to the period from the 14th to the 18th century and testify to the intense use of the site, as indicated by historical sources.

This year's fourth research campaign took place on an area of about 50 m², which is located between the Gothic church and the polygonal rampart with a slope. It is bordered on the northern side by the southern wall of the church, with the western wall located east of the cobbled area investigated during previous campaigns, and on the eastern and southern sides by the rampart, which is polygonal on the outside and semi-circular on the inside. Within this area, several different layers were investigated, which were created as a result of the deliberate filling of the area at the beginning of the Modern Pe-


meljenja te je vjerojatno riječ o ubrzanoj dogradnji koja se odvijala zbog opasnosti od predstojećih ratnih sukoba. Otkrivena je i hodna površina, a na uglu zidova na zapadnom dijelu istraženog prostora otkrivene su i stube kojima se komuniciralo prema kaldrmi, a koje su sekundarno zatvorene zidanom konstrukcijom. Uz stube je nađen i sekundarno zapunjen otvor na zidu koji vodi ispred pročelja crkve. Na svim navedenim zidovima vidljivo je nekoliko faza izgradnje, a s obzirom na lošu očuvanost poligonalnog zida koji je napuknuo na više mjesta, ponegdje i u cijeloj sačuvanoj visini, uz njega nije rađen puni iskop zbog opasnosti od njegova urušavanja. Među otkrivenim nalazima iz slojeva nasipa koji se okvirno mogu smjestiti od 13. do konca 15. ili početka 16. stoljeća prisutna je veća količina životinjskih kostiju i školjaka te grubog kuhinjskog i glaziranog posuđa. Glazirano posuđe potječe iz talijanskih radionica, a zastupljena je olovno glazirana i engobirana keramika te majolika. Među metalnim predmetima javljaju se oni rađeni od željeza koji su služili u građevinske svrhe (čavli, okovi) i kao alat (kosa), a tu su i svakodnevni predmeti od bronce (naprstci, ulomci lima, aplika) te novac. Naoružanju pripadaju željezni vereton te kameni i olovni projektili.

riod in order to cushion the impact of firearms, i.e. cannons, on the external polygonal wall. In addition to filling, reinforcing of the polygonal wall is visible on its inner side, where a semi-circular wall that has no foundations is attached to it, and it was probably a hasty construction that took place due to the danger of impending war conflicts. Walking surface was also discovered, and at the corner of the walls in the western part of the explored area, stairs were discovered that led to the cobbled area, which were subsequently closed by a stone-built structure. Next to the stairs was a secondarily filled opening in the wall leading to the front of the church. Several phases of construction are visible on all the mentioned walls, and due to the poor preservation of the polygonal wall, which has cracked in several places, sometimes in the entire preserved height, full excavation was not carried out next to it due to the danger of its collapse. Among the discovered finds from the fill layers, which can roughly be placed from the 13th to the end of the 15th or the beginning of the 16th century, there is a large quantity of animal bones and shells, as well as coarse kitchenware and glazed pottery. Glazed pottery originates from Italian workshops, and includes lead-glazed earthenware, specimens with engobe and majolica. Among the metal objects, the iron ones were used for construction purposes (nails, fittings) and as tools (scissors), and there are also everyday objects made of bronze (thimbles, fragments of sheet metal, appliqué) and coins. Weapons include an iron bolt for a crossbow and stone and lead projectiles.

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BRODOLOM KOD
HRIDI MALOG
ŠKOLJA U UVALI
SUĐURAĐU NA
OTOKU ŠIPANU

Shipwreck off the
rock of Mali Školj in
the bay of Suđurađ
on the island of Šipanu



UVOD

Brodolom kod hridi Malog Školja u uvali Suđurađu na otoku Šipanu upisan je u službeni evidenciju podvodne kulturne baštine početkom sedamdesetih godina prošlog stoljeća. Ostatci potonulog broda leže na dubini od 27 do 34 m, a sudeći prema površinskim nalazima, prekrivaju prostor od oko 540 m². U vremenu, od 1972. do 1974., zbog neprekidnog pljačkanja nalazišta, provedeno je nekoliko zaštitnih istraživačkih kampanja pod vodstvom Anice Kisić i Zdenka Brusića (Kisić 1979; 2006). Tijekom istraživanja utvrđeno je kako je riječ o brodolomu iz druge polovice 16. stoljeća, koji se može povezati s dubrovačkom obitelji Primojević (tal. *de Primi*). Trinaest godina poslije u Državnom arhivu u Dubrovniku Stjepan Vekarić (1987: 65–71) identificirao je potonuli brod kao navu *Santo Hieronimo*, koja je prvotno pripadala Jerolimu Benediktu Primojeviću (tal. *Hieronimo Benedicto de Primi*), a potonula je na ulazu u uvalu Suđurađ 1576. godine. Dvije su informacije povezane u jednu cjelinu tek dvadesetak godina poslije (Kisić 2006).

Godine 2000. Odjel za zaštitu arheološke baštine Ministarstva kulture, pod vodstvom Marija Jurišića, proveo je probno istraživanje nalazišta, što je rezultiralo mišljenjem kako nije riječ o prioritetnom zadatku hrvatske podmorske arheologije (Mihajlović, Jurišić 2010). Osam godina poslije, u okviru projekta

INTRODUCTION

The shipwreck off the rock of Mali Školj in the bay of Suđurađ on the island of Šipan was entered into the official records of underwater cultural heritage in the early 1970s. The remains of the sunken ship lie at a depth of 27 to 34 m, and judging by the surface finds, they cover an area of about 540 m². In the period from 1972 to 1974, due to repeated looting of the site, several rescue research campaigns were conducted under the leadership of Anica Kisić and Zdenko Brusić (Kisić 1979; 2006). During the research, it was determined that the shipwreck happened in the second half of the 16th century, and that the ship could be associated with the Primojević (It. *de Primi*) family from Dubrovnik. Ten years later, in the State Archives in Dubrovnik, Stjepan Vekarić (1987: 65–71) identified the sunken ship as *nava Santo Hieronimo*, which originally belonged to Jerolim Benedikt Primojević (It. *Hieronimo Benedicto de Primi*), and sank at the entrance to the bay of Suđurađ in 1576. The two pieces of information were connected only some twenty years later (Kisić 2006).

In 2000, the Department for the Protection of Archaeological Heritage of the Ministry of Culture, under the leadership of Mario Jurišić, conducted a trial survey of the site, which resulted in the opinion that it is not a priority task for Croatian under-



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· Inkrustirani metalni elementi u površinskom sloju nalazišta (foto: B. Vukičević)
· Encrusted metal elements in the surface layer of the site (photo: B. Vukičević)

koji je financirao UNESCO *Participation programme 2008-2009*, Irena Radić Rossi, Mate Parica i Carlo Beltrame proveli su stručni očevid tijekom kojeg je zaključeno kako stanje i značenje nalazišta upućuju na potrebu sustavnog istraživanja (Parica 2009).

Godine 2014., u organizaciji autora teksta provedeno je preliminarno fotogrametrijsko snimanje nalazišta, a zahvaljujući podršci Društva prijatelja dubrovačke starine sustavno istraživanje započelo je sljedeće godine. Istraživanje je organizirano pod vodstvom Sveučilišta u Zadru i organizacije Institute of Nautical Archaeology, sa sjedištem na američkom Sveučilištu Texas A&M (College Station, TX).

REZULTATI DOSADAŠNJIH ISTRAŽIVAČKIH KAMPANJA

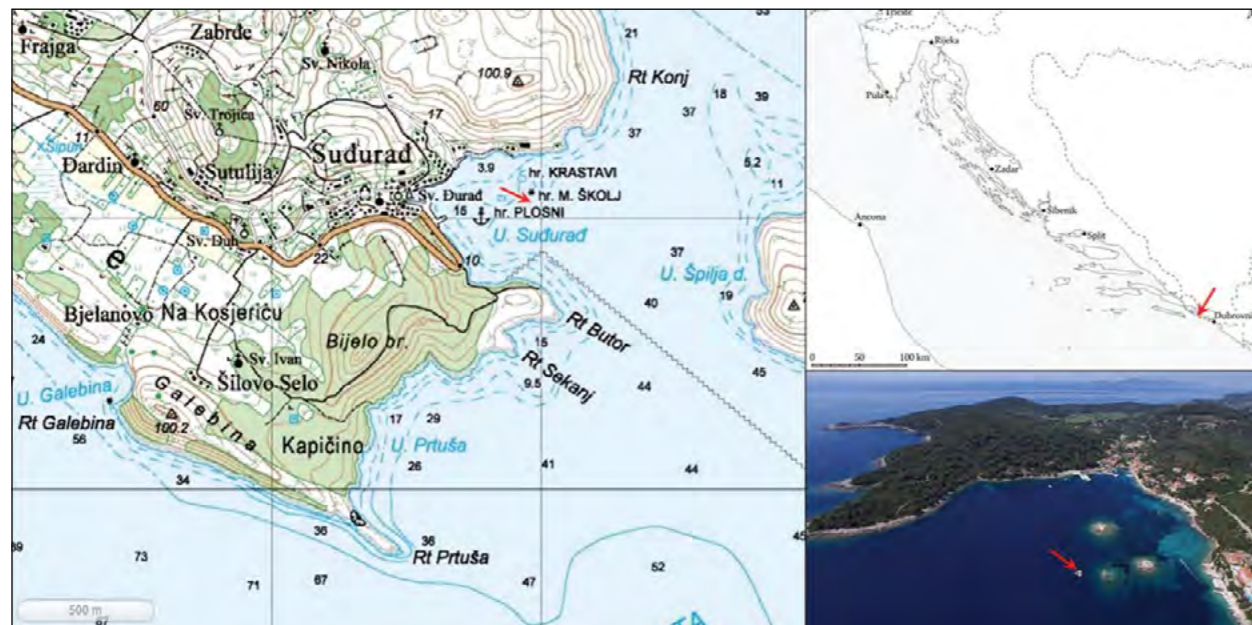
Tijekom istraživanja provedenih sedamdesetih godina prošlog stoljeća Zdenko Brusić vodio je podvodni dio radova, a Anica Kisić interpretirala je arheološke podatke (Kisić 2006, 131, 143). Arheološko istraživanje uključivalo je izradu plana nalazišta i iskopavanje triju probnih sondi, a prema procjenama istraživača, istraženo područje pokrivalo je otprilike 20 – 30 % olupine (Kisić 2006, 130). Prva

water archaeology (Mihajlović, Jurišić 2010). Eight years later, as part of a project funded by the UNESCO Participation Program 2008-2009, Irena Radić Rossi, Mate Parica and Carlo Beltrame conducted an expert survey during which it was concluded that systematic research is advisable regarding the condition and significance of the site (Parica 2009).

In 2014, authors of this text organized a preliminary photogrammetric recording of the site, and thanks to the support of the Society of Friends of Dubrovnik Antiquities, systematic research began the following year. The research was organized under the leadership of the University of Zadar and the Institute of Nautical Archaeology, based at the American University of Texas A&M (College Station, TX).

RESULTS OF THE PREVIOUS RESEARCH CAMPAIGNS

During the research carried out in the 1970s, Zdenko Brusić led the underwater part of the works, and Anica Kisić interpreted the archaeological evidence (Kisić 2006, 131, 143). The archaeological investigation included making of a site plan and the excavation of three trial trenches, and accord-



· Položaj nalazišta kod hridi Malog Školja u uvali Suđurađu na Šipanu (crtež: D. Davies; foto: E. Šilić)
· Site location off the rock of Mali Školj in the bay of Suđurađ on Šipan (drawing: D. Davies; photo: E. Šilić)





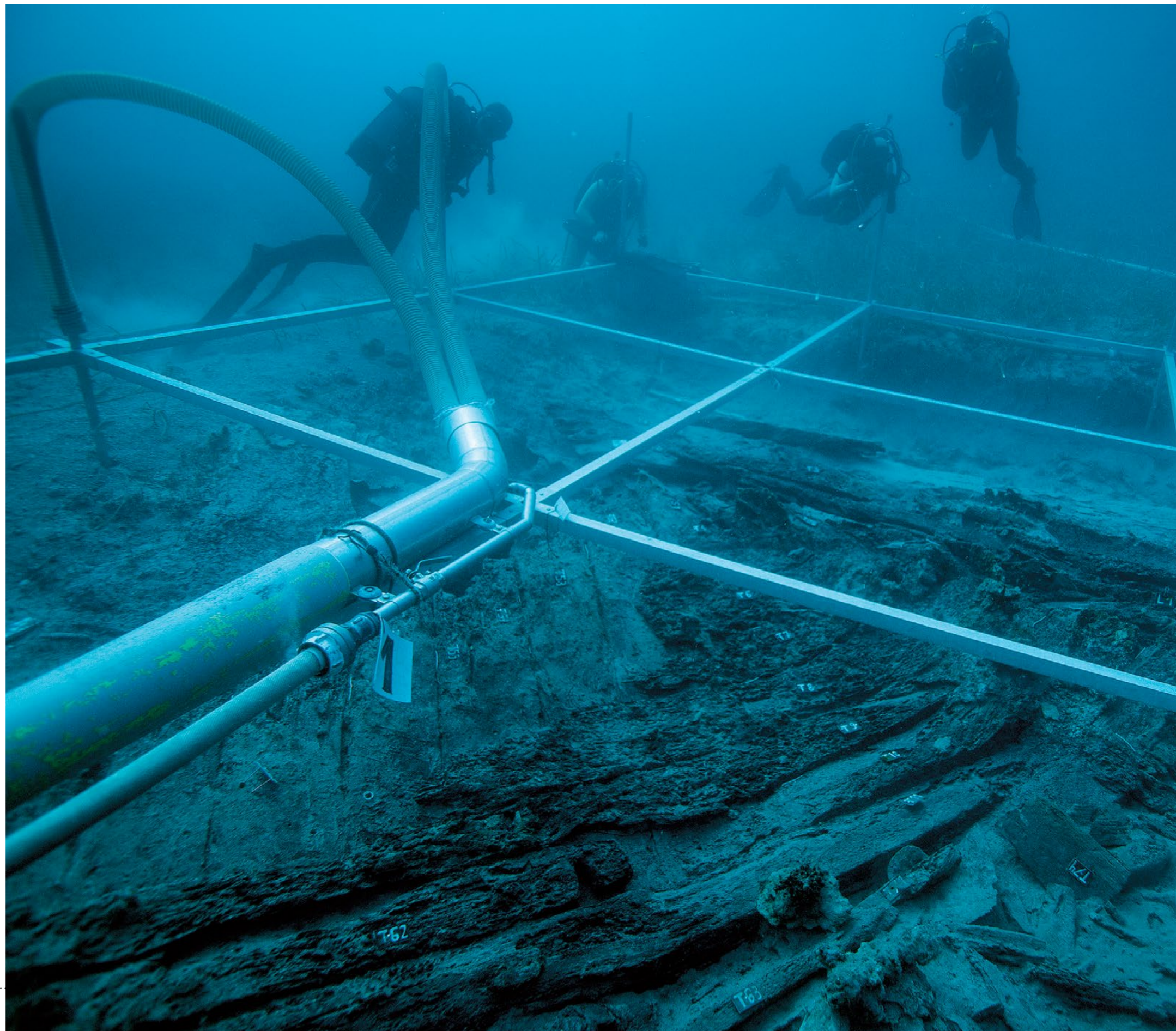
probna sonda iskopana je zapadno od nakupine balastnog kamena, druga na jugoistočnom dijelu skupine inkrustiranih metalnih elemenata, a treća na jugoistočnom dijelu nalazišta. Ostaci drvene brodske konstrukcije otkriveni u probnoj sondi 1 protumačeni su kao pramčani dio broda (Kisić 1979).

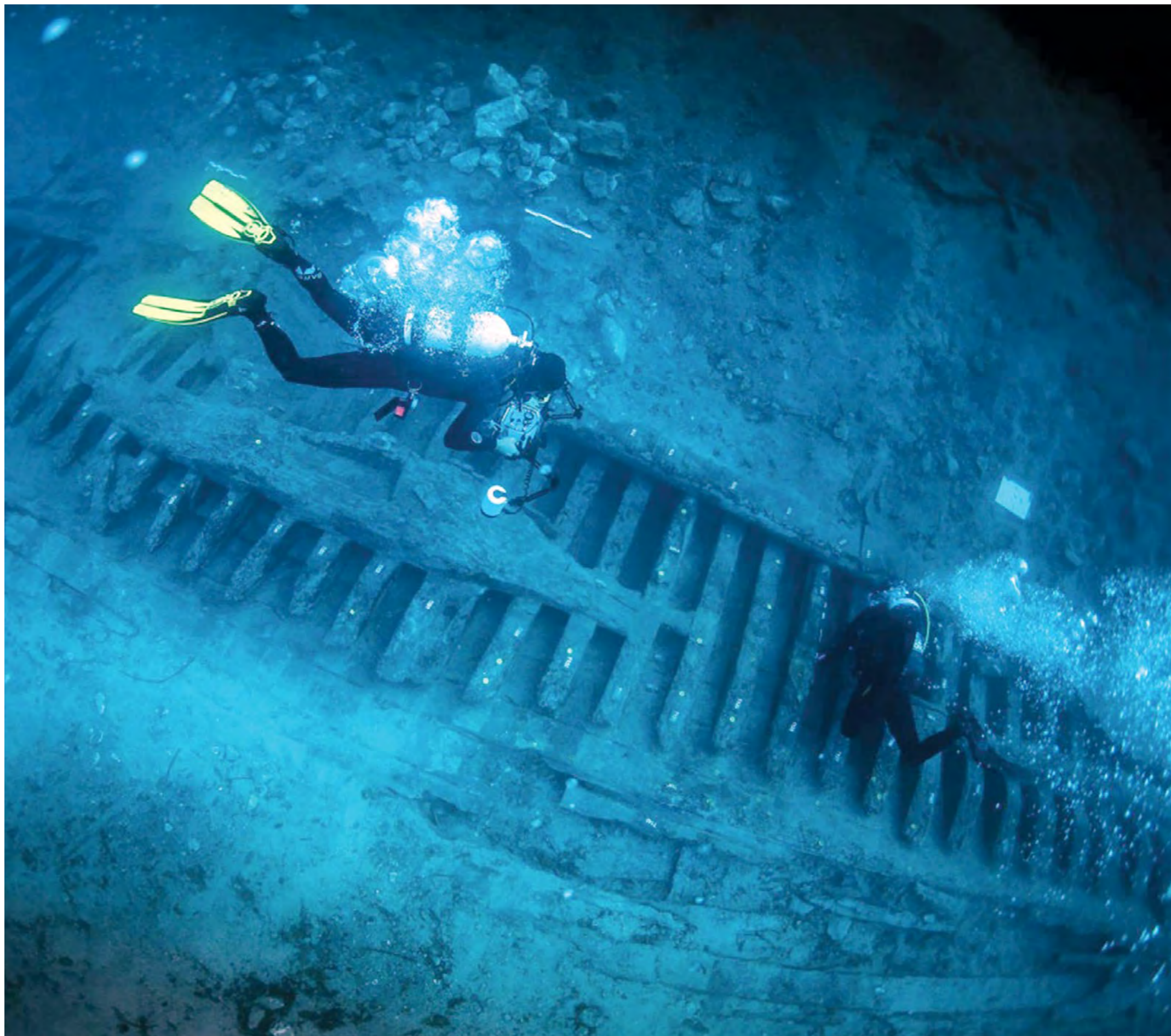
U probnoj sondi 2 otkriveni su izmiješani elementi brodske konstrukcije koji su se mogli usporediti s krmnim nadgrađem (Kisić 2006, 130), a debljina sloja sedimenta u probnoj sondi 3 spriječila je otkrivanje ostataka brodskog trupa (Kisić 2006, 130). Podvodnim rekognosciranjem nalazišta otkrivena su i dva sidra; jedno oko 19 metara sjeverno od skupine balastnog kamena, a drugo duboko ukopano u pijesak 13 m istočno od nalazišta (Kisić 2006, 131).

Tijekom istraživačkih kampanja pronađeno je oko dvije stotine artefakata, uključujući dio brodskog obrambenog naoružanja, poput male željezne puške, kamenih i olovnih topovskih kugli, kalupa za metke, bakrene lopatice za eksplozivni prah i kugli za bacanje zapaljive smjese. Od keramičkih predmeta pronađene su šalice, zdjele, tanjuri, različite vrste posuda za čuvanje hrane i posude za kuhanje. Naposljetku, pronađena je i serija dobro očuvanih metalnih predmeta, uključujući brončani pečatnjak, dio kantara s bakrenom zdjelicom, dva olovna utega i 11 brončanih provodnika za kolotur (Kisić 2006: 132, 136–137, 140–142). Kako na brodu nije bilo prepoznatljivog tereta, uz iznimku nakupine korodiranih elemenata čiji sastav i funkcija još za sada nisu razjašnjeni, Anica Kisić pretpostavila je postojanje tereta od organskog materijala, koji se, nažalost, nije očuvao (Kisić 2006: 131).

Tijekom istraživanja koja od 2015., uz kraće preki-
de, kontinuirano traju, utvrđeno je kako se na morskom dnu očuvala lijeva strana broda, s pramcem na manjoj, a krmom na većoj dubini. Od desne strane preostali su tek pojedini elementi brodske konstrukcije, uglavnom izvan originalnog položaja. Na toj je strani, međutim, odlično vidljiva olovna obloga kojom je bila prekrivena vanjska strana oplata, vjerojatno do razine vodne linije. Riječ je o zaštiti koja se u to vrijeme upotrebljavala uglavnom na prostorima zahvaćenim španjolskom brodograđevnom tradicijom, kako bi se oplata zaštitila od djelovanja brodskog crva. Dosadašnjim je istra-

Radna fotografija situacije na nalazištu tijekom istraživanja
(foto: B. Vukičević)
Situation at the site during the research (photo: B. Vukičević)





ing to the researchers' estimates, the investigated area covered approximately 20–30% of the wreck (Kisić 2006, 130). The first trial trench was excavated west of the ballast stone heap, the second in the southeastern part of the group of encrusted metal elements, and the third in the southeastern part of the site. The remains of the wooden ship structure discovered in trial trench 1 were interpreted as the bow part of the ship.

In trial trench 2, mixed elements of the ship structure were discovered that could be compared to the stern castle (Kisić 2006, 130), and the thickness of the sediment layer in trial trench 3 prevented the discovery of the remains of the hull (Kisić 2006, 130). Underwater survey of the site revealed two anchors; one about 19 meters north of the ballast stone heap, and the other deeply buried in the sand 13 m east of the site (Kisić 2006, 131).

During the research campaigns, about two hundred artifacts were found, including some of the ship's defensive weapons, such as a small iron gun, stone and lead shots, a bullet mold, a copper powder scoop, and firepots. The pottery finds include cups, bowls, plates, various types of food storage containers and cooking vessels. Finally, a number of well-preserved metal objects were also found, including a bronze seal, a part of a steelyard with a small copper bowl, two lead weights and 11 bronze coaks (Kisić 2006: 132, 136–137, 140–142). As there was no recognizable cargo on the ship, with the exception of a cluster of corroded elements whose composition and function have not yet been clarified (Fig. 3), Anica Kisić assumed the existence of cargo made of organic material, which unfortunately was not preserved (Kisić 2006, 131).

During the research, which has been ongoing since 2015, with short interruptions (Fig. 4), it was determined that the port side of the ship was preserved on the seabed, with the bow at a shallower part and the stern at a greater depth. On the starboard side, only some elements of the ship structure remain, mostly out of their original position. On that side, however, the lead sheathing is clearly visible, which covered the outer side of the planking, probably up to the waterline level. It is a kind of protection that was used at that time mainly in the areas under the influence of the Spanish shipbuilding tradition, in order to protect planking from the

Fotogrametrijsko dokumentiranje nalaza (foto: B. Vukičević)
Photogrammetric documentation of the finds
(photo: B. Vukičević)



živanjima zahvaćen pramčani dio broda te dio duž kobilice, od pramca do njegova središnjeg dijela.

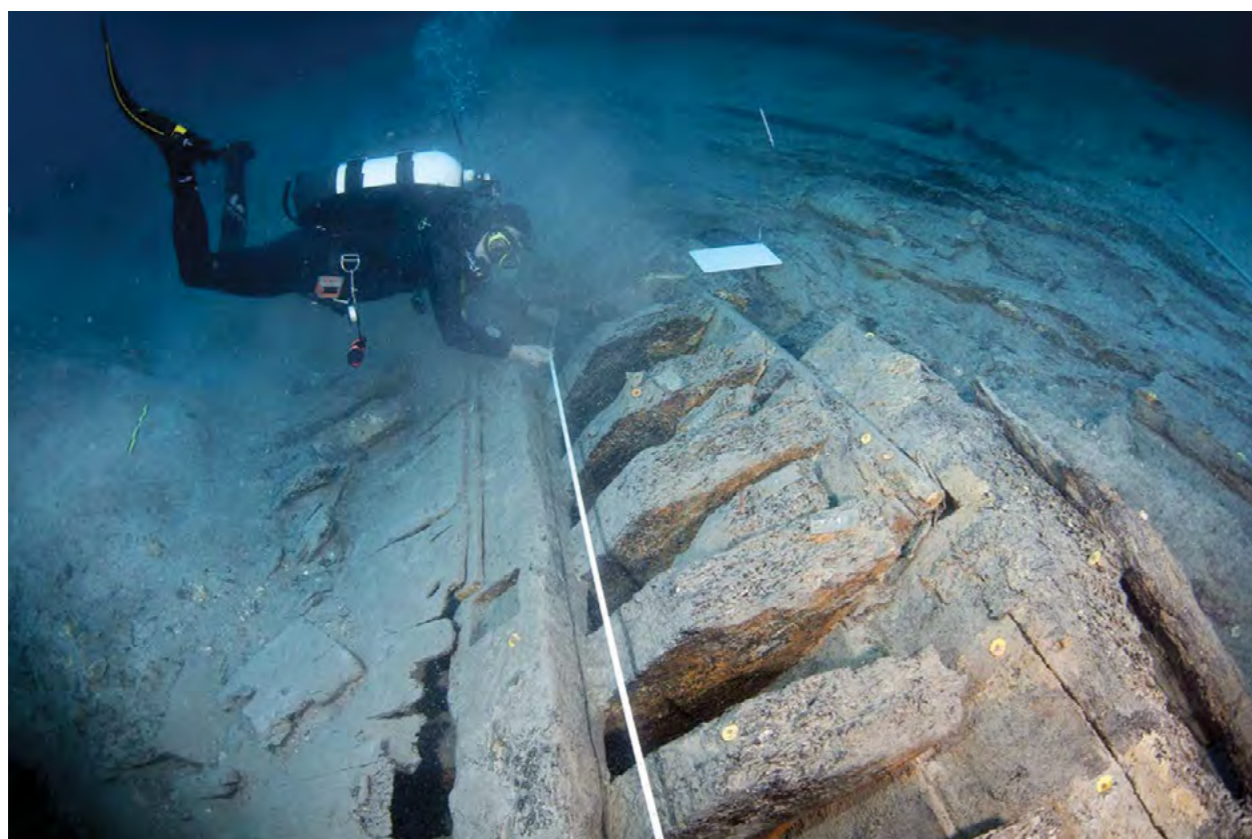
Podmorsko istraživanje postupno se proširilo u svim smjerovima. Ukupna istražena površina od 2015. do 2023. godine iznosi približno 180 m². Osim toga, površinski sloj nalazišta ponovno je pregledan kako bi se zabilježile i unijele u plan različite vrste inkrustiranih metalnih elemenata razasutih po morskom dnu. Ostaci trupa broda *Santo Hieronimo* dokumentirani su pomoću podvodne fotogrametrije i izravnih mjerenja, kako bi se izradio virtualni 3D model nalazišta, ortomozaik i 2D planovi nalazišta.

Iskopavanjem je utvrđeno da najbolje očuvani dio broda odgovara njegovu lijevom boku, a pod rebrima pramčanog dijela nazire se jedanaest vojeva. Nasuprot tomu, veći dio desnog boka sastoji se od izmještenih platica i ulomaka olovne obloge. Elementi brodske konstrukcije, uočeni i dokumentirani tijekom arheoloških iskopavanja provedenih od 2015. do 2021. godine, uključuju kobilicu i pramčanu statvu, oplatu i olovnu oblogu, rebra, proveze, hrptenicu, temeljnicu jarbola, unutrašnju oplatu, podnicu, vjerojatne ostatke zdenca za kaljužnu pumpu i komponente opute poput metalnih lanaca i traka (Casaban, Radić Rossi 2004).

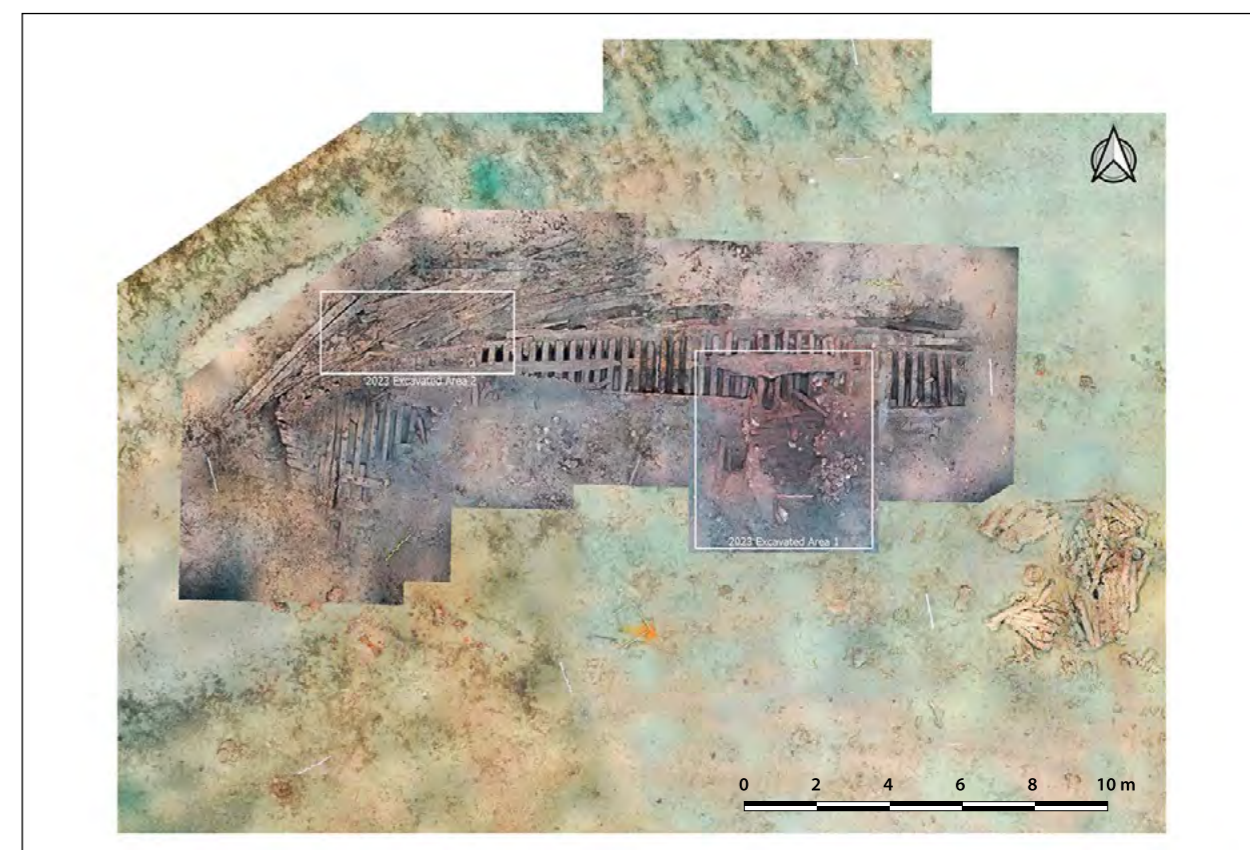
ship worm. So far, the research has covered the bow part of the ship and the part along the keel, from the bow to its central part.

Underwater research gradually expanded in all directions. The total investigated area from 2015 to 2023 is approximately 180 m². In addition, the surface layer of the site was re-examined to record and map the various types of encrusted metal elements scattered on the seabed. The *Santo Hieronimo* hull remains were documented using underwater photogrammetry and direct measurements to create a virtual 3D site model, orthomosaic and 2D site plans.

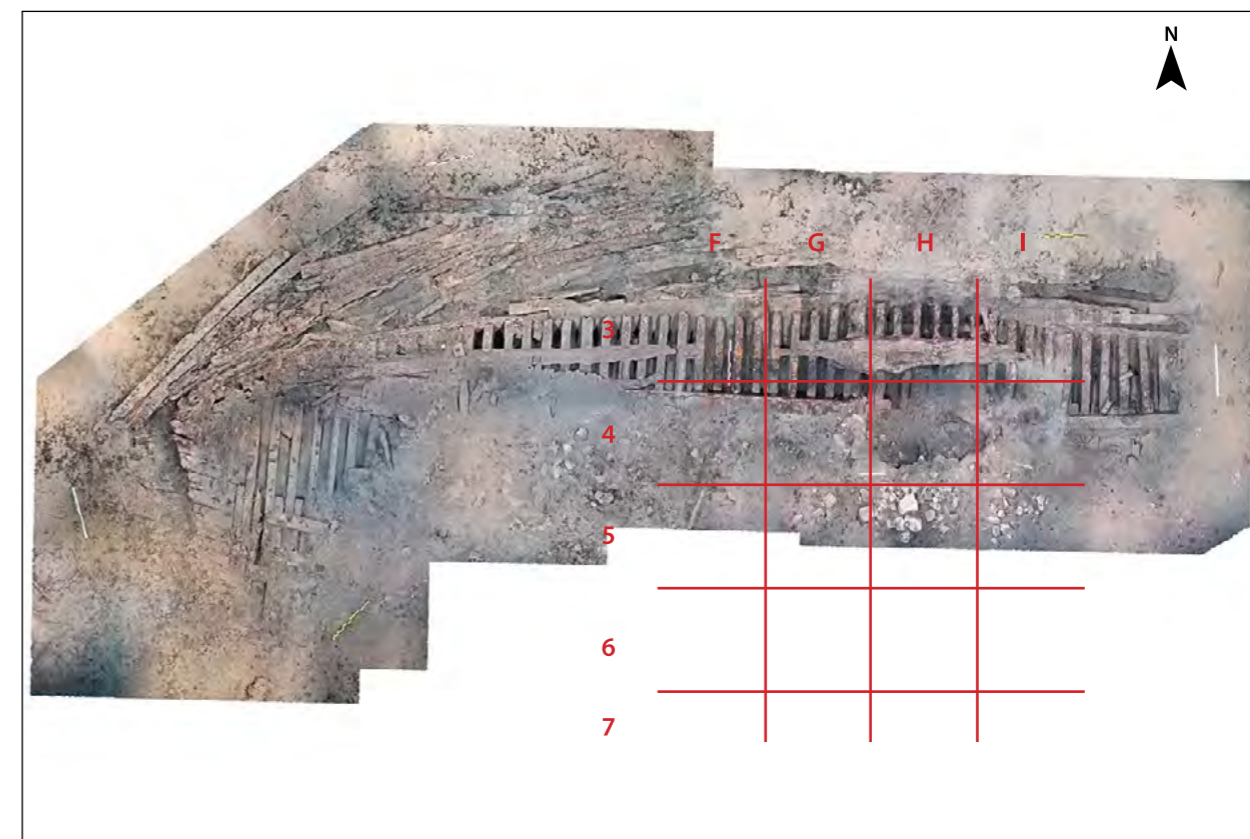
The excavation revealed that the best-preserved part of the ship corresponds to its port side, and eleven strakes can be seen under the frames of the bow part. In contrast, the greater part of the starboard side consists of displaced planks and fragments of lead sheathing. Elements of the ship structure, observed and documented during archaeological excavations conducted from 2015 to 2021, include the keel and stem, planking and lead sheathing, frames, stringers, keelson, mast step, ceiling, limber boards, probable remains of bilge pump well and rigging components such as metal stripes and chains (Casaban, Radić Rossi 2004).



Mjerenje elemenata brodske konstrukcije (foto: B. Vukičević)
Measurement of the ship structure elements (photo: B. Vukičević)



Položaj arheoloških sondi 2023. na fotogrametrijskom planu nalazišta (autori: J. Casaban, K. Yamafune)
Location of archaeological trial trenches in 2023 on the photogrammetric plan of the site (authors: J. Casaban, K. Yamafune)



Položaj pomoćnog metalnog mrežišta u sondi 1 (podloga: J. Casaban, K. Yamafune)
Position of auxiliary metal grid in trench 1 (background: J. Casaban, K. Yamafune)





ISTRAŽIVAČKA KAMPANJA 2023.

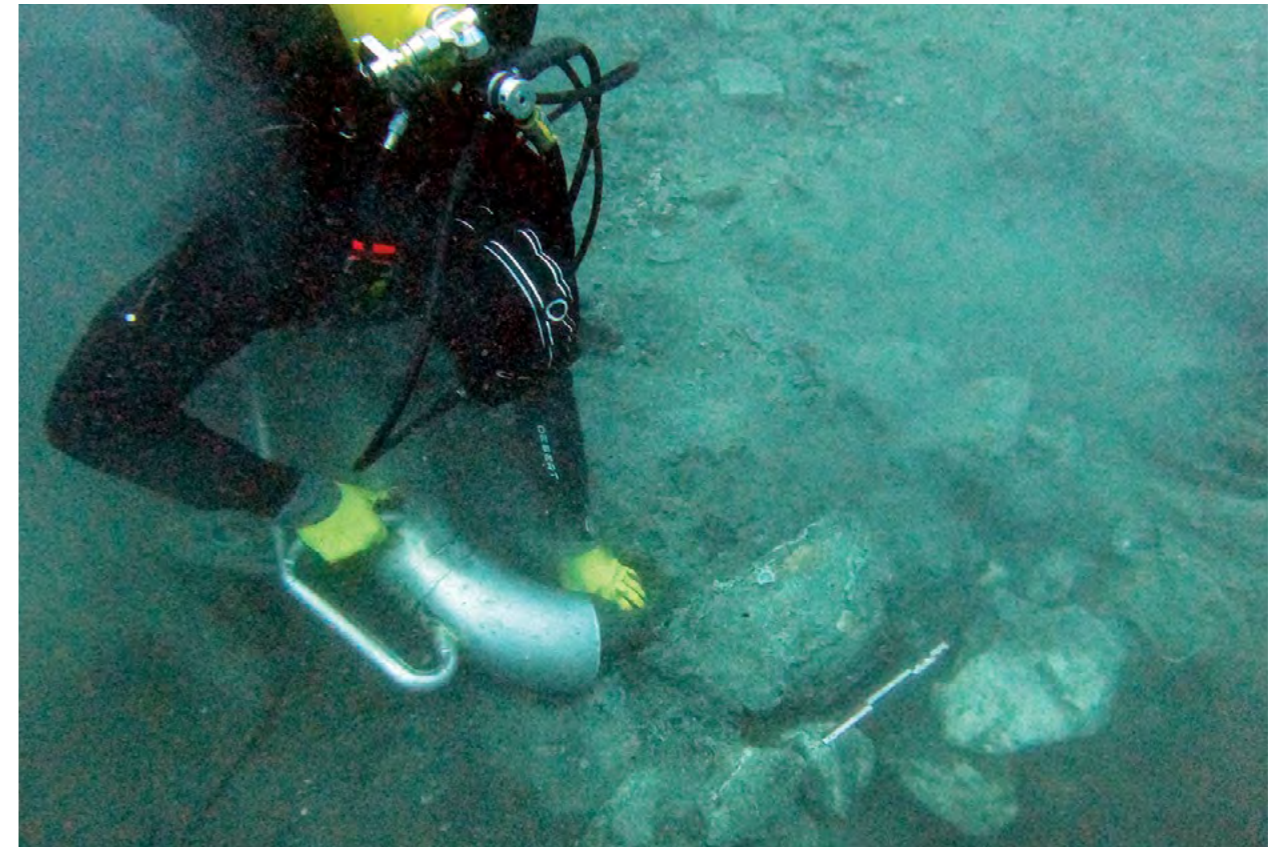
Tijekom istraživačke kampanje 2023. godine nastavljeno je istraživanje u središnjem dijelu broda, u kojem se tijekom 2021. godine naišlo na temeljnicu jarbola i glavno brodsko rebro sastavljeno od dvaju međusobno spojenih elemenata. Pomoćnim metalnim mrežištem zahvaćen je širi prostor, ali je količina sedimenta i balastnog kamenja znatno usporila iskop i koncentrirala ga u kvadrate G4, G5, H4 i H5.

RESEARCH CAMPAIGN IN 2023

During the research campaign in 2023, research was continued in the central part of the ship, where in 2021, the mast step and master frame composed of two interconnected elements were found. The auxiliary metal grid covered a wider area, but the amount of sediment and ballast stones significantly slowed down the excavation and concentrated it in squares G4, G5, H4 and H5.



Ortogonalni plan istraženog dijela nalazišta u sondi 1 (autor: J. Casaban)
Orthogonal plan of the investigated part of the site in trench 1 (author: J. Casaban)



Čišćenje bakrenih posuda (?) u sondi 1 (foto: I. Radić Rossi)
Cleaning of copper vessels (?) in trench 1 (photo: I. Radić Rossi)



Bakrene posude (?) u sondi 1 (foto: I. Radić Rossi)
Copper vessels (?) in trench 1 (photo: I. Radić Rossi)





Otkrivene su još tri vertikalne upore, koje su zajedno s uporom otkrivenom 2021. godine činile osnovicu četvrtaste konstrukcije pretpostavljenog kaljužnog zdenca, čije su stranice bile izrađene od okomito postavljenih dasaka. Sjeveroistočna upora nađena je izvan originalnog položaja, ali je u brodskom rebro jasno vidljiv utor u koji je originalno dosjedala. Bočne stranice pretpostavljenog kaljužnog zdenca nastavljaju se okomito prema jugu, čineći pregrade u smjeru pramca i krme broda. Prije i nakon njih, postavljene su poprečne daske podnice, dok je podnica u međuprostoru položena uzdužno.

U kvadratima G5 i H5 naišlo se na velike okrugle predmete od bakrenog lima, promjera 45 cm i visine 23 cm, od kojih je jedan za sada u cijelosti istražen i podignut s morskog dna kako bi se pokušali utvrditi njegov originalni izgled i namjena. Čini se da je riječ o velikim bakrenim posudama, koje u svojoj unutrašnjosti sadrže još nekoliko manjih posuda, ali je pretpostavku potrebno potvrditi rendgenskim snimkama i konzervatorskim tretmanom. S obzirom na količinu predmeta, očigledno je riječ o dijelu brodskog tereta koji se nalazi u relativnoj blizini skupine korodiranog metalnog materijala, vidljivog u površinskom sloju nalazišta.

Tijekom posljednjeg tjedna istraživanja radilo se i u pramčanom dijelu broda, duž njegove desne strane, s ciljem detaljnog čišćenja olovne obloge koja je prekrivala brodski trup. S nalazišta su uklonjeni dijelovi drvene građe izvan originalnog pložaja pa je ona mjestimično prilično dobro očišćena. Posao je potrebno nastaviti tijekom sljedeće istraživačke kampanje.

ZAKLJUČAK

Brod *Santo Hieronimo* pripadao je dubrovačkom poduzetniku Jerolimu Primojeviću, što ga čini jedinstvenim primjerom plovila povezanog s Dubrovačkom Republikom, koje se sustavno istražuje. Dosadašnji nalazi na morskome dnu dokazali su da je brodska konstrukcija iznimno dobro očuvana. Osim toga, u rubnim dijelovima nalazišta izrazito je dobro vidljiva olovna obloga kojom je brod bio obložen do vodne linije. Za sada je u svijetu zabilježen tek manji broj brodova koji se odlikuju takvom zaštitom brodskog trupa, a ploče pronađene na brodu potonulom kod hridi Malog Školja za sada su najvećih dimenzija. Osim brodske konstrukcije,

Three more vertical stanchions were discovered, which, together with the stanchion discovered in 2021, formed the basis of the square structure of the presumed bilge pump well, the sides of which were made of vertically placed boards. The northeast stanchion was found out of its original position, but the mortise in which it originally fitted is clearly visible in the ship frame. The sides of the assumed bilge pump well continue vertically to the south, forming partitions in the direction of the bow and stern of the ship. Before and after them, transverse limber boards were placed, while the floor in the interspace was laid longitudinally.

Squares G5 and H5 yielded large round objects made of copper sheet with a diameter of 45 cm and a height of 23 cm, one of which has been fully explored and lifted from the seabed to try to determine its original appearance and purpose. It seems that these are large copper vessels, which contain several smaller vessels inside, but the assumption needs to be confirmed by X-rays and conservation treatment. Given the quantity of objects, they were obviously a part of the ship cargo located in the relative vicinity of a heap of corroded metal material, visible in the surface layer of the site.

During the last week of research, the bow part of the ship was also investigated, along its starboard side, with the aim of detailed cleaning of the lead sheathing that covered the ship's hull. Wooden segments outside the original position were removed from the site, so, in some places, it has been decently cleaned. The work should be continued during the next research campaign.

CONCLUSION

The ship *Santo Hieronimo* belonged to the Dubrovnik entrepreneur Jerolim Primojević, which makes it a unique example of a systematically researched vessel associated with the Republic of Ragusa. Previous finds on the seabed have proven that the ship structure is extremely well preserved. In addition, in the marginal parts of the site, the lead sheathing with which the ship was lined to the waterline is clearly visible. So far, only a small number of ships have been recorded in the world that have such protection of the hull, and the sheets found on the ship that sank off the rock of Mali Školj are the largest so far. In addition to the

na nalazištu se još uvijek pronalaze i predmeti iz brodske opreme i tereta, što nalazište čini još zanimljivijim. Stoga je istraživanje potrebno nastaviti kako bi se na vrijeme spasili svi očuvani podatci o brodskoj konstrukciji te izvadili i zaštitili svi pokretni nalazi.

ship structure, ship equipment and cargo items can still be found at the site, which makes it even more interesting. Therefore, it is necessary to continue the research in order to save all the preserved data on the ship structure in time and to take out and protect all the small finds.

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DVOJNA GROBNICA NA SVOD U UVALI SV. LUKE KOD JELSE

Double vaulted tomb in St. Luke's Bay near Jelsa

U studenome 2023. godine u suradnji Odjela za arheologiju Sveučilišta u Zadru i arheološke tvrtke Kantharos d. o. o. provedena su rekognosciranja i probna arheološka istraživanja na području uvale Sv. Luke koja je još poznata pod imenom „Carkvica“ ili „Crikvica“. Probnim arheološkim istraživanjima uključeno je čišćenje i dokumentiranje dvojne grobnice na svod koja se nalazi na zapadnom dijelu obale.

Uvala Sv. Luke nalazi se 4 km istočno od Jelse na otoku Hvaru. Riječ je o manjoj uvali okruženom borovom šumom i maslinicima na čijem se istočnom rtu nalazi srednjovjekovna crkva iz 14. stoljeća posvećena sv. Luki koja je i najreprezentativnija građevina unutar njezina krajolika. Uz uvalu se pruža plodni dolac, tipično dugo i usko kraško polje, kakva karakteriziraju otočni i obalni dio Hrvatske.

Osim crkve sv. Luke, na istočnom dijelu uvale, nedaleko od crkve, nalaze se ostatci antičke arhitekture, vjerojatno vile rustike (Gamulin 1907: 145-147; Nikolanci 1958: 58; Nikolanci 1973: 95; Petrić 1978: 22-23; Zaninović 1967: 363; Zaninović 1973: 209-210; Zaninović 1980: 36-37; Gaffney et al. 1997: 146). Pod morem u uvali nalaze se strukture antičkog prista-

Field survey and archaeological trial excavations were carried out in the area of St. Luke's Bay which is also known under the name "Carkvica" or "Crikvica" (*little church*) in November 2023, in collaboration between the Department of Archaeology of the University of Zadar and the archaeological company Kantharos. Preliminary archaeological investigations included the cleaning and documentation of a double vaulted tomb located in the western part of the coast.

St. Luke's Bay is located 4 km east of Jelsa on the island of Hvar. It is a small bay surrounded by pine forests and olive groves. On its eastern cape is a medieval church

dating to the 14th century dedicated to St. Luke, which is also the most representative building in the landscape. A typical long and narrow, fertile karst field (*"dolac"*) which characterizes the islands and coastal part of Croatia, extends along the bay.

Apart from the church of St. Luke, on the eastern part of the bay, not far from the church, there are ancient ruins, probably of a countryside villa (*villa rustica*) (Gamulin 1907: 145-147; Nikolanci 1958: 58;

ništa (Zaninović 1980: sl. 9; Gaffney et al. 1997: 146) koje je potvrđeno podvodnim rekognosciranjima Tee Katunarić (Crnčević 2022).

Dvojna grobnica na svod, koja je dosad vrlo kratko spomenuta u literaturi (Gamulin 1907: 146; Gaffney et al. 1997: 146), te nije registrirana kao kulturno dobro, nalazi se na suprotnoj, zapadnoj obali uvale. U literaturi se spominju dvije grobnice nepoznatog podrijetla i nepoznatog položaja (Gaffney et al. 1997: 146), dok kod opisa don Vice Gamulina iz

Nicolanci 1973: 95; Petrić 1978: 22-23; Zaninović 1967: 363; Zaninović 1973: 209-210; Zaninović 1980: 36-37; Gaffney et al. 1997: 146). The structures of an ancient pier (Zaninović 1980: fig. 9; Gaffney et al. 1997: 146) were confirmed by the underwater survey conducted by Tea Katunarić (Crnčević 2022:).

The double vaulted tomb, which has so far been only briefly mentioned in the literature (Gamulin 1907: 146; Gaffney et al. 1997: 146), and is not registered as an example of cultural heritage, is loca-


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1. Grobnica 3. Ostaci rimske arhitekture
2. Ostaci pristaništa 4. Sv. Luka

Arheološka topografija uvale Sv. Luke (foto i izrada karte: E. Visković)
Archaeological topography of St. Luke's Bay (photo and map: E. Visković)



1907. godine na prostoru uvala Sv. Luke stoji navodno „3 posvođene sobice“ koje puk naziva „pećnice“ (Gamulin 1907: 146). Takav bi opis mogao odgovarati ovoj grobnici na svod s tom razlikom da zatečeno stanje grobnice potvrđuje dvije „sobice – pećnice“ odnosno komore, a ne tri. Na položaj su nam skrenuli pozornost kolege Nikša Vujnović i Ivan Volarević na čemu im srdačno zahvaljujemo.

Dvojna grobnica na svod nalazi se na uzvišenom položaju u odnosu na uvalu, na blago terasastom terenu, uz rubni dio plodne površine, unutar pošumljenog dijela. Stanje grobnice upućuje na to da je bila sekundarno upotrijebljena kao nekakav tip

ted on the opposite, western coast of the bay. Two tombs of unknown origin and unknown location are mentioned in the literature (Gaffney et al. 1997: 146), while in the description by Father Vice Gamulin from 1907 there is a mention of “3 vaulted rooms” that the locals call “ovens” in the area of St. Luke’s Bay (Gamulin 1907: 146). Such a description could correspond to this vaulted tomb with the difference that the found state of the tomb confirms two “rooms - ovens” or chambers, rather than three. Our colleagues Nikša Vujnović and Ivan Volarević drew our attention to the position, for which we sincerely thank them.

privremenog skloništa, a grobne komore koje bi se trebale nalaziti pod zemljom zatečene su u današnjoj ravnini terase i nivou zemlje. Uočeno je da joj je unutrašnjost u cijelosti očišćena, nije bilo tragova ljudskih kostiju, a prednji dio, gdje bi se trebao nalaziti ulaz, u potpunosti je uništen te je na tom mjestu, uz južnu komoru, izgrađen suhozid.

Probna su arheološka istraživanja uključila čišćenje humusnog sloja, uklanjanje šute kamenja koja je otpala od konstrukcije grobnice, uklanjanje suhozida i čišćenje unutrašnjosti grobnih komora. Time se dobila maksimalna očuvanost grobnice.

Nakon čišćenja uzete su mjere, postojeće je sta-

The double vaulted tomb is located on an elevated position in relation to the bay, on a slightly terraced ground, along the edge of fertile area, within a wooded part. The state of the tomb indicates that it was used secondarily as some type of temporary shelter, and the burial chambers that should be located underground were found in today’s terrace plane and ground level. It was noticed that its interior was completely cleaned, without any traces of human bones, and the front part, where the entrance should have been, was completely destroyed. A dry stone wall was built in that place, next to the southern chamber.

Preliminary archaeological investigations included cleaning the humus layer, removing dry stone wall and rubble from the tomb construction and cleaning the interior of the burial chambers. This resulted in maximum preservation of the tomb.

After cleaning, the measurements were taken, the existing condition was photographed and a 3D model of the tomb was created. The location was also photographed from the air with a drone, which provided an excellent basis for studying the landscape and archaeological topography of the entire bay.

It was a tomb with two burial chambers with a vault, which are typologically characteristic of Late Antiquity, and they are most common in the interior of the province of Dalmatia. The chambers were built at the same time and connected by a wall with a maximum width of 42 cm. The outer width of the southern chamber is 180 cm, and of the northern one 190 cm. The length of the preserved part of the southern chamber is 235 cm. The length of the preserved part of the northern chamber is 220 cm. The inner height of the northern one is 110 cm, while the southern one is 132 cm high on the inner side. The outer height of the northern chamber (without the slab) is 146 cm, and the southern chamber is 167 cm high on the outer side.

They are oriented east-west, and both chambers on the west side have one niche each (southern niche: width 40 cm; height 45 cm, depth 30 cm; northern niche: width 50 cm; height 40 cm; depth 50 cm), there are no traces of resting places nor bones. A crude slab (90 cm x 70 cm),

Zračna fotografija položaja grobnice na svod (foto: E. Visković)
Aerial photograph of the position of the vaulted tomb
(photo: E. Visković)





nje fotografirano te je izrađen 3D model grobnice. Položaj je također snimljen iz zraka dronom čime se dobila izvrsna podloga za izučavanje krajolika i arheološke topografije cijele uvale.

Pokazalo se da je riječ o grobnici s dvjema grobnim komorama na svod koje su tipične za razdoblje kasne antike, a najzastupljenije su u unutrašnjosti provincije Dalmacije. Komore su izgrađene istovremeno te su spojene zidom maksimalne širine 42 cm. Vanjska širina južne komore iznosi 180 cm, a vanjska širina sjeverne 190 cm. Dužina sačuvanog dijela južne komore iznosi 235 cm. Dužina sačuvanog dijela sjeverne komore je 220 cm. Unutarnja visina sjeverne 110 cm, dok je kod južne 132 cm. Vanjska visina sjeverne komore (bez ploče) iznosi 146 cm, a južne 167 cm.

Orijentirane su istok-zapad, a obje komore na zapadnoj strani imaju po jednu nišu (niša južne: š. 40; v. 45, dub. 30; niša sjeverne: š. 50 cm; v. 40 cm; dub. 50 cm), nema tragova ležajeva ni kostiju. Iznad sjeverne sačuvana je nepravilna ploča (90 cm x 70 cm), debljine 13 cm.

Svodovi su izrađeni od sedre, a zidovi od nepravilnog kamenja povezanog žbukom. Unutrašnjost obje komore grubo je ožbukana.

Ovakav tip grobnica tipičan je za kasnoantičko razdoblje i najčešće se nalaze uz starokršćanske

13 cm thick, has been preserved above the northern one.

The vaults are made of travertine, and the walls are made of undressed stones bound by mortar. The interior of both chambers is roughly plastered.

This type of tomb is typical of the late antique period and is most often found next to or inside early Christian churches. It is very indicative that the tomb is leaning against the dry stone wall on the western part, exactly where the tomb ends. Namely, in the extension of the same dry stone wall, at a distance of 3 m, traces of plaster can be seen within its lower layers. A larger cairn was also formed immediately next to the dry stone wall, which could possibly indicate the position of an early Christian church.

Archaeological trial excavations of the double vaulted tomb were aimed at drawing attention to the rich archaeological heritage of St. Luke's Bay and wider area of Jelsa. St. Luke's Bay is a very important archaeological site to which the professional and scientific public has not paid much attention, even though the archaeological material, especially the architectural remains, are well preserved and visible even without archaeological investigations. All references in the literature are



Tlocrt grobnice na svod prema 3D modelu (izradio: E. Visković)
Ground plan of the vaulted tomb according to a 3D model (made by: E. Visković)



Grobnica na svod prije arheoloških iskopavanja (foto: E. Visković)
Vaulted tomb before archaeological excavations (photo: E. Visković)



Grobnica na svod nakon arheoloških iskopavanja (foto: E. Visković)
Vaulted tomb after archaeological excavations (photo: E. Visković)





3D model grobnice na svod (izradio: E. Visković)
A 3D model of the vaulted tomb (made by: E. Visković)

crkve ili unutar njih. Vrlo je indikativno što je grobnica prislonjena na suhozid na zapadnom dijelu, točno na mjestu gdje grobnica završava. Naime, u produžetku tog istog suhozida, na udaljenosti od 3 m, unutar njegovih donjih slojeva uočavaju se tragovi žbuke. Neposredno uz suhozid također je formirana veća kamena gomila koja bi eventualno mogla upućivati na položaj starokršćanske crkve.

Probnim arheološkim istraživanjima dvojne grobnice na svod željela se skrenuti pozornost javnosti na bogatu arheološku baštinu uvale Sv. Luke i šireg prostora Jelse. Uvala Sv. Luke vrlo je važan arheološki lokalitet kojem stručna i znanstvena javnost nije posvetila veliku pozornost iako je arheološka građa, osobito arhitektura, dobro očuvana, te vidljiva i bez arheoloških istraživanja. Svi su navodi u literaturi kratki i sporadični. Potencijalna buduća istraživanja lokaliteta unutar uvale, te njihovo suvremeno dokumentiranje i prezentiranje, bila bi velik doprinos ne samo spoznajama o arheološkoj topografiji šireg prostora Jelse već za arheologiju otoka Hvara i arheologiju hrvatskih otoka općenito.

short and sporadic. Potential future research of the sites within the bay, and their contemporary documentation and presentation, would be a great contribution not only to the knowledge of the archaeological topography of the wider area of Jelsa, but also to the archaeology of the island of Hvar and the archaeology of the Croatian islands in general.

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GRADINA SAMOGRAD / ZAMINA





Ravne kotare, najplodniji dio sjeverne Dalmacije, karakterizira izmjena antiklinala (uzvišeni dio boranog reljefa) i sinklinala (udubljeni dio), koje prate dinarski smjer pružanja reljefa, od sjeverozapada prema jugoistoku. Upravo se na jednom takvom nizu uzvišenja, sjeveroistočno od Vranskog jezera, nalazi lokalitet čija se aktualna arheološka istraživanja opisuju u ovom radu. Brdo je na suvremenim kartama označeno toponimom Zamina, no gradina se u arheološkoj literaturi najčešće navodi pod imenom Samo-grad ili Vran-Samograd. Spominje se još od Josipa Alačevića (Alačević 1879: 10) i Grgura Urlič-Ivanovića (Urlič Ivanović 1881: 107-108.), a pojedini autori na nju ubiciraju *Blandonu* ili *Blanonu* koja se spominje u *Geografiji* Klaudija Ptolomeja te u *Antoninovu itinerariju* (Brusić 2007: 23, bilješka 15). M. Čelhar smatra kako je ovdje u mlađem željeznom dobu bilo središte teritorijalne općine, na kojem je život nastavljen i poslije, u rimsko doba (Čelhar 2014: 182-183).

Od 2017. godine na gradini se provode arheološka istraživanja u suradnji Agencije Han-Vrana i Odjela za arheologiju Sveučilišta u Zadru. U prvim trima kampanjama istraživanja su se provodila na

The region of Ravni Kotari, the most fertile part of northern Dalmatia, is characterized by an alternation of anticlines (elevated part of undulated relief) and synclines (downward part), which follow the Dinaric direction of the relief spreading, from the northwest to the southeast. It is precisely on such a series of elevations, northeast of Lake Vrana, that there is a site whose current archaeological research is described in this paper. The hill is marked with the toponym Zamina on modern maps, but the hillfort is most often mentioned in the archaeological literature under the name Samograd or Vran-Samograd. It is mentioned by Josip Alačević (Alačević 1879: 10) and Grgur Urlič-Ivanović (Urlič Ivanović 1881: 107-108), and some au-

thors refer to it as *Blandona* or *Blanona*, which is mentioned in the Geography of Claudius Ptolemy and in the Antonine Itinerary (Brusić 2007: 23, note 15). M. Čelhar believes that a center of the territorial municipality was situated here in the Late Iron Age, where life continued even later, in the Roman era (Čelhar 2014: 182-183).

Archaeological investigations have been carried out on the hillfort since 2017, in cooperation of the

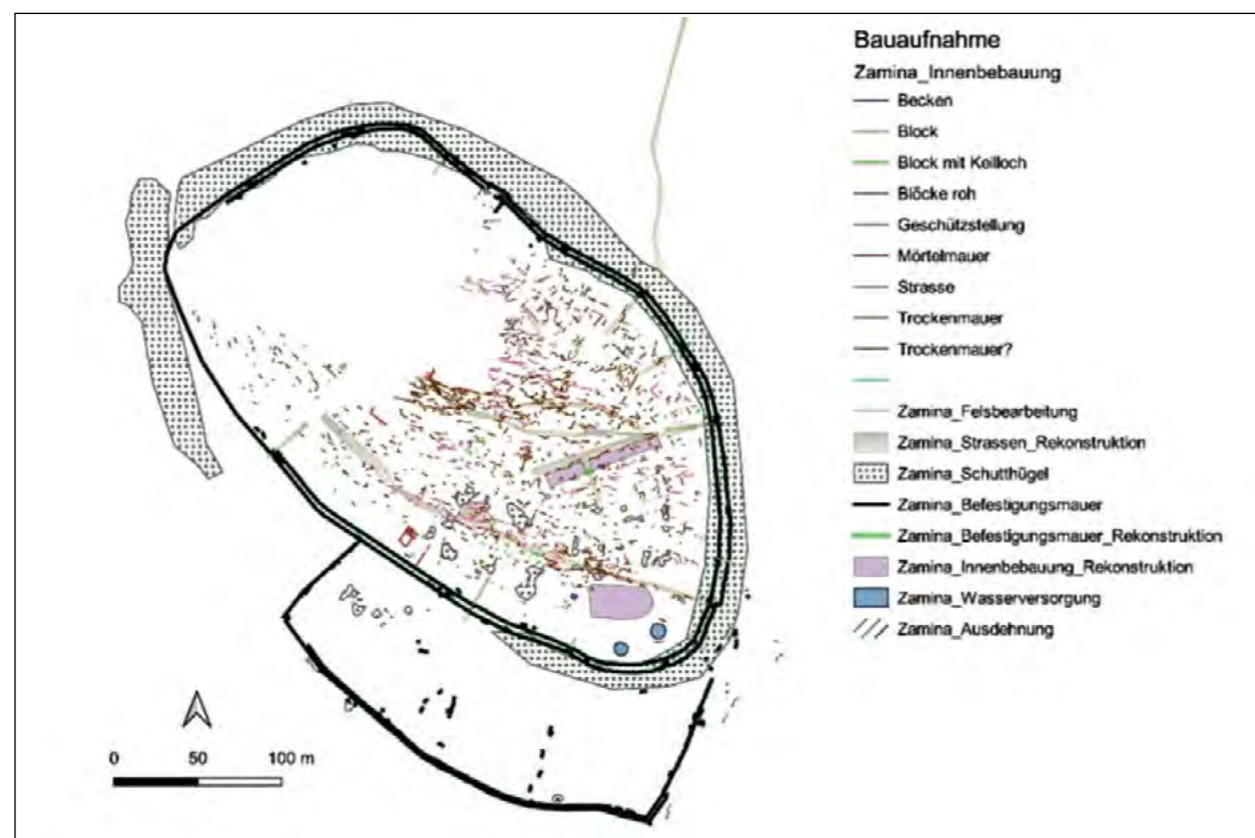


Jure ŠUČUR

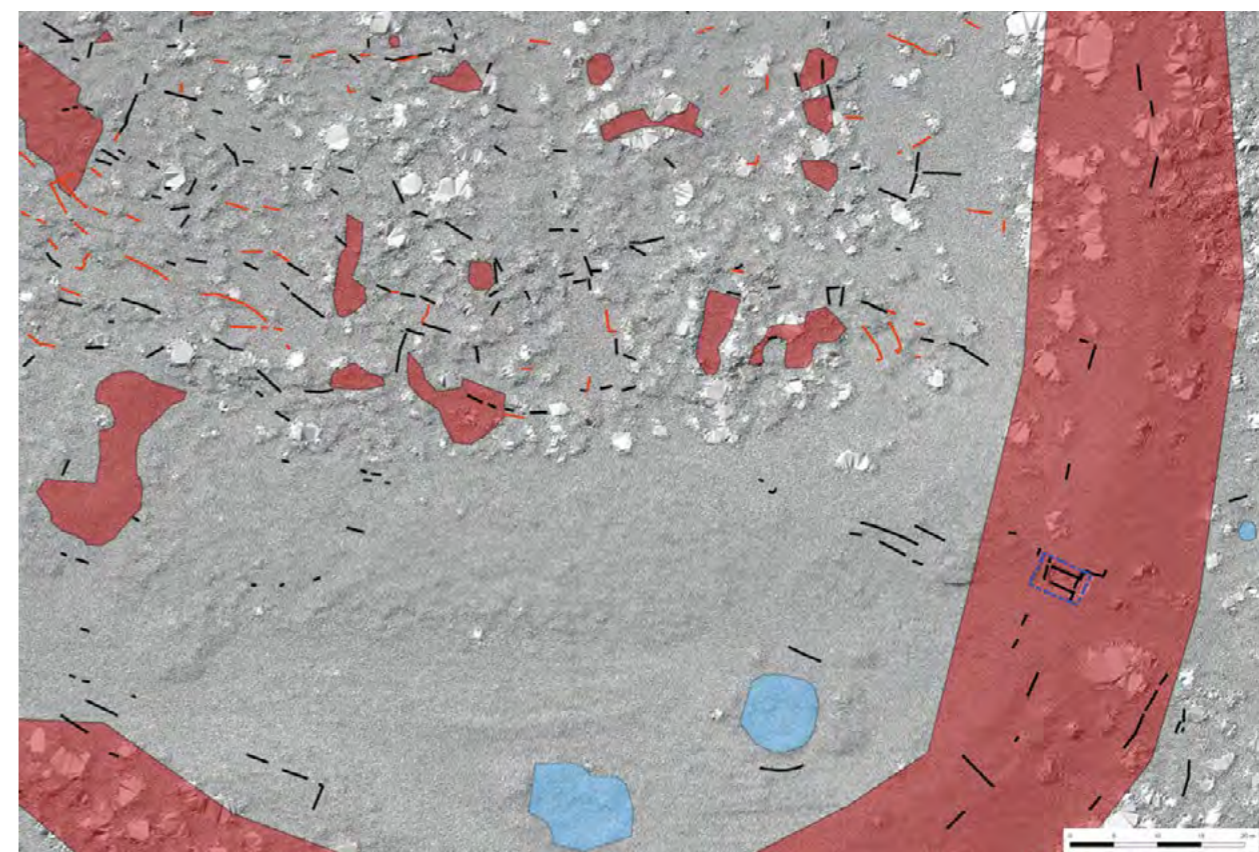
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Površinski zabilježene strukture na gradini (izrada: G. Rasbach)
Structures recorded on the surface of the hillfort (made by: G. Rasbach)



Strukture zabilježene na jugoistočnom dijelu gradine (izrada: R. Scholz)
Structures recorded in the south-eastern part of the hillfort (made by: R. Scholz)

jugozapadnoj padini gradine, na jednoj od nižih terasa, te je istražen dio termalnog sklopa urbane vile koja je, s obzirom na databilne nalaze, sa sigurnošću funkcionirala od 2. do 4. stoljeća, a pod istražene prostorije bio je prekriven loše očuvanim mozaikom. Sjeveroistočno od spomenute prostorije, osim sklopa kasnijih zidova, uočen je i mogući bedem, a iskapanjem smo dosegli slojeve 4. ili 3. st. pr. Kr. jer se pod prostoriju podvlači žuta glinena podnica na kojoj je pronađen dio kasnoliburnske certosoidne fibule.

Stručnu su nam pomoć i u ranijim godinama pružali njemački kolege, no od 2021. godine financiranje istraživanja preuzima Römisch-Germanische Kommission (RGK) u sklopu projekta *Besiedlung, Raumerschließung und -nutzung von der Eisenzeit bis in die Spätantike am Vrana-See* (Naseljavanje, razvoj i korištenje prostora od željeznog doba do kasne antike na prostoru Vranskog jezera). Četvrta (2021.) i peta (2022.) arheološka kampanja provedene su na jugoistočnom dijelu gradine gdje je istražen ulaz u naselje, kao i dio bedema. Ulaz je širok 1,6 m, bedemi pokazuju više faza, a u posljednjoj fazi jednim redom masivnog kamena zapriječen je prolaz, koji je vjerojatno i prije prestao funkcionirati. Uz samo iskopavanje, na cijeloj

Han Vrana Agency and the Department of Archaeology of the University of Zadar. In the first three campaigns, the research was carried out on the southwestern slope of the hill, on one of the lower terraces, and a part of the thermal complex of the urban villa was investigated, which, given the datable finds, was definitely functional from the 2nd to the 4th century, and the floor of the investigated room was covered with poorly preserved mosaic. To the northeast of the mentioned room, in addition to some later walls, a possible rampart was also observed, and through excavation we reached the layers of the 4th or 3rd century BC because under the room there is a yellow clay floor on which part of a late Liburnian pseudo-Certosia fibula was found.

German colleagues provided us with professional help in the earlier years, but from 2021, research funding will be taken over by the Römisch-Germanische Kommission (RGK) as part of the project *Besiedlung, Raumerschließung und -nutzung von der Eisenzeit bis in die Spätantike am Vrana-See* (Settlement, development and the use of space from the Iron Age to Late Antiquity in the Lake Vrana region). The fourth (2021) and fifth (2022) archaeological campaigns were carried out in the south-





Uklanjanje vegetacije oko platoa na jugoistoku gradine (foto: J. Šučur)
 Removal of vegetation around the plateau in the southeast of the hillfort (photo: J. Šučur)

površini lokaliteta bilježene su sve strukture koje je bilo moguće uočiti, te se na taj način stvara prostorna baza podataka koja će integrirati sve spoznaje, i one dobivene iskopavanjem i one dobivene korištenjem nedestruktivnih metoda. Uz voditelja istraživanja, Marka Meštrova iz Interpretacijskog centra Maškovića han, i zamjenika, Juru Šučura s Odjela za arheologiju Sveučilišta u Zadru, stručnu ekipu sačinjavali su Roman Scholz i Gabriele Rasbach iz Römisch-Germanische Kommission, te Judith Ley i Franziska Lang s Technische Universität Darmstadt.

U 2023. godini uloge voditelja i zamjenika su zamijenjene, a uz već spomenute članove stručnog tima sudjelovali su i studenti arheologije: Victoria Holze, Agata Karan, Monika Špoljarić, Helena Žigić, Kristina Valjan, Ivan Klasan i Ivana Josić. Tijekom ovogodišnje kampanje nisu se provodila iskopavanja, već se nastavio rad na otkrivanju i kartiranju površinski vidljivih ostataka, ponajprije ostataka građevina (zidova kuća, fortifikacijskih elemenata itd.), ali i znakovitih pokretnih nalaza pronađenih tijekom obilaska. Spomenute aktivnosti odvijale su se u dva segmenta. Jednim je dijelom nastavljen detaljan pregled gradine na prostoru koji nije obuhvaćen prethodnih godina, dok se drugi dio sasto-

eastern part of the hillfort, where the entrance to the settlement and part of the ramparts were investigated. The entrance is 1.6 m wide, the ramparts show several phases, and in the last phase, a single row of massive stones was used to block a passage, which, in all likelihood, had no longer been functional at the time. In addition to the excavation, all the structures that could be observed were recorded on the entire surface of the site, thus creating a spatial database that will integrate all information, both those obtained by excavation and those obtained using non-destructive methods. Along with the leader of the research, Marko Meštrov from the Interpretation Center Maškovića Han, and the deputy, Jure Šučur from the Department of Archaeology of the University of Zadar, the expert team consisted of Roman Scholz and Gabriele Rasbach from the Römisch-Germanische Kommission, and Judith Ley and Franziska Lang from the Technische Universität Darmstadt.

In 2023, the roles of leader and deputy were switched, and in addition to the already mentioned members of the expert team, archaeology students also participated: Victoria Holze, Agata Karan, Monika Špoljarić, Helena Žigić, Kristina Valjan, Ivan Klasan and Ivana Josić. During this year's

jao od uklanjanja vegetacije, drveća, grmlja i trave, prije bilježenja vidljivih struktura na južnom dijelu gradine.

Naime, na jugoistočnom dijelu gradine, u nastavku komunikacije koja od istraženog ulaza ide prema zapadu nalazi se veći plato, na kojem gotovo uopće nisu vidljive nikakve strukture. Na tom je mjestu još Luka Jelić pretpostavio postojanje foruma, a u ovoj se kampanji od vegetacije čistio okolni prostor te su dokumentirane sve strukture uočene na tom dijelu kako bi se područje pripremilo za sljedeću kampanju.

campaign, no excavations were carried out, but work continued on the discovery and mapping of the features visible on the surface, primarily the remains of buildings (walls of houses, fortification elements, etc.), but also significant small finds recovered in the survey. The mentioned activities took place in two segments. One part continued the detailed inspection of the hillfort in an area that was not covered in previous years, while the second part consisted of the removal of vegetation, trees, bushes and grass, before recording the visible structures on the southern part of the hillfort.

Namely, in the southeastern part of the hillfort, in the continuation of the communication route that goes west from the explored entrance, there is a larger plateau, on which almost no structures are visible. At that place, Luka Jelić assumed the existence of a forum, and in this campaign, the surrounding area was cleared of vegetation, and all the structures observed in that part were documented in order to prepare the area for the next campaign.

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ISTRAŽIVANJE BRODOLOMA IZ 1. ST. PR. KR. KOD RTA LETAVICE NA OTOKU PAGU

Research of a 1st-century BC shipwreck off Cape Letavica on the island of Pag

UVOD

Brodolom kod rta Letavice za sada je jedino odlično očuvano nalazište u hrvatskom podmorju, nezaštićeno željeznim kavezom, na kojem se redovito provode turistička ronjenja, ali i arheološka istraživanja u kojima sudjeluju svi zainteresirani ronionci. Riječ je o brodskom teretu od oko četiristo amfora tipa Lamboglia 2, otkrivenom 2018. godine, koji leži na dubini od 32 do 38 m, ocrtavajući linije potopljenog broda (Radić Rossi, Dorušić 2019).

Nakon početne dokumentacijske kampanje, provedene po otkriću nalazišta, istraživanja se kontinuirano provode od 2020. godine. Financijska sredstva tijekom tri godine osigurana su iz vlastitih izvora poduzeća Foka d. o. o., Centra za podvodna istraživanja *Navalis* i Sveučilišta u Zadru, te priku-

INTRODUCTION

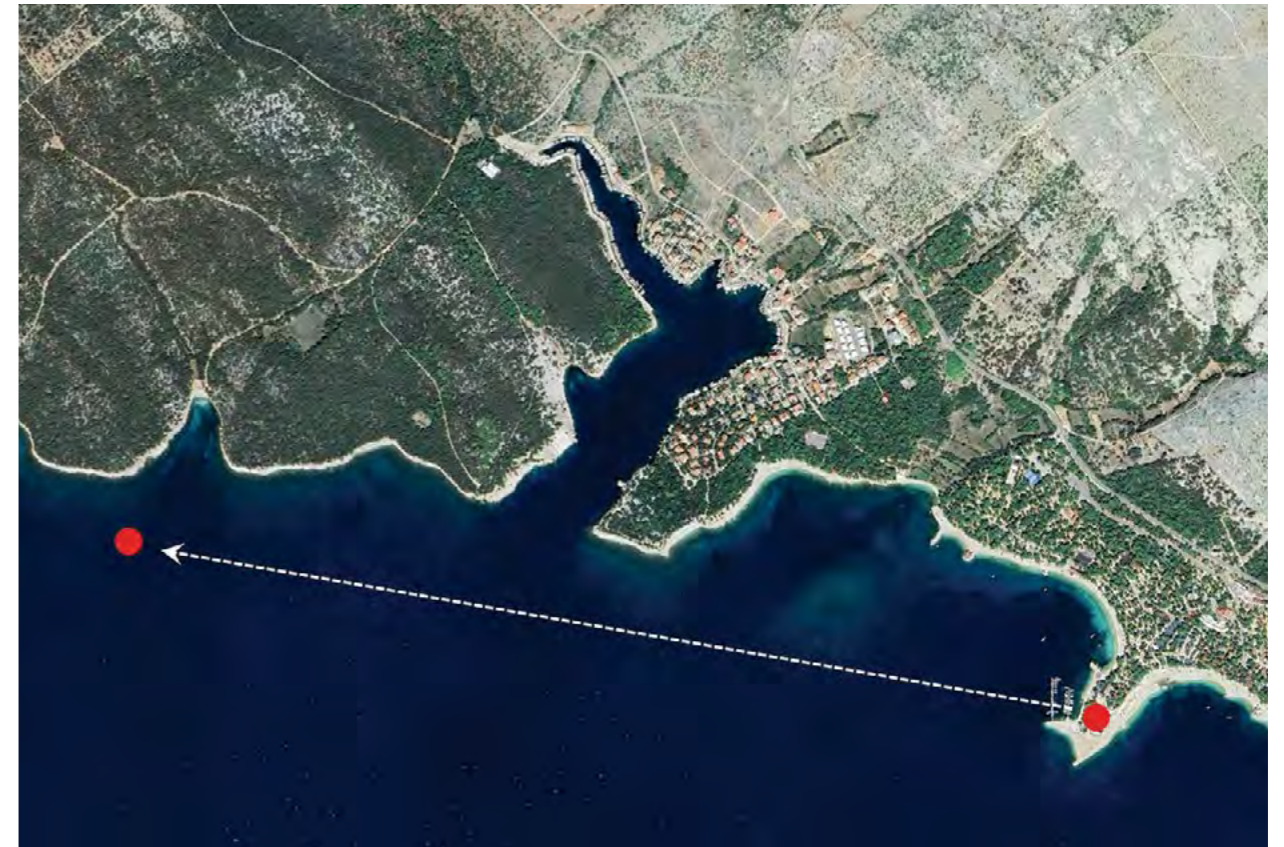
The shipwreck off Cape Letavica is currently the only well-preserved underwater site in the Croatian waters not protected by an iron cage, where tourist diving is regularly carried out, as well as archaeological research in which all interested divers participate. It is a cargo of about four hundred Lamboglia 2 amphorae, discovered in 2018, lying at a depth of 32 to 38 m, outlining the contours of the sunken ship (Radić Rossi, Dorušić 2019).

After the initial documentation campaign, carried out after the discovery of the site, research has been carried out continuously since 2020. For three years the funding was provided by the Foka Company, the Center for Underwater Research *Navalis* and the University of Zadar, as well as



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Položaj Ronilačkog centra Foka i nalazišta kod rta Letavice (podloga: Google Earth Pro)
Location of the Foka Diving Center and the site off Cape Letavica (source: Google Earth Pro)

pljenih donacija, uz kontinuiranu podršku Kampa Šimuni. Veći dio sredstava za istraživanja 2023. godine osiguralo je Ministarstvo kulture i medija RH.¹

REZULTATI DOSADAŠNJIH ISTRAŽIVANJA

Na nalazištu su do sada pronađene tri olovne prečke antičkih olovno-drvenih sidara, korodirani metalni predmet nalik na valosijek, petnaest čitavih ili djelomično oštećenih keramičkih posuda, keramička uljanica i jedanaest diskoidnih keramičkih čepova amfora (Radić Rossi, Yamafune 2023). Osim toga, pronađeni su ostatci metalnog lima za koji se pretpostavljalo da pripada metalnoj posudi. Tijekom konzerviranja i restauriranja na Umjetničkoj akademiji Sveučilišta u Splitu utvrđeno je, međutim, kako je riječ o dvjema metalnim posudama koje su se u trenutku potonuća nalazile jedna u drugoj. Konzervatorsko-restauratorski postupak na metalnim predmetima još je uvijek u tijeku, ali je

¹ Istraživanje je provedeno u organizaciji Odjela za arheologiju Sveučilišta u Zadru i Ronilačkog centra *Foka* iz Šimuna, uz sudjelovanje arheologa iz Arheološkog muzeja u Zadru i sa Sveučilišta na Malti, djelatnika Ronilačkog centra *Foka* i ronilaca volontera iz Hrvatske i Slovenije.

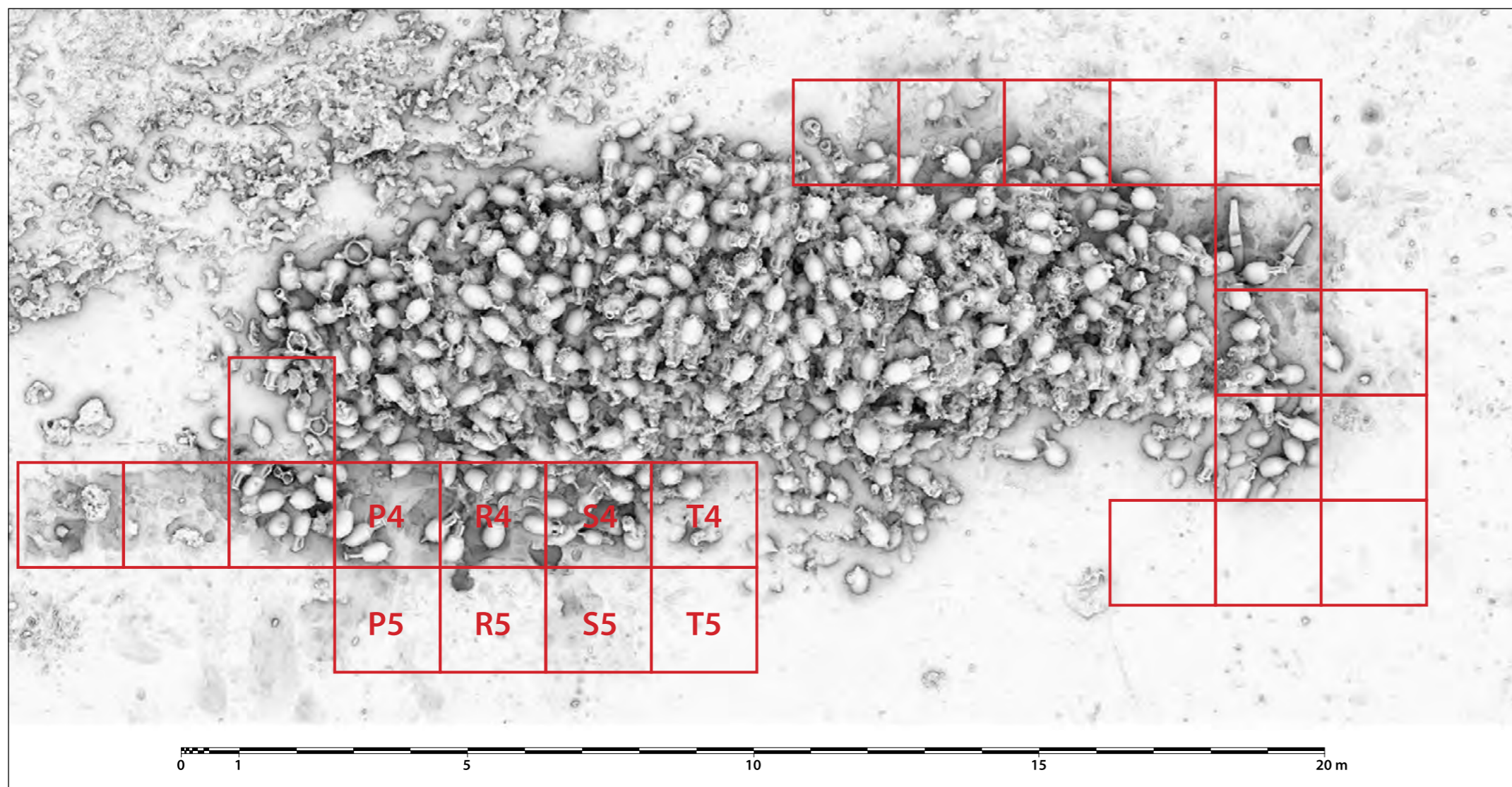
by the collected donations, with the continuous support of Camping Village Šimuni. Most of the funding for research in 2023 was provided by the Ministry of Culture and Media of the Republic of Croatia.¹

RESULTS OF THE PREVIOUS RESEARCH

So far, the site has yielded three lead stocks of ancient lead-wooden anchors, a corroded metal object similar to a cutwater, fifteen whole or partially damaged ceramic vessels, a ceramic oil lamp and eleven discoid ceramic amphora stoppers (Radić Rossi, Yamafune 2023). The remains of a metal sheet were also found, assumed to belong to a metal container. During conservation and restoration at the Art Academy of the University of Split, it was determined, however, that these were two metal containers that were inside each other at the time of sinking. The conservation-restoration

¹ The research was organized by the Department of Archaeology of the University of Zadar and the Foka Diving Center from Šimuni, with the participation of archaeologists from the Archaeological Museum in Zadar and the University of Malta, employees of the Foka Diving Center and volunteer divers from Croatia and Slovenia.





Položaj pomoćnog metalnog mrežišta; crvenom bojom označeni su novi kvadrati dodani tijekom istraživačke kampanje 2023. (podloga: K. Yamafune)
Position of the auxiliary metal grid; new squares added during the 2023 research campaign are marked in red (base: K. Yamafune)

a rather poor condition. Nevertheless, fragments of the frames and planks were recognized, and the technique of connecting the planks with the technique of mortise-and-tenon joints was also confirmed. Analyses of the wooden material showed that the found frames and planking were made of elm (*Ulmus* sp.), wooden treenails that used to connect the frames with the planking were made of olive (*Olea europaea* L.), and the tenons used to connect the planks of holm oak (*Quercus ilex* L.). In addition, a wood sample from the lead stock showed that the wooden part of the anchor was also made of holm oak.⁴

THE COURSE AND RESULTS OF THE 2023 RESEARCH

During the research campaign in 2023, the underwater excavation continued from the southwestern part of the ship structure towards the central part of the ship. Since there was no need for physical protection over the investigated part of the site at the end of last year's campaign, this year the research began with the installation of an auxiliary metal grid. It covered the western part of the position on which work had already been done during the past year, while the eastern part covered the area where no underwater excavation had been carried out so far. In squares S 4/5 and T 4/5, a large quantity of lead sheet was observed in the form of sheet metal plates connected to each other with metal nails. Although at first it looked like it was the lead sheathing of the hull, the situation at the site after a few days of research suggested that it was some other structure made of lead sheet. Given that ceramic objects are found on its upper and lower sides, the situation does not correspond to the position of the lead sheathing, but it is likely that it is an element of the galley. Since the lead has not been completely cleaned, its documentation is forthcoming.

dovršen na keramičkim nalazima.²

Tijekom dosadašnjih istraživanja s nalazišta su izvađene i dvije čitave amfore. Na amfori izvađenoj 2018. godine, tijekom postupka čišćenja, uočen je pečat ANTA.EV, utisnut na vratu. Težina amfore iznosi 22 kg, a kapacitet 38 l, što bi značilo da težina pune amfore iznosi 60 kg. Konzervatorsko-restauratorski zahvat na amfori izvađenoj 2022. godine, koja se odlikuje potpuno očuvanim izduženim šiljkom koji štiti dno posude, još je uvijek u tijeku.³

U gornjem, sjeveroistočnom dijelu nalazišta uočeni su elementi drvene brodske konstrukcije u prilično lošem stanju. Usprkos tomu, raspoznati su ulomci brodskih rebara i platica, a potvrđena je i tehnika međusobnog spajanja platica sistemom

process on the metal objects is still ongoing, but it has been completed on the ceramic finds.²

During the research so far, two complete amphorae have been removed from the site. On the amphora taken out in 2018, during the cleaning process, the stamp ANTA.EV was observed, stamped on the neck. The weight of the amphora is 22 kg, and the capacity is 38 l, which would mean that the weight of the full amphora is 60 kg. The conservation-restoration work is still ongoing on the amphora taken out in 2022, which is characterized by a completely preserved elongated spike that protects the bottom of the vessel.³

In the upper, northeastern part of the site, elements of wooden ship structure were observed in

utora i jezičaca. Analize drvene građe pokazale su da su pronađena rebra i oplata bili izrađeni od briješta (*Ulmus* sp.), drveni čavli kojima su rebra spajana za oplatu od masline (*Olea europaea* L.), a jezičci kojima su međusobno spajane platice od hrasta crnike (*Quercus ilex* L.). Osim toga, uzorak drveta iz olovne prečke pokazao je kako je i drveni dio sidra bio izrađen od hrasta crnike.⁴

TIJEK I REZULTATI ISTRAŽIVANJA 2023.

Tijekom istraživačke kampanje 2023. podmorski iskop nastavljen je od jugozapadnog dijela brodske konstrukcije u smjeru središnjeg dijela broda. Kako krajem prošlogodišnje kampanje nije bilo

² Konzervaciju i restauraciju keramičkih i metalnih nalaza provode Miona Miliša i Filip Rogošić na Odsjeku za konzervaciju – restauraciju Umjetničke akademije Sveučilišta u Splitu.

³ Konzervatorsko-restauratorski zahvat na dvjema izvađenim amforama provode Zdenka Vrgoč i Marina Čurković Madiraca u Međunarodnom centru za podvodnu arheologiju u Zadar.

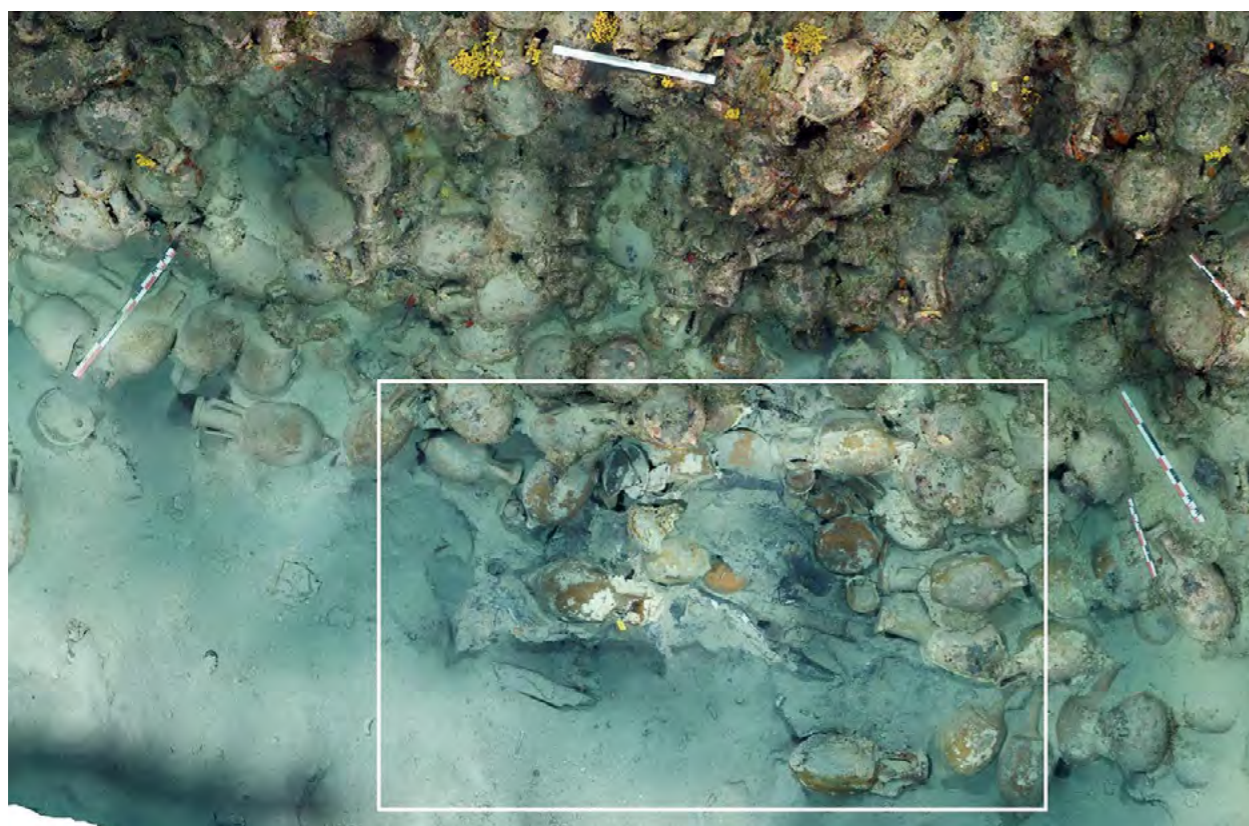
² The conservation and restoration of ceramic and metal finds is carried out by Miona Miliša and Filip Rogošić at the Department for Conservation - Restoration of the Art Academy of the University of Split.

³ Zdenka Vrgoč and Marina Čurković Madiraca are carrying out conservation and restoration work on the two collected amphorae at the International Center for Underwater Archaeology in Zadar.

⁴ Analize drvene građe provela je Alba Ferreira Dominguez iz arheološko-konzervatorske udruge Ipso Facto (Marseille, Francuska).

⁴ The analyses of the wooden material was carried out by Alba Ferreira Dominguez from the archaeological-conservation association Ipso Facto (Marseille, France).





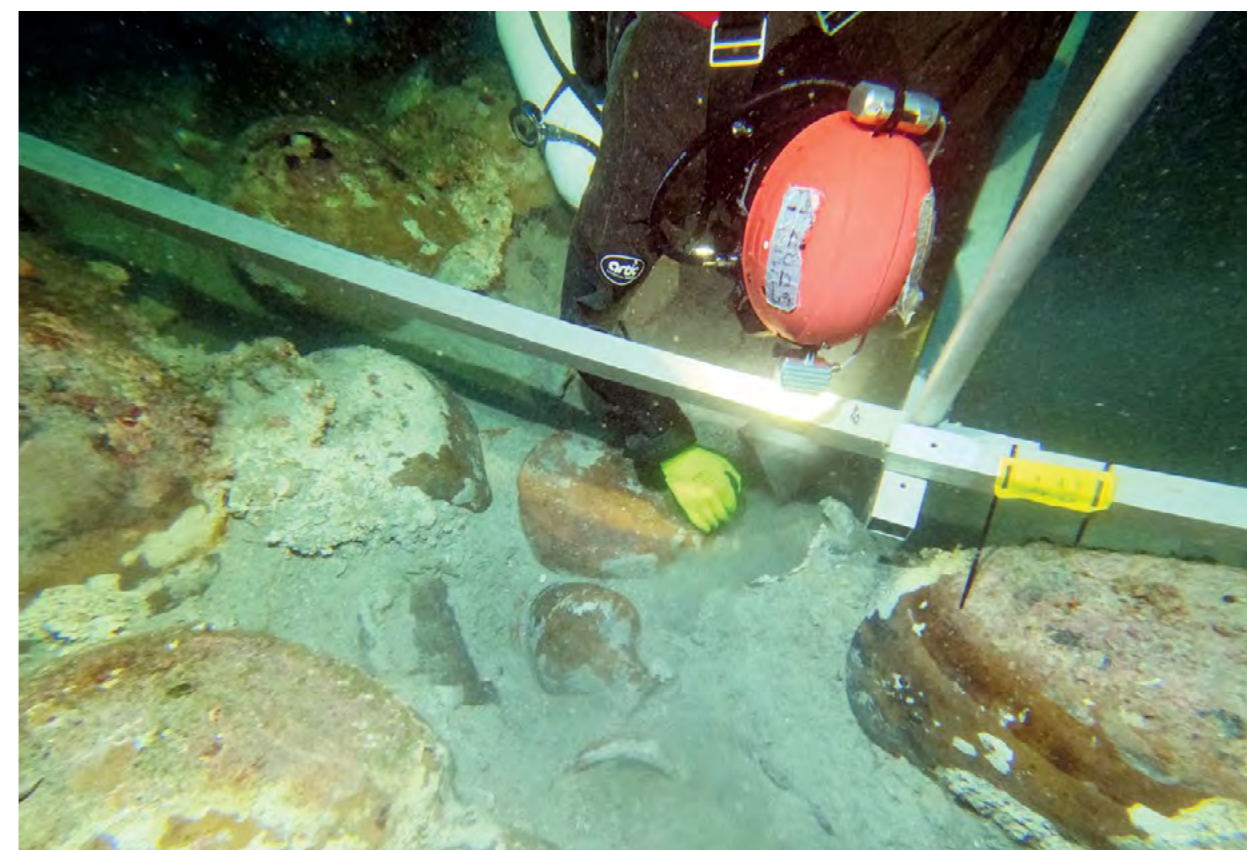
..... Površina na kojoj se proteže metalni lim, označena na fotogramterijskoj snimci istraženog dijela nalazišta (podloga: D. Taras)
 Surface where the metal sheet was found, marked on the photogrammetric image of the investigated part of the site
 (background: D. Taras)

potrebe za fizičkom zaštitom nad istraženim dijelom nalazišta, ove je godine istraživanje započelo postavljanjem pomoćnog metalnog mrežišta. Ono je zapadnim dijelom prekrilo poziciju na kojoj se već radilo tijekom protekle godine, dok je istočnim dijelom pokrilo površinu na kojoj do sada nije proveden podmorski iskop. U kvadratima S 4/5 i T 4/5 uočena je velika količina olovnog lima u obliku limenih ploča međusobno spojenih metalnim čavlima. Iako je u prvom trenutku izgledalo kako je riječ o olovnoj oblozi broskog trupa, situacija na nalazištu nakon nekoliko dana istraživanja sugerirala je da je u pitanju neka druga struktura izrađena od olovnog lima. S obzirom na to da se s njezine gornje i donje strane pronalaze keramički predmeti, situacija ne odgovara položaju olovne obloge, ali je vjerojatno da je riječ o nekom elementu brodske kuhinje. S obzirom na to da olovo nije očišćeno u cijelosti, njegovo će dokumentiranje tek uslijediti.

Iako je vladalo uvjerenje kako je brodska kuhinja u cijelosti istražena 2022. godine, iskop u kvadratima S 4 i T 4 rezultirao je otkrićem velike količine keramičkog posuđa koje zasigurno nije činilo teret potonulog broda, već je pripadalo brodskoj kuhinji. Riječ je o keramičkom materijalu iz 2./1. st. pr. Kr., koji obuhvaća razne oblike keramičkih zdje-

Although it was believed that the galley was fully explored in 2022, the excavation in squares S 4 and T 4 resulted in the discovery of a number of ceramic vessels that certainly did not belong to the cargo of the sunken ship, but to the galley. It is pottery dating to the 2nd/1st century BC, which includes various forms of ceramic bowls and jugs, platters, plates and conical lids, and one ceramic *guttus*. In addition, a small smoothed ceramic tile was found, measuring 5.6 x 7.2 x 1.2 cm, with beveled edges, which was probably used for the preparation of medicinal products. In square T 5, a small, complete pyxis was found, which had apparently rolled away from the main heap of ceramic objects during sinking. A total of thirty-six intact or damaged ceramic vessels were recovered, and twenty discoid ceramic amphora stoppers were also found in the excavation, which further confirmed that the amphorae were full and plugged at the time of sinking. All ceramic vessels, after being documented *in situ*, were removed from the site and stored for desalination, after which they were taken to the Department of Conservation and Restoration of the Art Academy of the University of Split.

During the excavation, another smaller Lam-



..... Čišćenje velikog tanjura iz brodske kuhinje (foto: I. Radić Rossi)
 Cleaning a large plate from the galley (photo: I. Radić Rossi)



..... Čišćenje keramičkog posuđa iz brodske kuhinje (foto: I. Radić Rossi)
 Cleaning ceramic vessels from the galley (photo: I. Radić Rossi)





Izbor keramičkog posuda izvađenog 2023. (foto: D. Romanović)
Selection of ceramic vessels taken out in 2023 (photo: D. Romanović)

ancient lead-wooden anchors, a metal object similar to a cutwater, and ceramic and metal vessels from the ship's galley have been found so far. The wooden elements of the ship structure, observed in the northeastern part of the site, suggest the presence of ship remains under the main concentration of finds. The ship's load of amphorae and three lead anchor stocks are presented *in situ*, and conservation and restoration work is in progress on the other items.

la i vrčeva, plitica, tanjura i koničnih poklopaca, a pronađen je i jedan keramički *guttus*. Osim toga, pronađena je i mala zaglađena keramička pločica, dimenzija 5,6 x 7,2 x 1,2 cm, zakošenih rubova, koja je vjerojatno korištena za pripremu medicinskih preparata. U kvadratu T 5 otkrivena je mala, cjelovita piksida, koja se očigledno, tijekom potonuća, otkotrljala od glavne koncentracije keramičkih predmeta. Izvađeno je sveukupno trideset i šest cjelovitih ili oštećenih keramičkih posuda, a u iskopu je pronađeno i dvadeset diskoidnih keramičkih čepova amfora, koji su dodatno potvrdili da su amfore u trenutku potonuća bile pune i začepljene. Svo je posuđe, nakon dokumentiranja *in situ*, uklonjeno s nalazišta i pohranjeno na desalinizaciju, nakon čega je predano Odsjeku za konzervaciju – restauraciju Umjetničke akademije Sveučilišta u Splitu

Tijekom iskopa otkrivena je još jedna amfora tipa Lamboglia 2, manjih dimenzija, a jedna je manja amfora izvađena za potrebe detaljnije analize i promidžbe nalazišta. Izvađena je i još jedna amfora uobičajenih dimenzija. Težina manje amfore iznosi 11,8 kg, a kapacitet oko 13,1 l. Kapacitet veće amfore iznosi 28 l, a težina joj nije izmjerena zbog velike količine morskih priraslina. Kapacitet manje amfore poklapa se s polovicom iznosa rimske mjerne jedinice *amphora* (26,2 l), koji se naziva *urna* (13,1 l), dok kapacitet veće amfore iznosi oko dvije litre više. Kapacitet amfore izvađene 2018. godine, koji iznosi 38 l, znatno je veći te zamalo doseže mjeru od jedne i pol rimske amfore, tj. jedne amfore i jedne urne.

boglia 2 amphora was found, and one smaller amphora was taken out for the purposes of more detailed analysis and promotion of the site. Another amphora of usual dimensions was also taken out. The weight of the smaller amphora is 11.8 kg, and the capacity is about 13.1 l. The capacity of the larger amphora is 28 l, and its weight was not measured due to the large amount of marine growth. The capacity of the smaller amphora matches half of the amount of the Roman measuring unit *amphora* (26.2 l), which is called *urna* (13.1 l), while the capacity of the larger amphora is about two liters more. The capacity of the amphora taken out in 2018, which is 38 l, is significantly larger and almost reaches the measure of one and a half Roman *amphorae*, i.e. one *amphora* and one *urna*.

CONCLUSION

During the research campaign in 2023, several more complete amphorae appeared in the southernmost part of the excavation area, so it will be necessary to continue the research in the direction of the south and east during the next year. Due to the fact that parts of wooden structures appeared in several places, the area of this year's excavation is covered with geotextile and protected until the work continues.

The well-preserved shipwreck near Cape Letavica on Pag proved to be an exceptionally interesting archaeological site, where three lead stocks of

ZAKLJUČAK

Tijekom istraživačke kampanje 2023. u krajnjem južnom dijelu iskopa pojavilo se još čitavih amfora pa će tijekom sljedeće godine biti potrebno nastaviti istraživanje u smjeru juga i istoka. S obzirom na to da su se na nekoliko mjesta pojavili i dijelovi drvene građe, prostor ovogodišnjeg iskopa pokriven je geotekstilom i zaštićen do nastavka radova.

Odlično očuvan brodolom kod rta Letavice na Pagu pokazao se kao iznimno zanimljivo arheološko nalazište na kojem su do sada pronađene tri olovne prečke antičkih olovno-drvenih sidara, metalni predmet nalik na valosijek te keramičko i metalno posuđe iz brodske kuhinje. Drveni elementi brodske konstrukcije, uočeni u sjeveroistočnom dijelu nalazišta, upućuju na postojanje ostataka broda pod glavnom koncentracijom nalaza. Brodski teret amfora i tri olovne prečke sidara prezentirani su *in situ*, a na ostalim predmetima u tijeku je konzervatorsko-restauratorski zahvat.

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RELJINA PEĆINA





U studenome 2023. godine provedeno je arheološko istraživanje Reljine pećine smještene na primorskoj padini južnog Velebita, na 588 metara nadmorske visine. Otvor pećine okrenut je prema jugoistoku, u smjeru plodnih udolina zaseoka Ranjevca (Renjevca, Reljinovca) te dalje prema vrhovima koji okružuju visoravan Bili Sinokos. Prirodni ulaz u pećinu naknadno je sužen suhozidnom dogradnjom. Ispred pećine nalazi se suhozidna ograda koja je ograđivala prostor za životinje, a manji suhozid dograđen je uz istočni zid pećine, zatvarajući prostor ispred ulaza u objekt koji nadvisuje izvučeni strop. Unutarnji prostor može se ugrubo podijeliti na tri dvorane i jedan vertikalni kanal. Prva dvorana djelomično je poprečno podijeljena velikom sigom koja seže sve do stropa, a dodatno je umjetno pregrađena dvama suhozidima od kojih se svaki nadovezuje na spomenutu sigu i nastavlja u suprotnom smjeru prema zidovima pećine. Prema kazivanju Tome Vukića, jedinog preostalog povremenog stanovnika Ranjevca, pećinom se za svoje blago prije tristotinjak godina prvi počeo koristiti izvjesni Relja prema kojem je pećina i dobila ime. Prema priči, Relja je dugo vremena duž Vele-

Archaeological excavations of Reljina pećina, located on the coastal slope of southern Velebit, at 588 meters above sea level, was carried out in November 2023. The opening of the cave faces southeast, in the direction of the fertile valleys of the hamlets of Ranjevac (Renjevca, Reljinovac) and further towards the peaks surrounding the Bili Sinokos plateau. The natural entrance to the cave was subsequently narrowed by a dry stone wall. In front of the cave there is



**Maja GRGURIĆ
SRZENTIĆ**

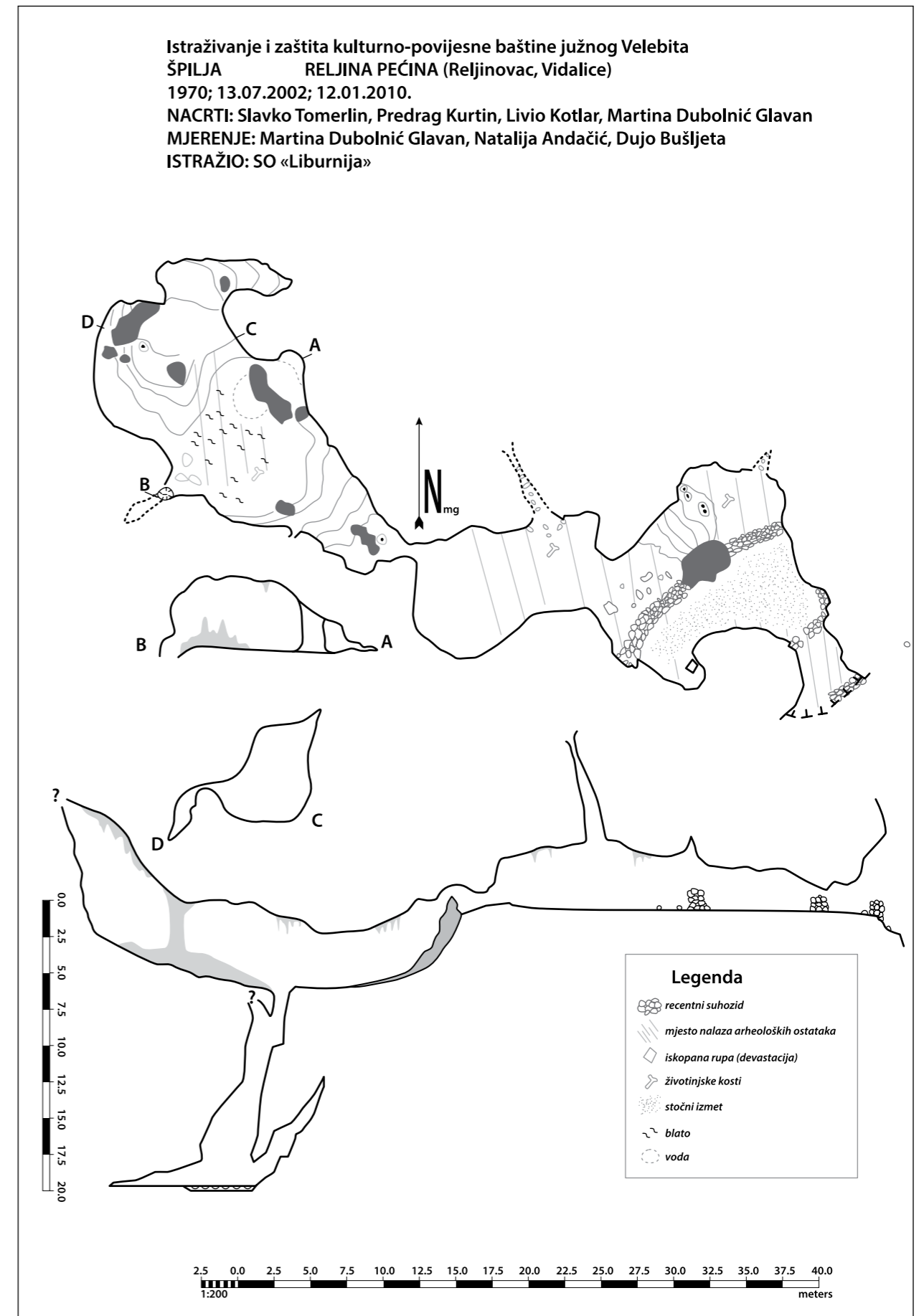
mrguric1@unizd.hr

a dry stone wall fence that enclosed the area for the animals, and a smaller dry stone wall was added along the eastern wall of the cave, closing the space in front of the entrance to the cave that is overhung

by the protruding ceiling. The interior space can be roughly divided into three halls and one vertical channel. The first hall is partially divided transversely by a large dripstone that reaches all the way to the ceiling, and it is additionally artificially partitioned by two dry stone walls, each of which is connected to the aforementioned dripstone and continues in the opposite direction towards the cave walls. According to Tomo Vukić, the only remaining temporary resident of Ranjevac, the



Istraživanje sonde 1 (foto: M. Grgurić Srzentić)
Excavation of trial trench 1 (photo: M. Grgurić Srzentić)



Speleološki topografski nacrt Reljine pećine (arhiva SO „Liburnija“)
Speleological topographical plan of Reljina pećina (archive of SO „Liburnija“)





bita tražio najpogodnije mjesto za svoje životinje, a upravo ova pećina, iako ne sasvim pogodna za stanovanje, bila je najbolje mjesto za njegovo blago radi vode koja se u njoj nakupljala. Toj priči u prilog ide i navodno postojanje jezera u pećini, koje je poslije ograđeno spomenutim suhozidom i nabacanim suhim granjem. Tijekom našeg obilaska pećine nismo naišli ni na kakvo jezero, no moguće

cave was first used three hundred years ago by a certain Relja, after whom the cave was named. According to the story, Relja searched for a long time the length and breadth of Velebit for the most suitable place for his animals, and this particular cave, although not quite suitable for living, was the best place for his animals because of the water that accumulated in it. This story is sup-

je da dolazi do povremenog nakupljanja vode zbog jačih kiša. Naime, na stropu pećine uočen je vertikalni dimnjak. Usput ćemo napomenuti i da se, prema pričama, Relja poslije odselio u Zadar pa je prema njemu nazvan današnji zadarski kvart Relja.

Pećina je od prije poznata kao potencijalni arheološki lokalitet s ostacima iz prapovijesnih razdoblja, a do prije nekoliko desetaka godina

ported by the alleged existence of a lake in the cave, which was later fenced off with the aforementioned dry stone wall and piled dry branches. During our survey of the cave, we did not come across any lake, but it is possible that there is an occasional accumulation of water due to heavy rains. Namely, a vertical chimney was observed on the ceiling of the cave. For the sake of curiosity, we may mention that, as the legend has it, Relja later moved to Zadar, so the present-day Zadar neighborhood Relja was named after him.

The cave has long been known as a potential archaeological site with remains from prehistoric times, and until a few decades ago it was used as a shelter for sheep and goats (Dubolnić 2006; Forenbaher 1988; Malez 1962). This year's research is the first archaeological research of Reljina pećina. Three trial trenches were opened, the first in front of the entrance to the cave, the second one on the inside, behind the entrance, and the third in the southern part of the first of the three halls. The surface of each trial trench was 2 m², and the final depth has not been reached in any of them yet.

In trial trench 1, a fairly uniform stratigraphy was found in the form of loose soil, which barely showed differences in consistency and color. In addition to numerous fragments of prehistoric pottery, flint and bones, an Eneolithic pot with a lid turned upside-down was also found *in situ*. Trial trench 2, with its specific stratigraphic image of a "layered cake" and very poor finds, confirmed the assumption that the deeper interior of the cave was used for animal stabling (Gerometta, Boschian 2022). Trial trench 3 was opened in a place where already on the surface it was clear that the stratigraphy had been disturbed, most likely by a combination of the actions of wild animals and humans. The probe served as a source of archaeological material, the concentration of which was the densest in this place, solely for the purpose of obtaining an approximate chronology of the use of the cave. A preliminary typological analysis of the pottery indicated the use of the cave during the Neolithic, Eneolithic, Bronze Age and Middle Ages. Undisturbed layers were reached only after more than a meter in depth, very similar to the situation in trial trench 1.



Ulaz u pećinu danas je teško uočljiv radi bujne vegetacije (foto: M. Grgurić Srzentić)
Entrance to the cave, hardly noticeable today due to lush vegetation (photo: M. Grgurić Srzentić)





Istraživanje sonde 2 (foto: D. Čar)
Excavation of trial trench 2 (photo: D. Čar)



Tomo Vukić, jedan od posljednjih pastira koji je čobanio u Reljinoj pećini (foto: M. Lorenzo Blaslov)
Tomo Vukić, one of the last shepherds who kept sheep in Reljina Cave (photo: M. Lorenzo Blaslov)

korištena je kao sklonište za ovce i koze (Dubolnić 2006; Forenbaher 1988; Malez 1962). Ovogodišnje istraživanje prvo je arheološko istraživanje Reljine pećine. Otvorene su tri sonde, prva ispred ulaza u pećinu, druga s unutarnje strane, iza ulaza, te treća u južnom dijelu prve od triju dvorana. Površina svake sonde bila je 2 m², a ni u jednoj od njih za sada nije dosegnuta konačna dubina.

U sondi 1 ustanovljena je prilično ujednačena stratigrafija u vidu rastresite zemlje koja je jedva primjetno pokazivala razlike u konzistenciji i boji. Osim brojnih ulomaka prapovijesne keramike, kremenja i kostiju pronađen je i jedan *in situ* očuvani eneolitički lončić s poklopcem okrenut naopako. Sonda 2, sa svojom specifičnom stratigrafskom slikom „slojevite torte“ te vrlo siromašna nalazima, potvrdila je pretpostavku da je dublja unutrašnjost pećine korištena za držanje životinja (Gerometta, Boschian 2022). Sonda 3 otvorena je na mjestu gdje je već na površini bilo jasno da je riječ o poremećenoj stratigrafiji, najvjerojatnije kombinacijom djelovanja divljih životinja i čovjeka. Sonda je poslužila kao izvor arheološkog materijala čija je koncentracija na ovome mjestu bila najgušća, isključivo radi dobivanja okvirne kronologije korištenja pećine. Preliminarna tipološka analiza lončarije uputila je na korištenje pećine tijekom razdoblja neolitika, eneolitika, brončanog doba te srednjeg vijeka. Tek nakon više od metra dubine dosegnuti su neporemećeni slojevi, vrlo slični situaciji u sondi 1.

Organizacija unutarnjeg prostora pretpostavljena je i na temelju uklesanog utora za gredu na velikoj sigi koja prvu dvoranu dijeli na dva dijela. Nasuprot utoru prirodna napuklina u zidu pećine stvara idealnu poziciju za uglavljanje drvene grede koja je mogla biti osnova za ostatak drvene konstrukcije koja odjeljuje prostor za boravak ljudi od prostora za držanje životinja. Ipak, nužno je napomenuti da je spomenuti uklesani utor vjerojatno novijeg datuma. Naime, ispod utora uklesan je ljudski lik kojem s desne strane glave stoji rog ukrašen poprečnim linijama, a s lijeve strane udubljenje nepravilne forme (Sunce i Mjesec?). Ljudski lik, zajedno s utorom, nalazi se na visini koju je danas lako dosegnuti rukom. Drugim riječima, onaj koji je klesao vjerojatno je stajao na hodnoj površini visinom približno jednakoj današnjoj.

Znatan doprinos razumijevanju i interpretaciji korištenja prostora pećine pružili su stanovnici



Spuštanje na donju razinu pećine (foto: L. Arbutina)
Descending to the lower level of the cave (photo: L. Arbutina)

The organization of the interior space is also assumed based on the carved groove for the beam on the large dripstone that divides the first hall into two parts. Opposite the groove, a natural crack in the cave wall creates an ideal position for the wedge of a wooden beam, which could have been the basis for the rest of the wooden structure that separates the living space for people from the space for keeping animals. However, it is necessary to mention that the aforementioned carved groove is probably more recent. Namely, below the groove there is a carved human figure with a horn decorated with transverse lines on the right side of the head, and an irregularly shaped depression (the Sun and the Moon?) on the left side. The human figure, together with the groove, is at a height that can easily be reached by hand today. In other words, the one who carved it probably stood on a walking surface, the height of which was approximately equal to today's.

A significant contribution to the understanding and interpretation of the use of the cave space was provided by the inhabitants of the settlements in the surrounding area. That is how we found out that there really was a wooden beam wedged between the rocks in the cave, and hay was hang-



Sloj spaljenog životinjskog izmeta (foto: M. Grgurić Srzentić)
Layer of burnt animal excrement (photo: M. Grgurić Srzentić)

podgorskih naselja okolnog područja. Tako smo doznali da se u pećini zaista nalazila drvena greda uglavljena među stijene, a s nje je visjelo sijeno kojim su se hranile ovce i koze. Unutarnja dvorana pećine u kojoj je otvorena sonda 2 zaista je korištena kao tor, a suhozidne pregrade na kojima se nekada nalazilo i suho granje priječile su životinjama da odlaze dublje u pećinu zbog vertikalne jame koja vodi do donje razine ovog speleološkog objekta. Prostor ispred ulaza u pećinu korišten je za odmor i druženje pastira, a tomu svjedoči nekoliko kamenih „stolica“ zatečenih po dolasku na lokalitet. Osim toga, doznali smo i da se striženje ovaca obavljalo u pećini, dok bi se vuna prala kod kuća u spomenutom zaseoku Ranjevcu, a u starija bi se vremena nosila sve do obale Kruščice i prala u moru. U neposrednoj blizini pećine nalazi se i glinište koje je prema kazivačima korišteno za vađenje gline u svrhu izrade podnica i pregradnih zidova u zaseoku Ranjevcu. Glina bi se ojačala „kosti jeti svinje“ te stavljala na granje.¹

Konačna preliminarna tipološko-kronološka analiza lončarije prikupljene iz svih triju sonda

¹ Na ustupljenim informacijama zahvaljujemo Tomi Vukiću, jedinom preostalom povremenom stanovniku Ranjevca, te Anki Sjaus iz Ljubotića.

ing from it to feed the sheep and goats. The inner hall of the cave where trial trench 2 was opened was indeed used as a pen, and the dry stone wall partitions that once contained dry branches prevented the animals from going deeper into the cave because of the vertical pit that leads to the lower level of this speleological structure. The area in front of the entrance to the cave was used for shepherds to rest and socialize, as evidenced by several stone “chairs” found upon arrival at the site. In addition, we learned that sheep shearing was done in the cave, while wool was washed at houses in the mentioned hamlet of Ranjevac, and in old times it was carried all the way to the coast of Kruščica and washed in the sea. In the immediate vicinity of the cave there is also a clay pit which, according to the tellers, was used to extract clay for the purpose of making floors and partition walls in the hamlet of Ranjevac. The clay would be hardened with “pig hair” and placed on the branches.¹

The final preliminary typo-chronological analysis of the pottery collected from all three trial

¹ We would like to thank Tomo Vukić, the only remaining temporary resident of Ranjevac, and Anka Sjaus from Ljubotić for the information provided.



Petroglif (foto: M. Lorenzo Blaslov)
Petroglyph (photo: M. Lorenzo Blaslov)

potvrdila je ranija nagađanja o okupaciji pećine u brončano doba, međutim nemali broj ulomaka upućuje i na razdoblje neolitika, eneolitika te na srednji i novi vijek. Nije na odmet spomenuti i ulomak litike s tipološkim karakteristikama koje odgovaraju mikrogravetama, tipičnim inače za razdoblje gornjeg paleolitika, što bi bio do sada najstariji nalaz na ovom dijelu Velebita. Reljina pećina pokazala je neslućeni potencijal za buduća arheološka istraživanja i rezultate koji će napokon popuniti rupe u poznavanju arheologije planinskog dijela sjeverne Dalmacije.

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ARHEOLOŠKI PREGLED PODMORJA OTOKA SV. FUMIJE I KRALJEVCA U BLIZINI ČIOVA

Underwater archaeological survey in the area of the islets of Sv. Fumija and Kraljevac near the island of Čiovo

U prvoj polovini studenog 2023. godine obavljen je podmorski arheološki pregled otoka Sv. Fumije i Kraljevca koji se nalaze u sklopu Općine Okrug na otoku Čiovu, a povijesno su pripadali teritoriju trogirske komune. Riječ je o drugoj kampanji arheološkog pregleda zapadnog dijela otoka Čiova, financiranog iz programa razvoja, zaštite i valorizacije pomorske baštine na području Splitsko-dalmatinske županije te programa očuvanja kulturne baštine Općine Okrug, a naziv projekta je: „Potopljena baština: Istraživanje, zaštita i valorizacija po(d)morske baštine zapadnog dijela Čiova“.

Otok Sv. Fumija na svojem sjeveroistočnom dijelu udaljen je od obale Čiova oko 200 metara. Na ovom dijelu nalazi se pličina koja je maksimalne dubine

Underwater archaeological survey of the islets of Sv. Fumija and Kraljevac was conducted in the first half of November 2023. These islets are part of Okrug Municipality on the island of Čiovo, and historically belonged to the territory of the Trogir commune. It was the second campaign of the archaeological survey of the western part of the island of Čiovo, financed from the program of development, protection and valorization of maritime heritage in the area of Split-Dalmatia County and the cultural heritage

preservation program of Okrug municipality, and the name of the project is: “Submerged heritage: Research, protection and valorization of the maritime/underwater heritage of the western part of Čiovo”.



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oko 5 metara. Na svim dijelovima potopljene prevlake primjetne su žile od rožnjaka koji je glavna sirovina za proizvodnju prapovijesnih sječiva prije pojave metala, te je moguće da je ovaj prostor bio važan izvor kremene sirovine prapovijesnim zajednicama, čemu u prilog ide i nedavno registrirano kopneno nalazište na otvorenom, vjerojatno gornjeg paleolitika, u obližnjoj čiovsjoj uvali Široka, smještenoj oko 600 metara sjeverno od Sv. Fumije (Paraman, Sirovica 2023).

Na površini dna pregledane pličine pronađeni su manji ulomci novovjekovne lončarije od čega valja izdvojiti ulomak gravirane keramike ukrašene tehnikom *a punta e stecca* iz Veneta koja se datira u 16. i 17. stoljeće (Gusar 2007: 180), te jedna keramička lula lončarskog tipa iz padske doline datirana od 1650. do 1750. (Gusar 2008: 143). Spomenuta pličina spaja se s isturenim rtom Labadusa i uvalom Duboka, u kojoj je podmorskim terenskim pregledom 2022. godine uz rimskodobne keramičke nalaze od ranocarskog do kasnoantičkog razdoblja zabilježena veća količina novovjekovnih staklenih i keramičkih ostataka, među kojima treba izdvojiti tronošce

The island of Sv. Fumija in its northeastern part is about 200 meters away from the coast of Čiovo. In this part there is a shoal with a maximum depth of about 5 meters. On all parts of the submerged isthmus, chert veins are noticeable, which is the main raw material for the production of prehistoric blades before the appearance of metals, and it is possible that this area was an important source of flint raw material for prehistoric communities, which is supported by the recently registered open-air site, probably dating to the Upper Palaeolithic, in nearby Široka cove in Čiovo, located about 600 meters north of Sv. Fumija (Paraman, Sirovica 2023).

On the surface of the examined shoal bed, small fragments of post-medieval pottery were found, of which it is worth highlighting a fragment of engraved pottery decorated with the *a punta e stecca* technique from Veneto, which dates back to the 16th and 17th centuries (Gusar 2007: 180), and one ceramic pipe of the pottery type from of the Po Valley dated from 1650 to 1750 (Gusar 2008: 143). The mentioned shoal connects with the projecting



Zračna snimka otoka Sv. Fumije (foto: B. Kačan)
Aerial view of the island of Sv. Fumija (photo: B. Kačan)





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 Metalni dijelovi brodske opreme u podmorju južnog dijela Kraljevca (foto: M. Parica)
 Metal parts of ship's equipment on the seabed in the southern part of Kraljevac (photo: M. Parica)

za pečenje glazure (Parica, Paraman 2023).

Na središnjem dijelu sjeverne obale Sv. Fumije primjetna je i potopljena obala dužine oko 400 metara. Riječ je o kamenom nasipu koji se nalazi na oko 1 metar dubine u odnosu na današnju morskou razinu. On bi mogao predstavljati obalni nasip iz antičkog razdoblja kojim se učvršćuje obala, te se na takav način štiti poljoprivredno zemljište od djelovanja morskih valova. Na zapadnom kraju potopljene obale primjetna je veća koncentracija antičke keramike. Generalno, materijal se može datirati od 2. i 1. stoljeća prije Krista – *Lamboglia 2* amfore (Carre et al. 2014: 427), preko sjevernoafričke kasnoantičke amfore tipa *Africana II* (Bonifay 2004: 111) do *Late Roman II* amfore iz 5. i 6. stoljeća (Arthur 1998: 168–169).

Naime, poput otoka Brača i Šolte, otok Čiovo je tijekom kasnoantičkog i srednjovjekovnog razdoblja bio poznato obitavalište pustinjaka i monaha (Radić 2009; Uroda 2013; Babić 2015). Na sjeveroistočnom rubu otočića Sv. Fumije već je u ranokršćanskom razdoblju podignuta crkvice sv. Eufemije kao

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 Zračna snimka pličine s ležištem rožnjaka (foto: B. Kačan)
 Aerial view of the shoal with the chert bed (photo: B. Kačan)



monaško središte sa samostanskim kompleksom, smješteno na kasnoantičkoj istočnojadranskoj navigacijskoj ruti (Radić 2009). U srednjem vijeku otok sa samostanom i čiovska obala u neposrednoj blizini posjed su najvećeg i najutjecajnijeg trogirskog benediktinskog samostana ranog i razvijenog srednjeg vijeka – Samostana sv. Ivana Krstitelja

cape of Labadusa and Duboka cove, where an underwater field survey in 2022 recorded Roman-era ceramic finds from the early Imperial period to Late Antiquity as well as a large amount of modern glass and ceramic remains, among which tripods for firing glaze should be singled out (Parica, Paraman 2023).





(ugašen u 2. polovici 15. stoljeća), a prema predaji je na otok iz Trogira pred napadom Mongola skriven i ugarsko-hrvatski kralj Bela IV., po kojem otočić sa zapadne strane Sv. Fumije nosi ime Kraljevac.

Rezultati nedavnog kopnenog terenskog pregleda pokazuju intenzivnu okupaciju otoka već u rimskom razdoblju – pri čemu distribucija registriranih keramičkih nalaza upućuje na postojanje niza objekata smještenih u dužini od oko 350 m uz sje-

In the central part of the northern coast of Sv. Fumija one can notice about 400-meter-long submerged coast. It is a stone embankment located at a depth of about 1 meter in relation to current sea level. It could represent a coastal embankment from the ancient period, which strengthens the coast and thus protects agricultural land from the action of sea waves. At the western end of the submerged coast, a greater concentration of ancient

vernu obalu središnjeg dijela otoka – nasuprot uvali Široka, na čijoj je istočnoj obali također registrirano postojanje objek(a)ta s cisternom (Paraman, Sirovića 2023). Stoga, otkriveni ostatci potopljene obale i keramičkog materijala, po svemu sudeći, pripadaju ostacima maritimne vile. Važno je istaknuti da na otoku postoji izvor pitke vode, smješten 50 m od sjeverne obale Sv. Fumije, uz koji je postojao i bunar (Radić 2009). Riječ je o jami s uređenim pristu-

Kalcificirani vapnenac u podmorju uvale Tršice na Sv. Fumiji
(foto: M. Parica)
Calcified limestone on the seabed of Tršice cove on Sv. Fumija
(photo: M. Parica)

pottery is noticeable. In general, the material can be dated from the 2nd and 1st centuries BC – *Lamboglia 2* amphorae (Carre et al. 2014: 427), through the North African late antique amphora of the *Africana II* type (Bonifay 2004: 111) to the Late Roman II amphora dating to the 5th and 6th centuries BC (Arthur 1998: 168–169).

Namely, like the islands of Brač and Šolta, the island of Čiovo was a famous abode of hermits and monks during the late antique and medieval periods (Radić 2009; Uroda 2013; Babić 2015). On the northeastern edge of the island of Sv. Fumija, a small church of St. Euphemia was built already in the early Christian period, as a monastic center with a monastery complex, located on the late antique eastern Adriatic navigation route (Radić 2009). In the Middle Ages, the island with the monastery and the Čiovo coast in the immediate vicinity were the property of the largest and most influential Trogir Benedictine monastery of the early and high Middle Ages - the Monastery of St. John the Baptist (defunct in the second half of the 15th century), and according to tradition, the Hungarian-Croatian King Bela IV hid on the island before the Mongol attack, naming the islet on the western side of Sv. Fumija Kraljevac.

The results of recent land field survey show an intensive occupation of the island already in the Roman period - where the distribution of recorded ceramic finds suggests the existence of a series of structures in a length of about 350 m located along the northern coast of the central part of the island - opposite Široka cove, on whose eastern coast the presence of a structure(s) with a cistern was recorded (Paraman, Sirovića 2023). Therefore, the discovered remains of the submerged coast and ceramic material, in all likelihood, belong to the remains of a maritime villa. It is important to emphasize that there is a source of drinking water on the island next to which there was also a well, located 50 m from the northern shore of Sv. Fumija (Radić 2009). It is an easily accessible pit, which the locals call simply – *Voda* (water). The highest concentration of surface finds was recorded in its surroundings, which preliminarily indicate that the western part of the ancient estate was organ-





Trbuh antičke amfore u podmorju jugozapadnog dijela Kraljevca (foto: M. Parica)
Belly of an ancient amphora on the seabed in the southwestern part of Kraljevac (photo: M. Parica)

pom koju lokalno stanovništvo naziva jednostavno – Voda. U njezinu okruženju zabilježena je najveća koncentracija površinskih nalaza, koji preliminarno upućuju na to da je zapadni dio antičkog gospodarstva organiziran oko ovog izvora (Paraman, Sirovica 2023). Samo antičko пристаниšte na otoku nije utvrđeno – no i podatci i kartografski izvori iz kasnije povijesti svjedoče o važnosti područja otoka Sv. Fumije s uvalama Dugom, Širokom i Pišćenom za pomorsku navigaciju i opskrbu pitkom vodom (Babić 2015) – dok se cijelo područje na povijesnim kartama bilježi kao luka sv. Eufemije.

U manjoj uvali Tršice na jugozapadnom dijelu Sv. Fumije, u zoni od 5 do 10 metara, primijećeno je nekoliko segmenata od kalcificiranog amorfno vapnenca¹. Zasada nije jasno je li ova anomalija ljudskog ili geološkog podrijetla.

ized around this source (Paraman, Sirovica 2023). The ancient pier on the island itself has not been identified - but data and cartographic sources from later history testify to the importance of the area of the island of Sv. Fumija with Duga, Široka and Pišćen coves for maritime navigation and drinking water supply (Babić 2015) - while the entire area is recorded on historical maps as the port of St. Euphemia.

In smaller Tršice cove on the southwestern part of Sv. Fumija, in the zone of 5 to 10 meters, several segments of calcified amorphous limestone were noticed.¹ It is not yet clear whether this anomaly is of human or geological origin.

The islet of Kraljevac is located east of Sv. Fumija, and they are connected by an underwater reef with an average depth of 8 to 10 meters. Zones

¹ Na ovu su nas anomaliju upozorili Jozo i Ivo Miše iz ronilačkog centra Trogir, te im ovom prigodom zahvaljujemo.

¹ We were told about this anomaly by Jozo and Ivo Miše from the diving center Trogir, and we would like to take this opportunity to thank them.

Otočić Kraljevac nalazi se istočno od Sv. Fumije, a povezani su podvodnim grebenom prosječne dubine od 8 do 10 metara. Pregledane su zone do oko 40 metara dubine. Kamenita obala u prosjeku završava na oko 35 metara dubine, a dalje se spušta strmije pješčano dno. Upravo na ovom prijelazu, na više odvojenih mjesta, primijećeni su pojedinačni nalazi većih dijelova trbuha antičkih amfora, bez postojanja veće koncentracije na jednom mjestu. Nije riječ o ostacima brodoloma, već samo o pojedinačnim nalazima. U podmorju središnjeg dijela južne obale Kraljevca, na oko 35 metara dubine nalaze se metalni ostaci brodske opreme – tank nepoznate namjene te nekoliko željeznih fragmenata do 2 metra dužine. Po stupnju očuvanosti, procijenjena je starost između 50 i 100 godina.

up to a depth of about 40 meters were examined. On average, the rocky coast ends at a depth of about 35 meters, and a steeper sandy bottom descends further. It was at this transition, in several separate places, that individual finds of larger parts of the bellies of ancient amphorae were observed, without the presence of a larger concentration in one place. These are not the remains of a shipwreck, but only individual finds. On the seabed of the central part of the southern coast of Kraljevac, at a depth of about 35 meters, there are metal remains of a ship's equipment - a tank of unknown purpose and several iron fragments up to 2 meters long. According to the degree of preservation, the estimated age is between 50 and 100 years.

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NOVIJA ISTRAŽIVANJA NALAZIŠTA ŠOPOT – CRKVINA

Recent investigations of the Šopot - Crkvina site

Nalazište Crkvina u selu Šopotu kod Benkovca smješteno je na južnoj padini Grubića glavice nedaleko od istoimenog izvora vode i željezničke pruge. Na vrhu brijega Grubića glavice nalaze se ostatci srednjovjekovnog kaštela, a duž cijele južne padine do pristupne ceste vidljivi su i ostatci grobova. Prva istraživanja položaja Crkvina proveo je don Mate Klarić 1928. i 1929. pri čemu je otkrio ostatke crkve i groblja. U ovim su istraživanjima otkriveni čuveni nalazi oltarne ograde s imenom kneza Branimira iz druge polovine 9. stoljeća na osnovi kojih je datirana i crkva (Delonga, Burić 1986: 165). Potaknut ovim iznimnim nalazima Muzej hrvatskih arheoloških spomenika u Splitu pod vodstvom Tončija Burića i Vedrane Delonge proveo je revizijska istraživanja od 1984. do 1986. godine (Delonga, Burić 1984, Burić 1986, Delonga, Burić 1987, Burić 2006). Istraživanja su obuhvatila prostor crkve koja je u potpunosti otkrivena i kon-

The Crkvina site in the village of Šopot near Benkovac is situated on the southern slope of Grubića glavica, not far from the water source of the same name and the railway line. The ruins of a medieval castle can be seen at the top of Grubića glavica hill, and the remains of graves are scattered along the entire southern slope up to the access road. The first investigations of the location of the Crkvina site were carried out by Father Mate Klarić in 1928 and 1929, when he found the remains of the church and the cemetery. In these investigations, the famous finds of the chancel screen



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with the name of Duke Branimir from the second half of the 9th century were discovered, which also served as a basis for dating the church (Delonga, Burić 1986: 165). Encouraged by these exceptional findings, the Museum of Croatian Archaeological Monuments in Split, under the leadership of Tonči Burić and Vedrana Delonga, conducted revision excavations from 1984 to 1986 (Delonga, Burić 1984, Burić 1986, Delonga, Burić 1987, Burić 2006). The research covered the area of the church, which was unearthed in entirety and preserved, as well as the graves that spread around it. The church, which, as we know from historical sources, was dedicated to St. Jerome, is a longitudinal single-nave building with a trapezoidal apse on the eastern side and a narthex on the western side. Its dimensions are 12.5 x 6 m. During the aforementioned research in the 1980s, fragments of pre-Romanesque stone furniture were also found, and the graves around the church were dated to the 13th and 14th centuries based on the finds and burial customs.

The continuation of the further systematic archaeological research was instigated since the site has not been fully explored, and because of the probability that the church, according to its architectural features, might date to the late Middle Ages, and not pre-Romanesque period as assumed by older researchers, and also because of the lack of knowledge about the exact location of the early medieval church. In 2016, the most recent investigations were started by the Regional Museum in Benkovac in cooperation with the Department of Archaeology of the University of Zadar. Three campaigns of

Pogled s juga na Grubića glavicu u Šopotu i lokalitet Crkvina
(foto: J. Šučur)
View of Grubića glavica in Šopot and the Crkvina site from the south (photo: J. Šučur)





Položaj crkve i groblja (foto: J. Šučur)
Position of the church and the cemetery (photo: J. Šučur)

zervirana te grobove koji su se prostirali uokolo nje. Crkva, koja je, kako doznajemo iz povijesnih izvora, bila posvećena sv. Jeri, jest longitudinalna jedno-brodna građevina s trapezastom apsidom na istočnoj i narteksum na zapadnoj strani. Dimenzije joj iznose 12,5 x 6 m. Tijekom spomenutih istraživanja 80-ih godina pronađeni su i ulomci kamenog predromaničkog namještaja, a grobovi oko crkve na osnovi nalaza i pogrebnih običaja datirani su u razdoblje 13. i 14. stoljeća.

S obzirom na to da lokalitet nije u potpunosti istražen, kao i vjerojatnost da sama crkva prema arhitektonskim osobinama ipak upućuje na razdoblje kasnog srednjeg vijeka, a ne predromaničke kako su to pretpostavili stariji istraživači te nepoznavanje točnog položaja ranosrednjovjekovne crkve, iniciran je nastavak daljnjih sustavnih arheoloških istraživanja. Godine 2016. započeta su najnovija istraživanja koja provodi Zavičajni muzej u Benkovcu u suradnji s Odjelom za arheologiju Sveučilišta u Zadru te su provedene tri kampanje arheoloških iskopavanja i jedna kampanja geofizičkih istraživanja. Već tijekom 2016. ustanovljeno je da je riječ o dvama horizontima grobova od kojih stariji pripada ranom srednjem vijeku što je potvrđeno nalazima jednojagodnih naušnica, a mlađi vjerojatno potječe iz 13.-14. stoljeća (Čurković 2017).

Tijekom 2023. nastavljena su istraživanja započeta tijekom prethodnih kampanja na prostoru zapadno od crkve.¹ Kako su iskopavanja direktno nastavljena na ona koja je provodio MHAS, korištena je ista kvadratna mreža s kvadratima veličine 4 x 4 m. Prostor istraživanja obuhvatio je četiri kvadrata, u kojima su dijelom otkriveni i grobovi koje su prije locirali ili istražili T. Burić i V. Delonga. Većina grobova ima kamenu arhitekturu od lomljenih ploča ili uslojenog neobrađenog kamena rađenu u tehnici suhozida. Donji sloj, stariji sloj grobova ukopan je većinom u zdravicu, a arhitektura im se sastoji od poklopnica koje čine lomljene

¹ Voditelj istraživanja bio je Marin Čurković iz Zavičajnog muzeja u Benkovcu, zamjenik Karla Gusar s Odjela za arheologiju Sveučilišta u Zadru, a članove stručne ekipe činili su Jure Šučur, Marina Šimičić i Kristina Horvat s Odjela za arheologiju, Mate Čurković iz Zavičajnog muzeja u Benkovcu, arheolozi Ana Karadole i Šime Vrkić te studenti arheologije Sveučilišta u Zadru: Noa Franin Pečarića, Duje Galić, Ivana Josić, Fran Mlinarić, Miroslav Novak, David Sartori, Eugen Fritz Prgomet i Barbara Vujković.







kamene ploče, obložnice su rađene od okomito postavljenih ploča, a i dno groba im je popločano, poput, primjerice, dječjeg ukopa u grobu 67. Najviše vremena posvetilo se istraživanju groba koji je pronađen u kampanji iz 1986. godine. Riječ je o velikoj kamenoj konstrukciji koja je bila prekrivena velikom količinom amorfnog i priklesanog kamenja. Nakon skidanja kamenja utvrdila se veća kamena konstrukcija od priklesanog kame-

archaeological excavations and one campaign of geophysical research were carried out. Already in 2016, it was established that there are two horizons of graves, the older of which belongs to the early Middle Ages, which was confirmed by the findings of single-beaded earrings, and the younger horizon probably dates to the 13th-14th centuries (Ćurković 2017).

In 2023, excavations started during previous cam-



Grob 70 (foto: M. Ćurković)
Grave 70 (photo: M. Ćurković)



Grob 67 (foto: M. Šimičić)
Grave 67 (photo: M. Šimičić)

paings continued in the area west of the church.¹ As the excavations continued directly onto those conducted by MHAS, the same square grid with squares of 4 x 4 m size was used. The research area included four squares, in which were some graves previously located or investigated by T. Burić and V Delonga. Most of the graves have stone structure of broken slabs or layered unworked stones made in the dry stone wall technique. The lower and older layer of graves is mostly dug in the sterile soil, and their structure consists of lids made of broken stone slabs, the lining made of vertically placed slabs, and the bottom of the grave is also paved, for example, the child's burial in grave 67. Most of the time was devoted to investigating the grave found in the 1986 campaign. It is a large stone structure that was covered with a large quantity of amorphous and roughly dressed stones. After removing the stones, a larger stone structure was uncovered, made of

¹ The leader of the research was Marin Ćurković from the Regional Museum in Benkovac, Karla Gusar from the Department of Archaeology of the University of Zadar was the deputy, and the members of the research team were: Jure Sućur, Marina Šimičić and Kristina Horvat from the Department of Archaeology, Mate Ćurković from the Regional Museum in Benkovac, archaeologists Ana Karadole and Šime Vrkić and archaeology students of the University of Zadar Noa Franin Pečarica, Duje Galić, Ivana Josić, Fran Mlinarić, Miroslav Novak, David Sartori, Eugen Fritz Prgomet and Barbara Vujković.





nja posloženog „na nož“. Unutar nje je pronađen grob 70, prekriven većim kamenim pločama, a obložnice su također načinjene od amorfnog kamena položenog „na nož“, unutar kojeg je nađen kostur odrasle osobe orijentacije zapad-istok. Kao i u ostalim otkrivenim grobovima, u ovoj kampanji nisu zabilježeni nalazi, no uočeno je da se ispod njega nalazi stariji grob koji tek treba istražiti te da grob 70 pripada mlađoj fazi groblja. Nalazi u ovogodišnjoj kampanji su malobrojni, a odnose se na manji ulomak predromaničke plastike ukrašen motivom kuke ili pasjeg skoka koji je identičan ukrasu koji se nalazi na oltarnoj gredi s imenom kneza Branimira koja je pronađena u prvim istraživanjima 1928. godine. Također je otkriven rano-srednjovjekovni pojasni jezičac/okov, kao i ulomci tegula te manja količina srednjovjekovne grube keramike, staklenih i metalnih predmeta.

roughly dressed stones arranged vertically. Grave 70 was found inside the structure, covered with larger stone slabs, and the coverings were also made of amorphous stones placed vertically, inside which was a skeleton of an adult, oriented west-east. As in the other discovered graves, no finds were recorded in this campaign, but it was noticed that there is an older grave under it that has yet to be explored, and that grave 70 belongs to the younger phase of the cemetery. The finds in this year's campaign are few, and refer to a small fragment of pre-Romanesque sculpture decorated with a hook or running-dog pattern, which is identical to the decoration on the altar beam with the name of Duke Branimir, found in the first excavation in 1928. An early medieval belt strap end/fitting was also recovered, as well as fragments of tegulae and a small quantity of medieval coarse pottery, glass and metal objects.

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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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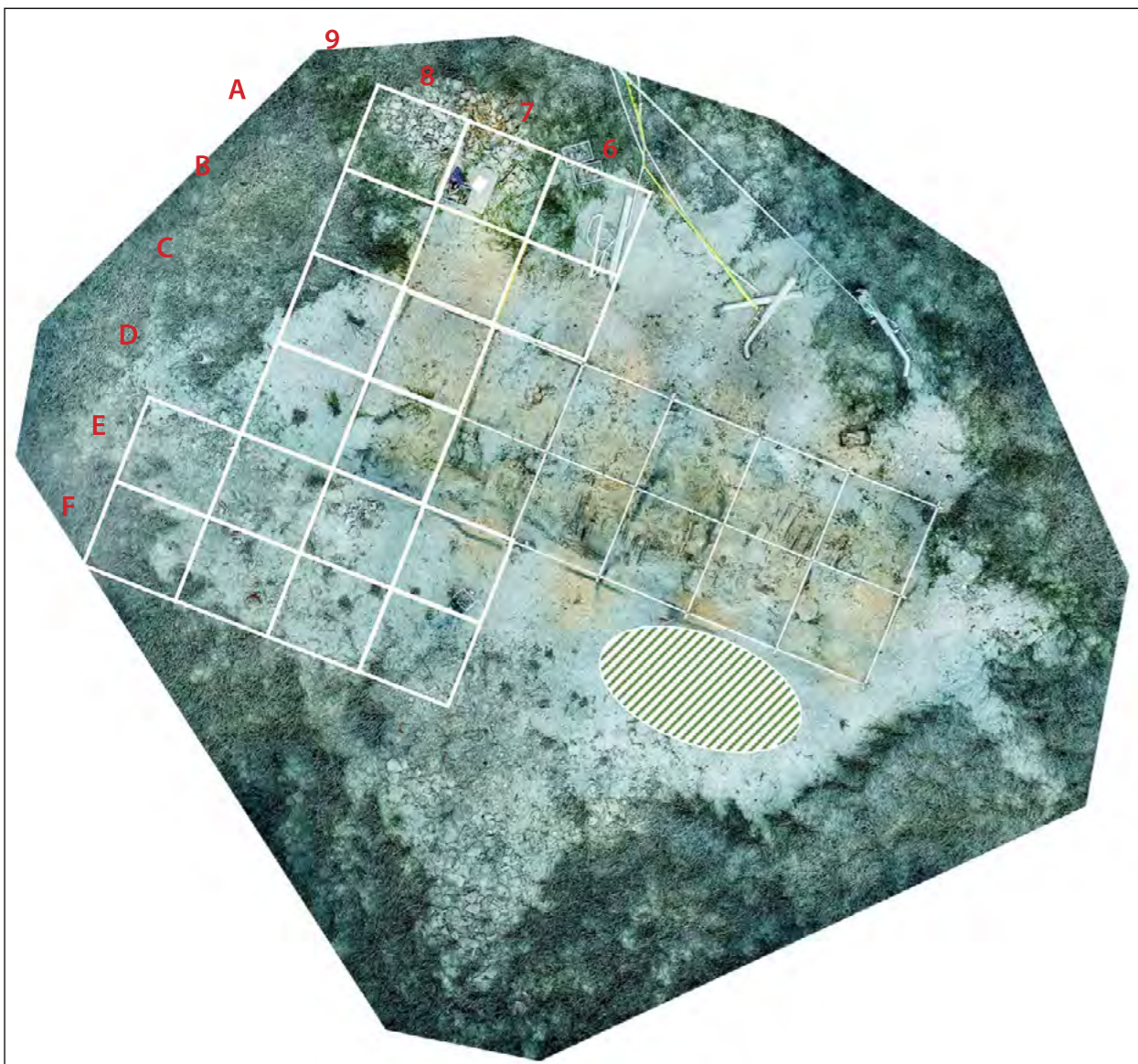
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Početni izgled pomoćnog metalnog mrežišta: nad matičnom stijenom u kvadratu D7 akumulirani su nedijagnostički, a u kvadratu D8 dijagnostički ulomci amfora (foto: M. Brzac)
The initial appearance of the auxiliary metal grid: non-diagnostic amphora fragments 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 ronionci 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 postavljene 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 privezom za oznaku nalazišta, koji je u međuvremenu izmješten nad matičnu stijenu u kvadratu C7.

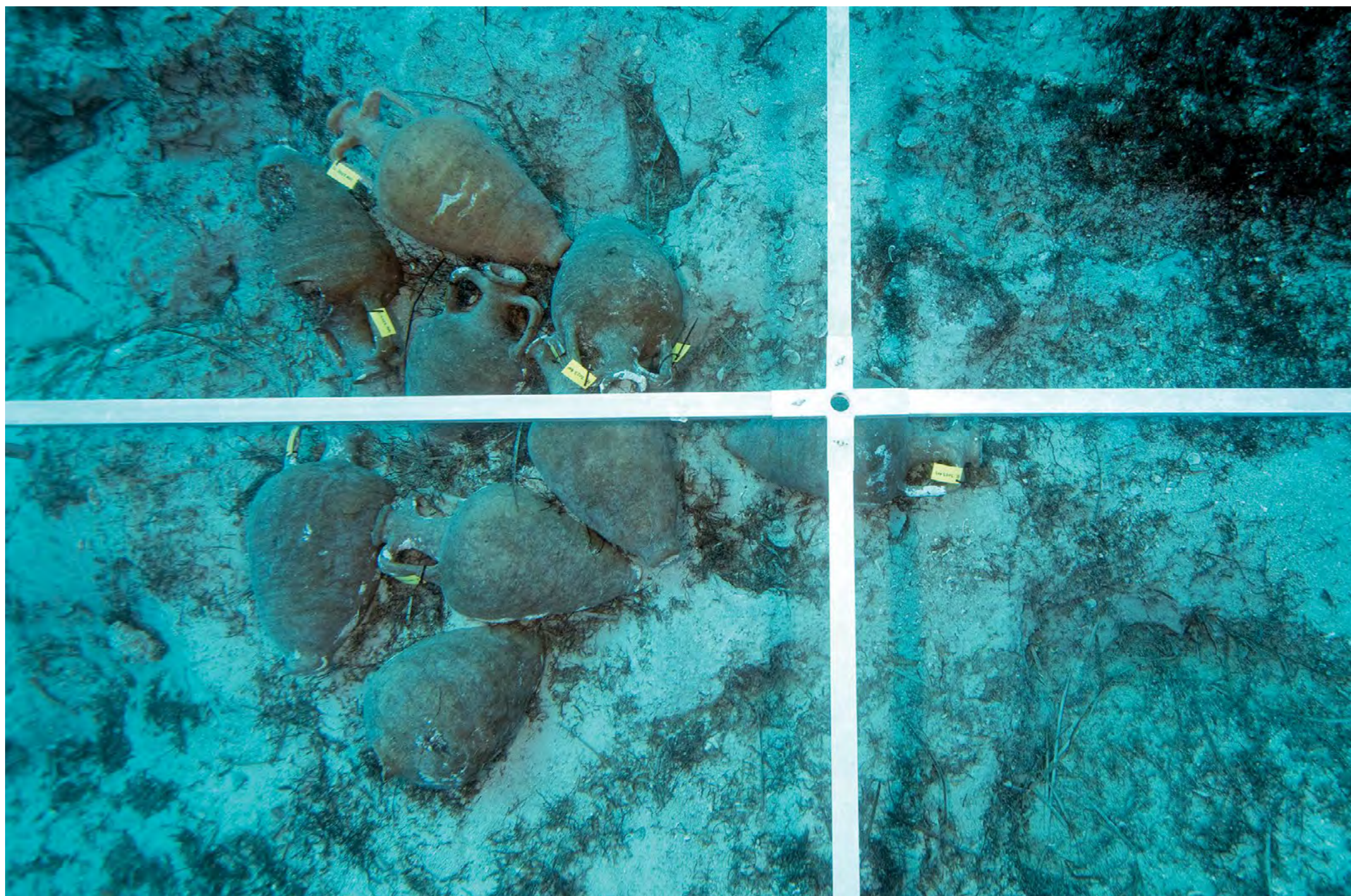
rock, which was soon reached in squares C and D. Four complete amphorae were discovered in square F8, while one was found in square F7. In that square, as well as in square E7, three amphorae broken into larger pieces were recorded. Squares A7, B7 and A8 yielded a group of eight complete or slightly 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 appliqué, 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.





Preprma 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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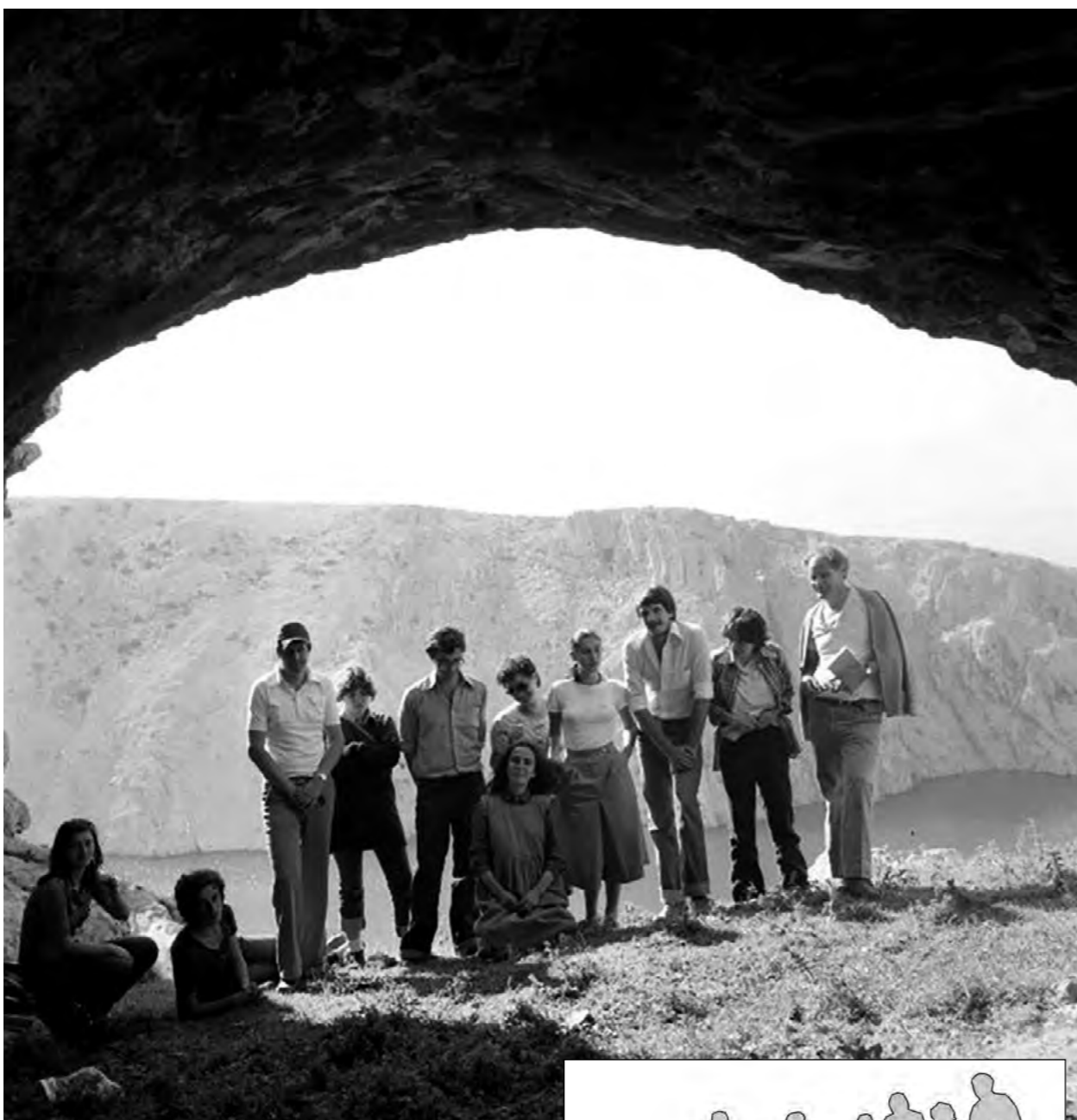
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STRATIGRAFIJA ARHIVA

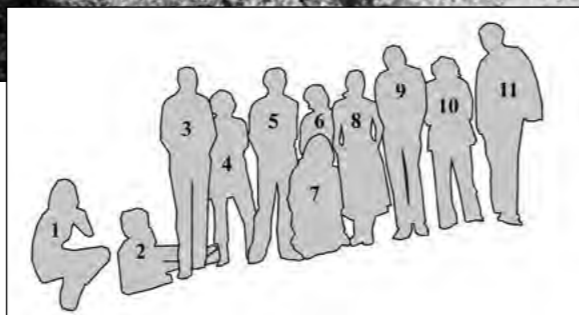
I u ovom broju nastavljamo „brisati prašinu“ s arhivskog gradiva i izvlačiti na svjetlo dana momente skrivene u stratigrafiji osobnih ili institucijskih arhiva. Okolnosti su se tako posložile da su na fotografijama dva lokaliteta koja su i danas predmet istraživanja, upravo onih koja su prezentirana na prethodnim stranicama – Pećina u Ždrilu u Jaseni-

STRATIGRAPHY OF ARCHIVES

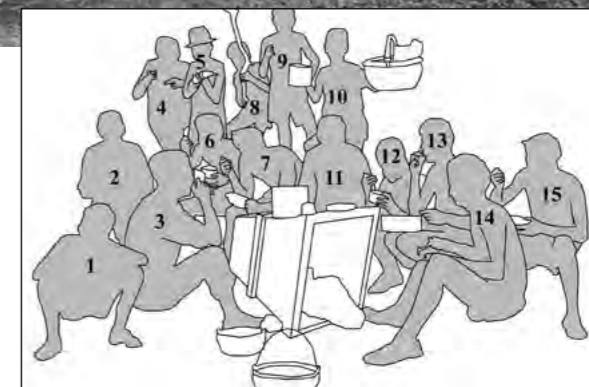
In this issue, we continue to “wipe the dust” off the archival material and bring to light moments hidden in the stratigraphy of personal or institutional archives. Coincidentally, the photos show two sites that are still the subject of research, precisely those that were presented on the previous pages - Pećina in Ždrilo in Jasenice and Sv. Ivan in



Pećina u Ždrilu, profesor Š. Batović sa studentima arheologije 1978. godine (foto: Radomir Jurić, AMZD fototeka 10303 33135). Identificirani sudionici: 2 - Jozo Dragić, 3 - Aljoša Stanojević, 8 - Ivna Anzulović, 9 - Matko Utrobičić, 10 - Darija Jončić, 11 - Šime Batović
Pećina in Ždrilo, professor Š. Batović with archaeology students in 1978 (photo: Radomir Jurić, AMZD photo archive 10303 33135). Identified participants: 2 - Jozo Dragić, 3 - Aljoša Stanojević, 8 - Ivna Anzulović, 9 - Matko Utrobičić, 10 - Darija Jončić, 11 - Šime Batović



Predah od istraživanja crkve sv. Ivana u Stivanjem polju, vjerojatno 1956. (foto: Joso Špralja, Odjel za povijest umjetnosti, Zbirka Petricioli 358 2). Identificirani sudionici: 2 - Ante Beverin, 3 - Pere Finka, 4 - Mirko Grbin 5 - Frane Grbin, 6 - Marijo Petešić, 8. - Mario Raljević, 9 - Jure Orlić, 10 - Nikola Orlić, 11 - Ivo Petricioli, 12 - Joso Ušalj, 13 - Šanto Frka, 14 - Mirko Orlić, 15 - Srećko Filipi
Taking a break, excavations of the church of St. John in Stivanje polje, probably in 1956 (photo: Joso Špralja, Department of Art History, Petricioli Collection 358 2). Identified participants: 2 - Ante Beverin, 3 - Pere Finka, 4 - Mirko Grbin 5 - Frane Grbin, 6 - Marijo Petešić, 8. - Mario Raljević, 9 - Jure Orlić, 10 - Nikola Orlić, 11 - Ivo Petricioli, 12 - Joso Ušalj, 13 - Šanto Frka, 14 - Mirko Orlić, 15 - Srećko Filipi



cama i Sv. Ivan u Stivanjem polju na Dugom otoku.

Prva fotografija potječe iz fototeke Arheološkog muzeja u Zadru, a naše znanje o njoj nadopunila je Ivna Anzulović, kojoj i ovom prigodom zahvaljujemo. Druga se čuva u Zbirci Petricioli na Odjelu za povijest umjetnosti Sveučilišta u Zadru, kojem zahvaljujemo na dopuštenju za korištenje zbirke. U identifikaciji sudionika pomogle su društvene mreže, a posebno kolegica Jona Petešić koja je napravila pravo malo terensko istraživanjima u Salima pa se i njoj i svima koji su sudjelovali također zahvaljujemo. Svaka dopuna informacija je uvijek dobrodošla!

Svakako bismo voljeli, ako posjedujete sličnu građu, koja je povezana s poviješću Odjela za arheologiju i njegovim aktivnostima, ili općenito studentskim životom, da nam se javite i da te tragove prošlosti podijelite na stranicama časopisa.

Stivanje polje on Dugi otok.

The first photo comes from the photo library of the Archaeological Museum in Zadar, and our knowledge of it was supplemented by Ivna Anzulović, whom we thank on this occasion. The second photo is kept in the Petricioli Collection at the Department of Art History of the University of Zadar, to whom we thank for permission to use the collection. Social networks helped in the identification of participants, especially our colleague Jona Petešić, who did a real field research in Sali, so we thank her and everyone who participated. Any additional information is always welcome!

We would certainly like, if you have similar material, which is related to the history of the Department of Archaeology and its activities, or student life in general, to contact us and share these traces of the past on the pages of the magazine.