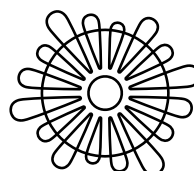


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Uvodnik

in situ [~ si'tu:] (latinski: na položaju), na prvotnome položaju, na nepromijenjenome (iskonskome) mjestu (Hrvatska enciklopedija, mrežno izdanje. Leksikografski zavod Miroslav Krleža, 2021).

Arheolozi vrijeme broje u stoljećima. Ovom malom dosjetkom najbolje ćemo opisati razloge nastajanja časopisa *In situ*. Od pripreme, preko realizacije, obrade materijala i analiza, do konačne interpretacije arheološka istraživanja dugotrajan su proces koji često zahtijeva godine i godine rada prije objave rezultata. A u međuvremenu podatci su u svojevrsnom limbu, iako mogu biti vrlo korisni. Časopis *In situ* zamišljen je kao godišnji kolaž aktivnosti Odjela za arheologiju upravo potaknut idejom brzog plasiranja osnovnih informacija o arheološkim istraživanjima. U slobodnoj stručnoj formi, s naglaskom na popularizaciji arheologije, cilj nam je otvoriti vrata i prezentirati ono što radimo. Stoga su, osim serviranja tijeka istraživanja na godišnjoj bazi, predstavljene i druge aktivnosti u kojima sudjeluju djelatnici Odjela. Sva slojevitost svijeta arheologije. Znanstvenicima će poslužiti kao mjesto dobivanja osnovnih, ali brzih informacija potrebnih za istraživanja, studentima da steknu uvid kako njihovi nastavnici pretvaraju teoriju u praksu, a javnosti da zaviri u kompleksnost arheoloških istraživanja. Nadamo se da ćemo uspjeti u svojem naumu i postati pouzdan izvor informacija, odnosno, da parafraziramo definiciju, staviti informacije u njihov prirodni položaj, tj. podijeliti ih sa svim zaljubljenicima u arheologiju.

Uredništvo

Editorial

in situ [~ si'tu:] (Latin on site), in the original or unchanged position or place (Hrvatska enciklopedija, online edition. Leksikografski zavod Miroslav Krleža, 2021).

Archaeologists count time in centuries. With this witty remark we will best describe the reasons for the creation of the *In situ* magazine. From preparation, through realization, material processing and analysis, to the final interpretation, archaeological research is a long-term process that often requires years and years of work before the results are published. Meanwhile, the data is in a kind of limbo, although it can be very useful. The magazine *In situ* was conceived as an annual collage of the activities of the Department of Archaeology, inspired precisely by the idea of quickly distributing basic information about archaeological research. In a free professional form, with an emphasis on the popularization of archaeology, our goal is to open doors and present what we do. Therefore, not only the course of research on an annual basis was presented, but also other activities in which the employees of the Department participate. It will serve as a place for scholars to get basic but quick information needed for research, for students to gain an insight into how their teachers put theory into practice, and for the public to take a peek at the complexity of archaeological research. We hope that we will succeed in our plan and become a reliable source of information, that is, to paraphrase the definition, put information in its natural position, i.e. share it with all archaeology enthusiasts.

Editorial board

Noć muzeja, 28. siječnja 2022.

Krajem siječnja Odjel za arheologiju Sveučilišta u Zadru sudjelovao je u programu sedamnaeste po redu Noći muzeja. Zbog epidemiološke situacije program se u potpunosti odvijao putem digitalnih kanala, a kako u stvarnosti izgleda radni dan arheologa i što točno arheolozi rade prije, za vrijeme i nakon arheoloških istraživanja posjetitelji su mogli pogledati u videouratku Odjela za arheologiju – *Virtualna arheološka stvarnost*.



Video je dostupan na našoj Facebook stranici <https://www.facebook.com/odjelzaarheologijuUNIZD> i na Youtube linku <https://youtu.be/INqwc7gZkOc>

Dan Sveučilišta, 25. ožujka 2022. – Potraga na zadarskom Muraju: Tajne skrivenih pisama

Povodom Dana Sveučilišta organizirana je aktivnost pod nazivom *Potraga na zadarskom Muraju: Tajne skrivenih pisama* u kojoj su sudjelovali studenti Odjela za arheologiju, Odjela za povijest umjetnosti te Odjela za turizam i komunikacijske znanosti. Aktivnost je organizirana u suradnji s udrugom Mala filozofija i Muzejom antičkog stakla, a program je sufinanciran u sklopu programa javnih potreba u kulturi Grada Zadra.

19. Festival znanosti, 2. – 7. svibnja 2022.

U sklopu Festivala znanosti doc. dr. sc. Tomislav Fabijanić, u suradnji s Milošem Biserkom i Nadanom Jelić iz udruge *Scientia populo*, održao je predavanje i radionicu na Kninskoj tvrđavi pod naslovom *Govori li nam smrt nešto o životu?*

Izv. prof. Ivana Jadrić-Kučan održala je učenicima 3. razreda OŠ Bartula Kašića u Zadru prezentaciju i interaktivnu radionicu – *Škola u rimsko vrijeme*. U sklopu radionice učenicima je prezentiran antički pisani materijal, nakon čega su oni sami imali priliku izraditi vlastite voštane pločice za pisanje (*tabulae ceratae*).



Museums Night, 28 January 2022

At the end of January, the Department of Archaeology of the University of Zadar participated in the program of the seventeenth Museums at Night event. Due to the epidemiological situation, the program was organized entirely through digital channels, and visitors could see what the working day of an archaeologist looks like in reality and what exactly archaeologists do before, during and after archaeological excavation in the video of the Department of Archaeology - *Virtual Archaeological Reality*.

The video is available at our Facebook page <https://www.facebook.com/odjelzaarheologijuUNIZD> and Youtube link <https://youtu.be/INqwc7gZkOc>

University Day, 25 March 2022 - Search on Muraj in Zadar: Secrets of hidden letters

On the occasion of the University Day, a game called *Search on Muraj in Zadar: Secrets of hidden letters* was organized for students from the Department of Archaeology, the Department of Art History, and the Department of Tourism and Communication Studies. The game was organized in cooperation with the association Little Philosophy and the Museum of Ancient Glass, and the program was co-financed as part of the program of public needs in the culture of the City of Zadar.



19th Science Festival, 2 – 7 May 2022

As part of the Science Festival, assistant professor Tomislav Fabijanić, in collaboration with Miloš Biserko and Nadana Jelić from the association *Scientia populo*, gave a lecture and conducted a workshop *Does death tell us something about life?* at the Knin fortress.

Associate professor Ivana Jadrić-Kučan gave a presentation and conducted an interactive workshop *School in Roman times* for the third graders of Bartul Kašić Elementary School in Zadar. As part of the workshop, children were shown ancient writing material, after which they had the opportunity to make their own wax writing tablets (*tabulae ceratae*).

Međuinstitucijska suradnja UNIZD – UMAS – ARMUS

Dana 31. svibnja 2022. godine naši studenti posjetili su Odjel za konzervaciju – restauraciju Umjetničke akademije u Splitu. U sklopu posjeta organiziran je niz aktivnosti u kojima su sudjelovali studenti 2. godine diplomskog studija arheologije iz Zadra i studenti 4. godine integriranog pred-diplomskog i diplomskog studija konzervacije – restauracije iz Splita. Studentima je, među ostalim, prezentiran projekt konzervacije – restauracije sarkofaga iz Salone, a zatim je organizirano vodstvo kroz izložbu *Vis – à – Vis 200. Arheološka baština otoka Visa*.

XV. svezak časopisa Archaeologia Adriatica

Dana 2. lipnja 2022. godine u Svečanoj dvorani Sveučilišta u Zadru održano je predstavljanje XV. sveska časopisa *Archaeologia Adriatica* posvećenog prof. dr. sc. Sinevi Kukoč. Uvodnu riječ o životu i djelu prof. Kukoč održao je prof. dr. sc. dr. h. c. Ante Uglešić. Dr. sc. Marko Dizdar, znanstveni savjetnik i ravnatelj Instituta za arheologiju u Zagrebu, predstavio je radove u vezi s prapovijesnim i protopovijesnim periodom, dok je radove iz antičkog, kasnoantičkog, srednjovjekovnog i novovjekovnog razdoblja predstavila dr. sc. Marija Kolega, izv. prof. u miru. Svečanom događaju prisustvovali su brojni kolege, gosti i studenti arheologije.



Europski dani arheologije, 17. – 19. lipnja 2022.

Ovogodišnji Europski dani arheologije obilježeni su predavanjem i prezentacijom – *Škola u rimsko vrijeme*, izv. prof. Ivane Jadrić-Kučan s Odjela za arheologiju. Prezentacija je održana petim razredima OŠ Bartula Kašića u Zadru.

U sklopu iste manifestacije u Arheološkom muzeju u Zagrebu prikazan je dokumentarni film *The Voyages of Gagliana Grossa. Exciting Story of a Late Renaissance Venetian Merchant Ship*.

Inter-institutional cooperation UNIZD – UMAS – ARMUS

On 31 May 2022, our students visited the Conservation - Restoration Department of the Art Academy in Split. As part of the visit, a series of activities were organized for students of the 2nd year of the graduate study program of archaeology from Zadar and students of the 4th year of the integrated undergraduate and graduate study programs of conservation - restoration from Split. Among other things, the students could learn more about the project of conservation - restoration of the sarcophagus from Salone, and there was also a guided tour through the exhibition *Vis – à – Vis 200. Archaeological heritage of the island of Vis*.

15th volume of the journal Archaeologia Adriatica

On 2 June 2022, the 15th volume of the journal *Archaeologia Adriatica* dedicated to full professor Sineva Kukoč was presented in the ceremonial hall of the University of Zadar. An introductory speech about the life and work of professor Kukoč was held by distinguished professor dr. h.c. Ante Uglešić. Marko Dizdar, PhD, scientific advisor and director of the Institute of Archaeology in Zagreb, presented works related to the prehistoric and protohistoric periods, while papers dealing with the classical antiquity, late antique, medieval and modern periods were presented by Marija Kolega, retired associate professor. The event was attended by many colleagues, guests and archaeology students.

European Archaeology Days, 17 – 19 June 2022

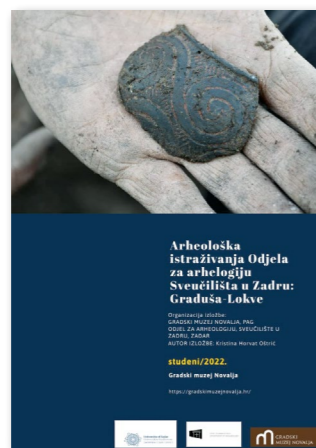
Within this year's European Archaeology Days, associate professor Ivana Jadrić-Kučan of the Department of Archaeology gave a lecture and presentation - *School in Roman times* for the fifth graders of Bartul Kašić Elementary School in Zadar.

As part of the same event, documentary film *The Voyages of Gagliana Grossa. Exciting Story of a Late Renaissance Venetian Merchant Ship* was screened at the Archaeological Museum in Zagreb.



Izložbe:

U suradnji s Gradskim muzejom Novalja u studenome 2022. godine, postavljena je Izložba **Arheološka istraživanja Odjela za arheologiju Sveučilišta u Zadru: Graduša – Lokve**, autorice doc. dr. sc. Kristine Horvat Oštrić. Na izložbi su predstavljeni rezultati najnovijih istraživanja neolitičkog naselja na položaju Graduša – Lokve u Islamu Grčkom.



U povodu održavanja znanstvenog skupa Hrvatskog arheološkog društva u Zadru, 11. listopada 2022. u Arheološkom muzeju u Zadru otvorena je izložba **Kud plovi ovaj brod? – Brodolom iz 4. st. pr. Kr. u podmorju otoka Žirja** nastala suradnjom Arheološkog muzeja u Zadru, Umjetničke akademije u Splitu i Odjela za arheologiju Sveučilišta u Zadru. Autori izložbe su Miona Miliša, Filip Rogošić i Irena Radić Rossi.

Europska Noć istraživača, 30. rujna 2022.

Sveučilište u Zadru i ove godine sudjelovalo je u manifestaciji Europska noć istraživača održanoj 30. rujna 2022. godine pod motom „Ja istražujem“. Program se odvijao u Providurovoj palači, a Odjel za arheologiju sudjelovao je s interaktivnom prezentacijom podvodnog nalazišta kod rta Letavice na Pagu pod nazivom *Istražujmo zajedno*.

Predstavljanje dviju knjiga akademika Nenada Cambija

U Svečanoj dvorani Sveučilišta u Zadru, dana 17. studenoga 2022., predstavljene su dvije nove knjige akademika profesora emeritusa i voditelja Zavoda za povijesne znanosti HAZU u Zadru Nenada Cambija. *Umjetnost antike u hrvatskim krajevima* dopunjeno je izdanje nakon prvog iz 2002. godine, koju je predstavio prof. dr. sc. Dražen Maršić te *Ver-*

**Exhibitions:**

The exhibition **Archaeological Excavations of the Department of Archaeology of the University of Zadar: Graduša – Lokve**, by assistant professor Kristina Horvat Oštrić, was set up in cooperation with the Town Museum of Novalja in November 2022. The exhibition presents the results of the latest excavations of the Neolithic settlement at the site of Graduša - Lokve in Islam Grčki.

The exhibition **Where is this ship sailing to? A 4th-century BC shipwreck off the island of Žirje** was opened in the Archaeological Museum in Zadar on the occasion of the scientific conference of the Croatian Archaeological Society in Zadar, on 11 October 2022, in cooperation of the Archaeological Museum in Zadar, the Academy of Arts in Split and the Department of Archaeology of the University of Zadar. The authors of the exhibition are Miona Miliša, Filip Rogošić and Irena Radić Rossi.

European Researchers' Night, 30 September 2022

This year, the University of Zadar once again participated in the European Researchers' Night event held on 30 September 2022 under the motto "I do research". The program took place in the Proveditor's Palace, and the Department of Archaeology participated with an interactive presentation of the underwater site near Cape Letavica on Pag titled *Let's explore together*.

Presentation of two books by academician Nenad Cambi

Presentation of two new books by the academician professor emeritus and head of the Institute of Historical Sciences of the Croatian Academy of Sciences and Arts in Zadar, Nenad Cambi, was held in the Ceremonial Hall of the University of Zadar, on 17 November 2022. Full professor Dražen Maršić presented the book *The Art of Antiquity in Croatia* which is an updated version of the first edition from 2002, and the other book is *The vernacular art of the early Christian period in the hinterland of Roman Dalmatia*, presented by associate professor Josipa Baraka Perica.

The Neolithic site of Barice in Smilčić, a book by professor emeritus Brunislav Marijanović

On 9 November 2022, the book *Neolithic site of Barice in Smilčić* by professor emeritus Brunislav Marijanović was presented in the Ceremonial Hall of the University of Zadar. The author of the book was introduced by the moderator distinguished professor dr. h.c. Ante Uglešić, and the book was presented by full professor Tihomira Težak-Gregl and associate professor Dario Vujević. The vice-rector of the University of Zadar, distinguished professor Josip Faričić also addressed the audience.

nakularna umjetnost ranokršćanskog razdoblja u zaleđu rimske Dalmacije, koju je predstavila izv. prof. dr. sc. Josipa Baraka Perica.

Knjiga prof. emeritusa Brunislava Marijanovića *Neolitičko nalazište Barice u Smilčiću*

U Svečanoj dvorani Sveučilišta u Zadru 9. studenoga 2022. g. predstavljena je knjiga profesora emeritusa Brunislava Marijanovića *Neolitičko nalazište Barice u Smilčiću*. Autora knjige predstavio je moderator prof. dr. sc. dr. h. c. Ante Uglešić, a knjigu su predstavili prof. dr. sc. Tihomira Težak-Gregl i izv. prof. dr. sc. Dario Vujević. Okupljenima se obratio i profesor Sveučilišta u Zadru prof. dr. sc. Josip Faričić.

Rekognicija relikvijara iz katedrale sv. Stošije u Zadru

Dana 22. studenoga 2022. g. akademik Mario Šlaus i prof. dr. sc. dr. h. c. Ante Uglešić predstavili su u Svečanoj dvorani Sveučilišta u Zadru rezultate rekognicije 34 relikvijara zadarskih zaštitnika, koji se većinom nalaze u Stalnoj izložbi crkvene umjetnosti u Zadru.

Ciklus predavanja *Studenti za studente*

U želji da našim studentima pružimo nešto novo i drukčije u 2022. godini pokrenuli smo niz gostujućih predavanja *Studenti za studente* s ciljem da studenti na jedan neformalan način podijele međusobna iskustva. Krajem godine održano je prvo u nizu predavanja, koje je održala Petra Govorčin s temom „Što nakon diplome?“. Predavanja i druženja održavaju se jednom mjesečno u klubu „Božo Lerotić“.

Terenska nastava studenata arheologije:**Krapina**

U siječnju 2022. godine studenti 1. godine preddiplomskog studija bili su u posjetu Krapini i Muzeju krapinskih neandertalaca

Šibenik i okolica

Studenti 3. godine preddiplomskog i 1. godine diplomskog studija posjetili su 29. travnja 2022. Šibenik (gdje su u obišli Tvrđavu sv. Mihovila, Gradski muzej Šibenik i katedralu sv. Jakova), Skradin i arheološki lokalitet Bribirsku glavicu.

Recognition of the reliquaries from the cathedral of St. Anastasia in Zadar

On 22 November 2022, academician Mario Šlaus and prof. dr. sc. dr. h. c. Ante Uglešić presented the results of the recognition of 34 reliquaries of the patron saints of Zadar, most of which are kept in the Permanent Exhibition of Ecclesiastical Art in Zadar. The presentation took place in the Ceremonial Hall of the University of Zadar.

Lecture cycle *Students for students*

Wishing to provide our students with something new and different in 2022, we started a series of guest lectures *Students for students* with the aim of inciting students to share mutual experiences in an informal way. At the end of the year, the first in a series of lectures was delivered by Petra Govorčin on the topic "What to do after graduation?". Lectures and gatherings are organized once a month in the Student Club Božo Lerotić.

Excursion for archaeology students:**Krapina**

In January 2022, 1st year undergraduate students visited Krapina and the Krapina Neanderthal Museum.

Šibenik and the surrounding area

On 29 April, 2022, 3rd-year undergraduate and 1st-year graduate students visited Šibenik (where they visited St. Michael's Fortress, Šibenik City Museum and the cathedral of St. Jacob), Skradin and the archaeological site of Bribirska glavica.

**Archaeological investigation of the site of Zamina / Samograd in Vrana**

Since 2017, the Public Institution Agency Han-Vrana, in cooperation with the Department of Archaeology of the University of Zadar, has been conducting excavations at the site marked on maps with the toponym Zamina, which in the archaeological literature is most often referred to

Arheološko istraživanje lokaliteta Zamina / Samograd u Vrani

Od 2017. Javna ustanova Agencija Han-Vrana u suradnji s Odjelom za arheologiju Sveučilišta u Zadru istražuje na lokalitetu označenom na kartama toponimom Zamina, koji je u arheološkoj literaturi najčešće naveden pod imenom Samograd ili Vran-Samograd. Gradina na granici Vrane i Radašinovaca spominje se u literaturi kao jedan od položaja na koji se ubicira *Blandona* ili *Blanona* iz *Geografije* Klaudija



Ptolomeja i *Antoninova itinerarija*. Godine 2021. u istraživanju se uključili njemački kolege iz Römisch-Germanische Kommission i s Tehničkog sveučilišta u Darmstadtu. Voditelj istraživanja je Marko Meštrov, zamjenik Jure Šučur, a članovi ekipe su također: Roman Scholz i Gabriele Rasbach iz Römisch-Germanische Kommission, Judith Ley i Franziska Lang s Technische Universität Darmstadt, Ana Ivas, te studentice i studenti arheologije Alen Grubić, Ivana Josić, Agata Karan, Ivan Mašković, Fran Mlinarić, Barbara Šušnjara. U ovogodišnjoj su se kampanji nastavila istraživanja jugoistočnog ulaza na gradinu koja su započela 2021. godine.

Terenska nastava studenata arheologije Filozofskog fakulteta u Mostaru – Peć Mlini

U periodu od 4. do 21. travnja 2022. Odjel za arheologiju Filozofskog fakulteta u Mostaru u suradnji s Općinom Grude proveo je arheološka istraživanja na dvjema mikrolokacijama koje prostorno gravitiraju Avanturističkom parku Peć Mlini. Istraživanja su vršena u sklopu terenske nastave Odjela pod vodstvom izv. prof. Darija Vujevića (Sveučilište u Zadru) i dr. sc. Tina Tomasa (Sveučilište u Mostaru), te uz sudjelovanje dr. sc. Mirka Rašića (Sveučilište u Mostaru) i studenata arheologije. Arheološka istraživanja obuhvatila su dva arheološka nalazišta različitog tipa, koja su samim time zahtijevala i primjenu različitih pristupa, strategija i metoda iskopavanja, te različitih tehnika dokumentiranja i prikupljanja arheološke građe i podataka. Riječ je o nalazištu pećinskog tipa (Pećina na Zaskoku) i prapovijesnoj kamenoj gomili. Spomenuta nalazišta do sada nisu poznata u arheološkoj literaturi, niti su registrirana kao arheološka dobra, a dokumentirana su tijekom terenskog pregleda šireg prostora Peć Mlina.

as Samograd or Vran-Samograd. Hillfort on the border of Vrana and Radašinovci is mentioned in the literature as one of the locations of *Blandona* or *Blanona*, settlement known from Claudius Ptolemy's *Geography* and the *Antonine Itinerary*. In 2021, German colleagues from the Römisch-Germanische Kommission and the Technical University of Darmstadt joined the research. The head of the research is Marko Meštrov, Jure Šučur is the deputy, and team members also include: Roman Scholz and Gabriele Rasbach from the Römisch-Germanische Kommission, Judith Ley and Franziska Lang from the Technische Universität Darmstadt, Ana Ivas, and archaeology students Alen Grubić, Ivana Josić, Agata Karan, Ivan Mašković, Fran Mlinarić, Barbara Šušnjara. This year's campaign was marked by continuation of the excavations of the south-eastern entrance to the hillfort, which began in 2021.

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

In the period from 4 to 21 April 2022, the Department of Archaeology of the Faculty of Philosophy in Mostar, in cooperation with the Municipality of Grude, conducted archaeological excavations at two micro-locations in wider surroundings of the Adventure Park Peć Mlini. The excavations were organized within fieldwork practice for archaeology students of the Faculty of Philosophy in Mostar under the leadership of associate professor Dario Vujević (University of Zadar) and Tino Tomas, PhD (University of Mostar), with participation of Mirko Rašić, PhD (University of Mostar) and archaeology students. Archaeological excavations included two archaeological sites of different types, which therefore required application of different approaches, strategies and methods of excavation, as well as different techniques for documenting and collecting archaeological material and data. Pećina na Zaskoku is a cave-type site, and the other site refers to a prehistoric stone mound. The mentioned sites have not been known in the archaeological literature, nor have they been registered as archaeological sites, and they were documented during the field survey of the wider area of Peć Mlini.

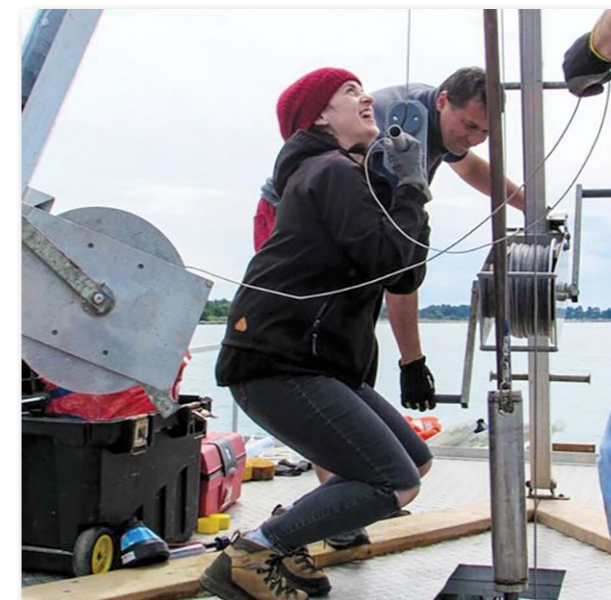


Gostujuća predavanja:

Tijekom travnja 2022. godine **dr. sc. Andrej Gaspari** s Odjela za arheologiju Sveučilišta u Ljubljani održao je niz gostujućih predavanja:

- *Podvodna nalazišta sjeverozapadne Istre (slovenski dio) i u kontinentalnim vodama.*
- *Počeci rimske Emone (kasna prapovijest Ljubljane, rimski vojni logori, urbanizam i infrastruktura, nekropole, materijalna kultura).*
- *Ranokršćanska nekropola na Gosposvetskoj cesti (Ljubljana).*
- *Plovila i brodograditeljske prakse kasne praistorije i rimskog doba na kontinentalnim vodama.*
- *Arheologija rijeke Ljubljanice.*
- *Kultne prakse kod Kelta i pojava Galo-rimskih svetišta u jugoistočnim Alpama.*

- **Dr. sc. Katarina Jerbić** održala je u svibnju 2022. godine na Odjelu za arheologiju gostujuće predavanje *Arheologija ispod morskog dna. Potopljeno prapovijesno sojenočarsko naselje i paleookoliš u uvali Zambratija.*



- **Doc. dr. sc. Adelphine Bonneau** (Odjel za kemiju i Odjel za povijest, Sveučilište Sherbrooke, Kanada) održala je 16. svibnja 2022. u sklopu kolegija Arheometrija predavanje na temu *The study of rock art sites: from archaeology and ethnology to archaeological sciences.*

- Dana 9. lipnja **dr. sc. Ivan Drnić** iz Arheološkog muzeja u Zagrebu održao je gostujuće predavanje s temom *La-tenska kultura i mlađe željezno doba u južnoj Panoniji.*

- U lipnju 2022. u organizaciji Odjela za arheologiju **dr. sc. Ian D. MacLeod** održao je dva javna predavanja na temu konzervacije arheološke baštine – *Conservation of rock art in Western Australia* i *Corrosion and Conservation of WWII iron shipwrecks in Micronesia.*

Visiting lectures:

During April 2022, **Andrej Gaspari, PhD**, from the Department of Archaeology of the University of Ljubljana delivered a series of visiting lectures:

- *Underwater archaeological sites along northwestern coast of Istria (Slovenian part) and continental waters.*
- *The beginnings of Roman Emona (late prehistory of Ljubljana, Roman military camps, urbanism and infrastructure of the Roman town, graveyards, material culture).*
- *Early Christian necropolis at Gosposvetska road (Ljubljana).*
- *Vessels and shipbuilding practices of late prehistory and Roman Period in the continental waters.*
- *Archaeology of the Ljubljanica River.*
- *Celtic cult practices and emergence of Gallo-Roman temples in Southeastern Alpine area.*

- In May 2022, **Katarina Jerbić, PhD**, delivered a visiting lecture *Archaeology under the seabed. Submerged prehistoric pile-dwelling settlement and paleoenvironment in Zambratija bay* at the Department of Archaeology.

- On May 16, 2022, **Adelphine Bonneau, PhD**, (Department of Chemistry and Department of History, University of Sherbrooke, Canada) gave a lecture *The study of rock art sites: from archaeology and ethnology to archaeological sciences*, as part of the Archaeometry course.

- On June 9, **Ivan Drnić, PhD**, from the Archaeological Museum in Zagreb gave a visiting lecture on the topic of *La Tène Culture and the Late Iron Age in southern Pannonia.*

- In June 2022, **Ian D. MacLeod, PhD**, gave two public lectures on the conservation of archaeological heritage – *Conservation of rock art in Western Australia* and *Corrosion and Conservation of WWII iron shipwrecks in Micronesia*, organized by the Department of Archaeology.

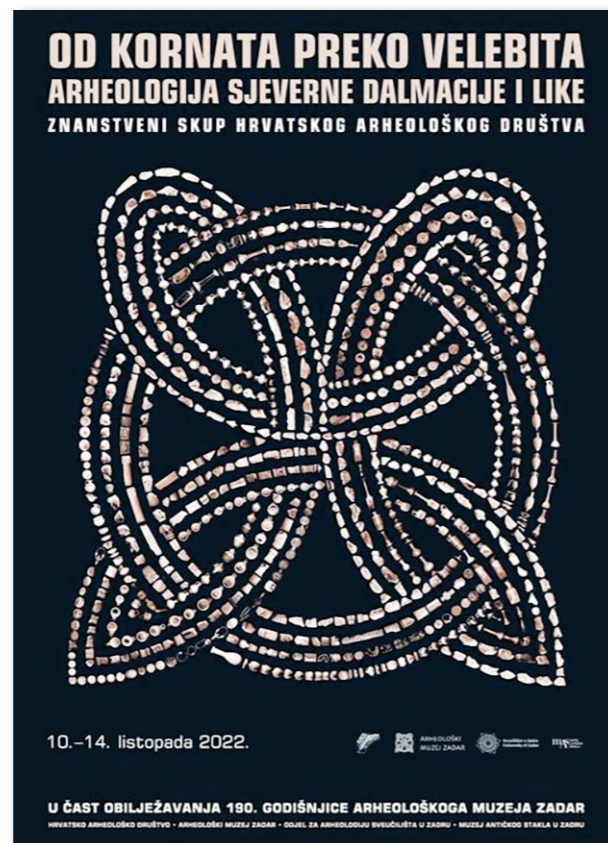


Znanstveni skup Hrvatskog arheološkog društva

Od Kornata preko Velebita – arheologija Sjeverne Dalmacije i Like

Ovogodišnji znanstveni skup HAD-a, pod nazivom *Od Kornata preko Velebita – arheologija Sjeverne Dalmacije i Like* održan je u Zadru od 10. do 14. listopada 2022. godine u organizaciji Hrvatskog arheološkog društva, Arheološkog muzeja u Zadru, Odjela za arheologiju Sveučilišta u Zadru i Muzeja antičkog stakla u Zadru. Skup je u povodu obilježavanja 190. rođendana Arheološkog muzeja, nakon dugih 25 godina ponovno organiziran upravo u Zadru.

Prigodno otvorenje skupa održano je u crkvi sv. Donata, a tijekom trajanja odvijao se na više lokacija. Osim velikog broja predavanja skup je popraćen i otvorenjem nekoliko prigodnih izložbi te predstavljanjem triju znanstvenih publikacija. Drugog dana skupa domaćin je bilo Sveučilište u Zadru i naš Odjel za arheologiju. Tom su prigodom sudionici skupa mogli razgledati izložbeni prostor Odjela za arheologiju i izložbu fotografija *Muzej između Donata i Foruma*, autora Filipa Jurković Pešić s Odjela za arheologiju i Roberta Maršića iz Arheološkog muzeja u Zadru. Izložba kroz odabrane fotografije prikazuje jedan dio duge povijesti Arheološkog muzeja, točnije vrijeme između 1954. i 1974. godine kada je muzej djelovao u zgradi tadašnjeg Filozofskog fakulteta, današnjeg Sveučilišta. Osim dviju sekcija predavanja, u Svečanoj dvorani Sveučilišta u Zadru predstavljen je Zbornik radova *Hvarski arhipelag i arheologija dalmatinskih otoka: od dinamične prošlosti do kulturnog turizma (Izdanja Hrvatskog arheološkog društva)*, te je održana i Godišnja skupština HAD-a, na kojoj je kao jedan od laureata u kategoriji „Josip Brunšmid“, izabran Mate Parica, izv. prof. na Odjelu za arheologiju, kojem ovom prigodom čestitamo, kao i svima koji su na bilo koji način doprinijeli velikom uspjehu skupa.



Scientific Conference of the Croatian Archaeological Society

From Kornati across Velebit - archaeology of northern Dalmatia and Lika

In the organization of the Croatian Archaeological Society, Archaeological Museum in Zadar, Department of Archaeology of the University of Zadar and Museum of Ancient Glass in Zadar, an annual scientific meeting was held from October 10 to 14, 2022, entitled *From Kornati across Velebit - archaeology of northern Dalmatia and Lika*. The gathering was organized in Zadar after 25 long years to mark the 190th birthday of the Archaeological Museum.

The official opening of the conference was held in the church of St. Donatus. The conference program was organized at several venues. In addition to a large number of lectures, several special exhibitions were opened and three scientific publications were presented.

The second day of the meeting was hosted by the University of Zadar and our Department of Archaeology. On this occasion, the participants of the conference could visit the exhibition space of the Department of Archaeology and the photo exhibition *Museum between Donat and Forum*, by Filipa Jurković Pešić from the Department of Archaeology and Robert Maršić from the Archaeological Museum in Zadar. Through selected photographs, the exhibition shows a part of the long history of the Archaeological Museum, more precisely the time between 1954 and 1974, when the museum operated in the building of the then Faculty of Philosophy, today's University. In addition to two lecture sessions, the miscellany *Hvar Archipelago and Archaeology of Dalmatian Islands: From the Dynamic Past to Cultural Tourism* (Croatian Archaeological Society Editions) was presented in the Ceremonial Hall of the University of Zadar, the Annual Assembly of the Croatian Archaeological Society was held, where one of the laureates in the "Josip Brunšmid" category, was Mate Parica, associate professor at the Department of Archaeology, whom we congratulate on this occasion, as well as everyone who contributed in any way to the great success of the meeting.



Sudjelovanje na znanstvenim skupovima / Participation in scientific conferences:

Od Kornata preko Velebita – arheologija Sjeverne Dalmacije i Like, Znanstveni skup Hrvatskog arheološkog društva, Zadar, 10. – 14. listopada 2022.:

- Pećina u Ždrilu – pregled recentnih istraživanja (M. Bodružić, M. Dubolnić Glavan, D. Vujević)
- Preliminarni rezultati probnih arheoloških istraživanja neolitičkog nalazišta Graduša – Lokve i Pod jarugom (K. Horvat Oštrić, N. Triozzi)
- Potopljeni neolitički lokaliteti na zadarskom području (M. Parica)
- Identificiranje formacije krškog kulturnog krajolika Velebita i Bukovice primjenom zračne arheologije (N. Kulenović, V. Glavaš, I. Kulenović)
- Arheobotanička analiza liburnske keramike s lokaliteta Nadin – Gradina (D. Knežić, R. Šošarić, M. Čelhar)
- Augustovski sloj pokapanja u Nadinu – primjer Grobnice 105 (M. Čelhar, I. Borzić)
- Fontana s prikazom Meduze iz Burnuma (I. Jadrić-Kučan, J. Zaninović)
- Mater castrorum u carskoj ideologiji na prostoru rimske provincije Dalmacije (I. Jadrić-Kučan, I. Banovac)
- Rimske reljefne keramičke sitnice iz Starog fundusa Arheološkog muzeja u Zadru (T. Alihodžić, I. Borzić)
- Preliminarni rezultati istraživanja rimskog imanja na lokalitetu Beneficij-Gudulija kod Vele Luke na otoku Korčuli (I. Borzić, D. Radić)
- Brodolom kod otočića Gnalića (*Galiana grossa*, 1583.); Rezultati istraživanja 2012. – 2022. (I. Radić Rossi, M. Bondioli)
- Rezultati novih istraživanja na rtu Ljubljana u Ljupču kod Zadra (K. Gusar, D. Vujević, V. Glavaš)
- Anžuvinski projekt spajanja toplog i hladnog mora na primjerima numizmatičkih nalaza iz Ljupča (*castrum Liube*) (M. Ilkić, D. Filipčić)
- Sjevernodalmatinski nalazi novca iz razvijenog i kasnog srednjeg vijeka s područja Austrije i Njemačke (M. Ilkić, D. Filipčić)
- Preliminarni rezultati arheoloških istraživanja „Malog Arsenala“ u Zadru (T. Fabijanić)
- Istraživački projekt Gradina i luka Svetog Ivana – izolirana točka otočnih dodira (GRIVA 2021. – 2023.) (I. Borzić)
- Fibule iz Burnuma (J. Zaninović, I. Jadrić-Kučan)
- Zadarski rimski katastar i njegova održivost kroz vrijeme (J. Baraka Perica, F. Jurković Pešić, L. Bogdanić)
- Prikaz istraživanja s gradilišta rekonstrukcije zgrade stare Tehničke škole u Zadru (M. Šimičić)

2nd Mediterranean Archaeology Australasian Research Community (MAARC) conference, 31st January - 2nd February 2022:

- Same time, different place – the late Iron Age of northern and southern Dalmatia confronted (M. Čelhar, I. Borzić)
- Nadin-Gradina and the Birth of a City: From Liburnian

Settlement to Roman Municipium in Northern Dalmatia (Croatia) (M. Čelhar, G. Zaro)

Society for American Archaeology 87th Annual Meeting, Chicago, Illinois, 30th March – 3rd April, 2022:

- What Lies Beneath: Revealing the Liburnian Character of a Roman Townscape in Northern Dalmatia (G. Zaro, M. Čelhar, I. Borzić, D. Vujević)

Roman Archaeology Congress (RAC/TRAC), Split, Croatia, 6th – 9th April 2022:

- Time of Change: North Dalmatia in Late Iron Age (M. Čelhar, M. Ilkić, G. Zaro)
- Hellenistic and Late Republican amphorae from the island of Korčula (I. Borzić)
- Roman Republican coins from Northern Dalmatia and Southeastern Lika (L. Šešelj, M. Ilkić)

11th Biennial Fields of Conflict Conference, Edinburgh, United Kingdom, 7th – 8th May 2022:

- On a troubled border – archaeological traces of late medieval and early modern period in the area of Vrana (Croatia) (K. Gusar, J. Šučur)

7th International Congress of Underwater Archaeology, Helsinki, 6th – 10th June 2022:

- How to protect an outstanding shipwreck site? (I. Radić Rossi, V. Dorušić)

ARTE-FACTUM 2022, Symposium on ancient crafts and technologies, STUDY DAYS ON ANCIENT GLASS, Podgorica, Crna Gora, 9th – 12th June 2022:

- Glass tubular unguentaria from the Roman legionary camp Burnum (I. Jadrić Kučan)

Conference on Hunting and Gathering Societies (CHAGS13), Dublin, 27th June – 1st July 2022:

- Lithic variability and local raw material sources: an experimental approach (D. Vujević, M. Bodružić, T. Ivančić)

The 25th International LIMES Congress, Nijmegen, Netherlands, 21st – 27th August 2022:

- The last legion on the Limes Delmaticus - VIII Augusta (Ž. Miletić, S. Bekavac)

- Testimonies of the Legio VIII Augusta in Burnum (S. Bekavac, Ž. Miletić)

The 24th International Congress of Byzantine Studies, Venice, Italy, 22nd – 24th August 2022:

- Results of Archaeological Excavations of Early Byzantine Fort of Tureta on the Island of Kornat, Croatia (T. Fabijanić)

EAA - 28th Annual Meeting of the European Association of Archaeologists, Budapest, Hungary, 31st August – 3rd September 2022:

- Under pressure – Lithic raw material procurement strategy: a case study of Vlakno cave (Croatia) (D. Vujević, Z. Perhoč, M. Bodružić)
- Beyond Liburnia: Exploring Iron Age boundaries and Interregional Connections in northern Liburnia (M. Čelhar, G. Zaro)
- Usage of prehistoric tali (astragali) from Nadin, Croatia (M. Kolenc, K. Korpes, M. Čelhar, T. Trbojević Vukičević)
- Mosaic glass objects from the roman legionary camp Burnum (I. Jadrić Kučan, A. Šokčević Purušić)
- Life at the border of Venetian Republic and Ottoman Empire – bioarchaeological aspects (Ž. Bedić, J. Šučur)

Scientific roundtable: Comparative overview of Late Antiquity and Early Medieval archeology of Dalmatia and Dardania, Priština, Kosovo, 3rd - 4th October 2022:

- Vaulted tombs as foundations of Churches. Examples from the Roman provinces of Dalmatia and Dardania (J. Baraka Perica, A. Uglešić)
- Some remarks on Early Byzantine Fortifications in Kosovo and Dalmatia (T. Fabijanić)

Between Global and Local: Adriatic Connectivity from Protohistory to the Roman Period, Stari Grad, Hvar Island, 28th – 29th October 2022:

- Traditions and Novelties in the Funerary Customs of the Eastern Adriatic Iron Age Communities in Nadin and Kopača During the 2nd and 1st centuries BC (M. Čelhar, I. Borzić)
- Globalno i lokalno: case study špilje Rače, Lastovo (I. Drnić, K. Brkić Drnić, I. Borzić)
- Od kabotaže do plovidbe otvorenim morem u antici; svjedočanstva iz jadranskog podmorja (I. Radić Rossi)

The unusual in usual: small finds-household items, pottery, jewellery; the bridge between Antiquity and the Early Middle Ages. Roads and rivers 4, Zagreb, Hrvatska, 24th – 25th November 2022:

- Decorative pendants of Roman soldiers from Burnum (I. Jadrić Kučan)

1st International Conference of Mediterranean Harbour and Coastal Archaeology, Marseille, France, 27th September – 1st October 2022:

- Portus Salonitanus; In Search of the Port of Ancient Salona (I. Radić Rossi)

Kosinjska dolina – jučer, danas i sutra, Gornji Kosinj, Hrvatska, 2022.:

- Tragovi naseljenosti Kosinjske doline u prapovijesti i antici (V. Glavaš, M. Glavičić)

Korištene fotografije su iz arhiva Sveučilišta u Zadru
Used photographs are from archives of University of Zadar

REZULTATI NOVIH ISTRAŽIVANJA NA RTU LJUBLJANA U LJUPČU KOD ZADRA

Results of recent
excavations on
Cape Ljubljana in
Ljubač near Zadar



Selo Ljubač nalazi se na jugoistočnoj obali plitke Ljubačke uvale. Iznad sela nalazi se Ljubačka kosa, istaknuti greben na kraju kojeg se, na rtu Ljubljana, nalaze ostatci srednjovjekovnog utvrđenog grada koji se još 1205. u ispravi kralja Andrije II. spominje se kao "castrum Lubey/Jubae" (Bianchi 1879: 276-278, Smičiklas 1905: 52, Petricioli 1983:117, Dobronić 1984: 89). Ujedno je to i prvi spomen da su ivanovci imali svoje posjede na ovome položaju, jer se navode granice grada Nina izuzevši posjed grada Liube koji pripada hospitalu Sv. Ivana (Smičiklas 1905: 52, Dobronić 1984: 89). Osim ivanovaca, castrum je i jedna od rezidencija benediktinki (Ostojić 1964: 117). Stoga ne čudi navod zadarskog povjesničara Bianchia koji uz crkvu sv. Marije spominje i nekoliko samostana unutar i izvan gradskog bedema (Bianchi 1879: 278-279). S vremenom se u izvorima na ovom prostoru počinju spominjati i razni velikaši od kojih treba spomenuti one iz plemićkog roda Matafar kojima Ladislav Napuljski daruje Ljubač, a prema darovnici mogli su ga nasljeđivati samo po muškoj lozi. S obzirom da niti jedan od braće nije imao muškog potomka, Ljubljana je došla pod vlast Venecije i dobila status mletačke komune ili grada (Bianchi 1879: 278, Petricioli 1983: 119, Dokoza 2017: 187-188). Gradski život vodio se do 17. stoljeća, kada tadašnji generalni providur Foscolo naređuje rušenje utvrde da ne bi došla pod osmansku vlast (Oršolić 2017: 194).

Kao uvod u sustavna istraživanja, u sklopu terenske nastave Odjela za arheologiju već dvije godine se provode probna istraživanja na nekoliko pozicija: područje oko ulaznog dijela u utvrdu, crkva sv. Marcele i groblje uz nju, crkva sv. Marije, središnji objekti i zapadna terasa.

Istraživanjima se pokušava utvrditi osnovna stratigrafija i kronologija lokaliteta. Prvi izbor usmjeren je na prostor bedema, a razlog ovakvom odabiru leži u činjenici da se vidljive obrambene formacije Ljubljane sastoje od nekoliko građevinskih elemenata za koje nije bilo moguće utvrditi jasan kronološki slijed: jarak koji se proteže cijelom istočnom stranom utvrde i linijom prati visoki nasip građen od zemlje i kamena, na vrhu kojega se primjećuju ostatci zidanog bedema. Sam ulaz u naselje je izgleda bio flankiran parom kula, od kojih ona sjeverna danas gotovo nije vidljiva. Navedene strukture otvaraju brojna istraživačka pita-

The village of Ljubač is situated on the southeast coast of the shallow Bay of Ljubač. Above the village is Ljubačka kosa, a prominent ridge at the end of which, on Cape Ljubljana, are the remains of a medieval fortified town which was mentioned as castrum *Lubey/Jubae* in the deed of King Andrew II as early as 1205 (Bianchi 1879: 276-278, Smičiklas 1905: 52, Petricioli 1983: 117, Dobronić 1984: 89). At the same time, it is the first mention that the Knights Hospitaller had their properties in this location, because the borders of the town of Nin are mentioned, excluding the property of the town of Liuba, which belongs to the Order of the Knights of the Hospital of Saint John in Jerusalem (Smičiklas 1905: 52, Dobronić 1984: 89). In addition to the Knights Hospitaller, the castrum was also one of the residences of the Benedictine nuns (Ostojić 1964: 117). Therefore, it is not surprising when the Zadar historian Bianchi mentions several monasteries inside and outside the city walls along with the church of St. Mary (Bianchi 1879: 278-279). Over

time, sources began to mention various noblemen in this area, among whom we should mention those from the noble family of Matafar to whom Ladislaus of Naples gave Ljubač, and according to the grant document, they could inherit it only through the male line. Given that none of the brothers had male descendants, Ljubljana came under the rule of Venice and received the status of a Venetian commune or town (Bianchi 1879: 278, Petricioli 1983: 119, Dokoza 2017: 187-188). City life lasted until the 17th century, when the then governor general Foscolo ordered the demolition of the fort so that it would not be seized by the Ottomans (Oršolić 2017: 194).

As an introduction to systematic research, and within the fieldwork practice of the Department of Archaeology, trial excavations have been carried out for two years at several positions: the area around the entrance to the fort, the church of St. Marcella and the cemetery next to it, the church of St. Mary, central buildings and western terrace.

The aim of the excavations is to determine the basic stratigraphy and chronology of the site. The attention was paid first to the area of the ramparts, and the reason for this choice lies in the fact that the visible defensive formations of Ljubljana consist of several building elements for which it was not possible to establish a clear chronological sequence:

nja poput iz kojeg je razdoblja jarak, da li je nasip u cijelosti ili djelomično prapovijesna gradnja ili je pak podignut isključivo kao podloga za bedem, kada je podignut zidani bedem, postoji li više faza obrambenih kula, itd. Također nepoznata je bila namjena terasa koje okružuju naselje kao i vrijeme njihova nastanka, a niti smještaj i dimenzije prapovijesnog naselja nisu bile poznate.

Na ulaznom dijelu nalazi se kula tlocrta nepravilnog peterokuta, vanjskih dimenzija 11,24x11,24 m. Nekoć obložena pravilnim klesanim blokovima, danas je od njenih zidova ostala tek unutarnja struktura. Unutrašnjost kule je raščlanjena na tri dijela. I dok za dvije prostorije nema naznaka čemu bi mogle služiti, mala južna prostorija kule napravljena je kao cisterna obložena glinom iznutra s krunom zdenca od opeke. Način gradnje, opeke i glina odgovaraju još jednom objektu povezanom s kulom. Riječ je o velikoj peći naslonjenoj na vanjski zid kule, s unutarnje strane bedema. Sačuvani rub pokazuje da je peć imala kupolu, dok je dno popločano opekama, s istim karakteristikama kao i ona od koje je napravljen zdenac.

U kuli je pronađeno malo nalaza, od kojih oni dabilni ukazuju na razdoblje novog vijeka. Izgleda da cijela konstrukcija kule predstavlja jednu fazu, i to iz

a ditch that spreads along the entire eastern side of the fort and is followed by a high embankment made of earth and stone, on top of which the remains of a stone-built rampart can be seen. The entrance to the settlement seems to have been flanked by a pair of towers, of which the northern one is hardly visible today. The above-mentioned structures open numerous research questions, such as the dating of the ditch, whether the embankment is entirely or partially a prehistoric construction or it was built solely as a base for the rampart, when the stone-built rampart was erected, whether there are several phases of defensive towers, etc. Also, we knew nothing about the purpose of the terraces surrounding the settlement and the time of their creation, and the location and dimensions of the prehistoric settlement were just as poorly known.

At the entrance, there is a tower with an irregular pentagonal floor plan, and external dimensions of 11.24 x 11.24 m. Once lined with ashlars, today only the inner structure remains of its walls. The interior of the tower is divided into three parts. While there is no indication of the function of two rooms, the small southern room of the tower was made as a clay-lined cistern with a brick well crown. The construction method, bricks and clay correspond to an-



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



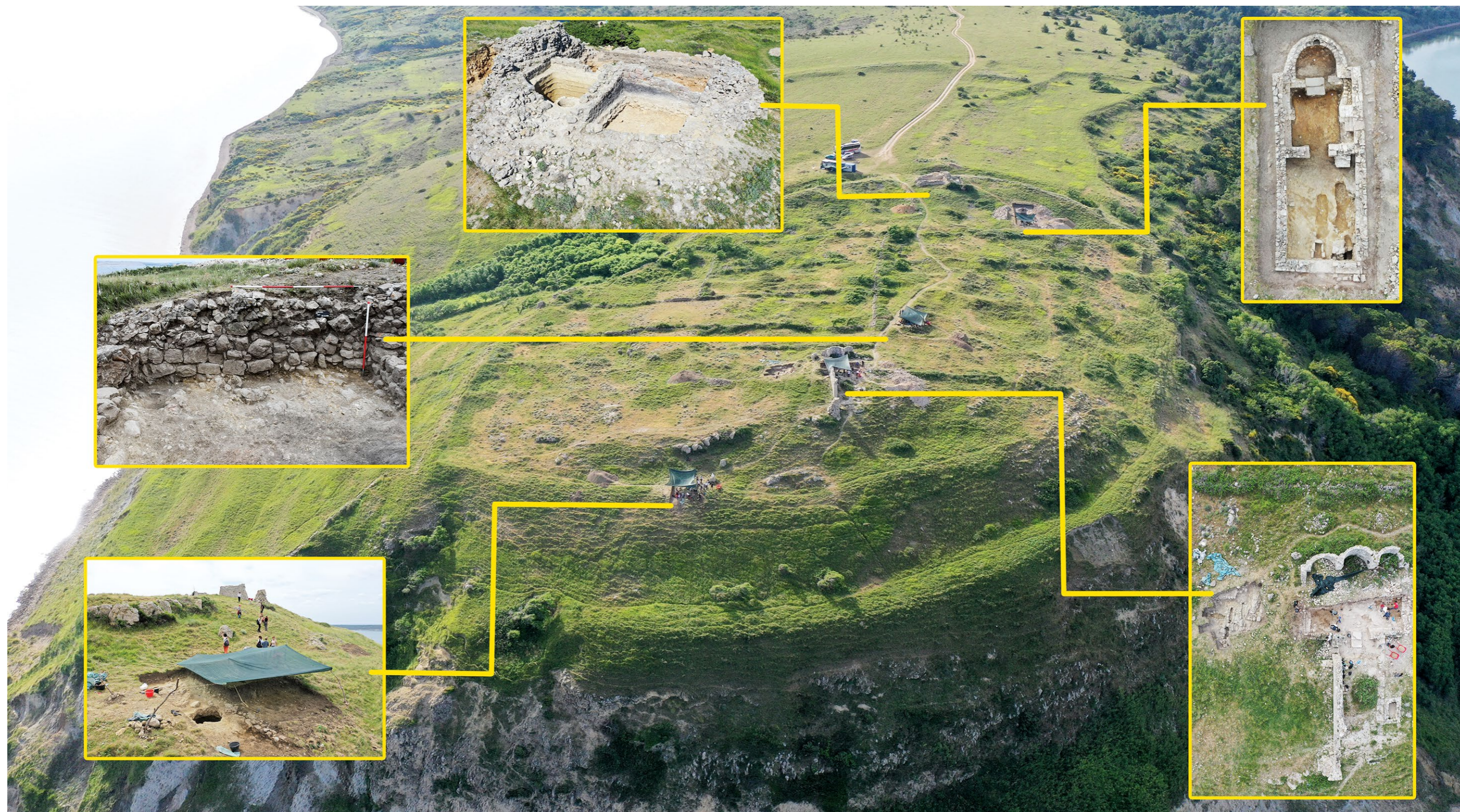


mlađih razdoblja naselja, iako spoj kule sa bedemi-
ma gdje je vidljivo da je kula naknadno dodana na
bedem ne isključuje mogućnost da je na ovom mje-
stu postojao stariji fortifikacijski objekt, iz vremena
kada se na vrhu nasipa podiže zidani bedem. U pri-
log tome mogla bi ići i trojagodna naušnica prona-
đena na dnu velike prostorije unutar kule, a koja se

other building connected to the tower. It is a large
furnace leaning against the outer wall of the tow-
er, on the inner side of the rampart. The preserved
edge shows that the furnace had a dome, while the
bottom was paved with bricks, with the same char-
acteristics as bricks used for constructing the well.
The tower yielded few finds, of which the data-

okvirno može datirati u razdoblje 13.-15. st. Zemljani
nasip na kojem stoji bedem podignut je u prapovi-
jesti, a na njega su naknadno zidani bedemi i kula.
Jarak prema stratigrafskim odnosima i nalazima u
njemu, ne možemo datirati prije srednjeg vijeka.
Crkva sv. Marije je jednobrodna longitudinalna
građevina s polukružnom apsidom na istoku i dva

ble ones indicate the Modern Period. It seems that
the entire construction of the tower represents
one phase, seemingly from the younger periods of
the settlement, although the junction of the tower
with the ramparts, where it is evident that the tow-
er was subsequently added to the rampart, does
not exclude the possibility that there was an older



..... Položaj sonde (izradio: D. Vujević)
..... Position of the trenches (made by D. Vujević)





Arheološka iskopavanja kule (foto: L. Bogdanić)
Archaeological excavations of the tower (photo: L. Bogdanić)

para kontrafora na bočnim zidovima i klupama između njih. Vanjska dužina joj iznosi 12,73 m, a vanjska širina 4,77 m. Crkva je osim glavnog ulaza na zapadnom, imala i manji bočni na južnom zidu. Njena izgradnja je započela krajem 14. ili početkom 15. stoljeća. U povijesnim dokumentima spominje se 1421. godine kada zadarski plemić Ludovik Matafar oporučno ostavlja sredstva da se dovrši gradnja crkve (Bianchi 1879: 278). Ožbukana unutrašnjost sačuvala je crveni i crni oslik na zidovima. Široke trake ispunjene crvenom mrežom ukrašavale su bočne zidove, dok je na sjevernoj strani, na središnjem dijelu, pronađen mogući prikaz broda slikan crnom bojom.

Arheološkim istraživanjima utvrđene su najmanje dvije građevinske faze vidljive kroz produženje kontrafora i zatvaranje južnog ulaza. Spolije ugrađene u zidove crkve, ostaci starijeg zida u JZ uglu crkve i nalazi u crkvi i uokolo nje svjedoče o postojanju starijeg, najvjerojatnije predromaničkog crkvenog objekta u njejoj neposrednoj blizini.

U navedeno se uklapaju i grobovi pronađeni ispod poda crkve, od kojih tek jedan možemo povezati s crkvom sv. Marije, dok ostali vjerojatno pripadaju razdobljima prije njene gradnje. Od pronađenih pokopa može se izdvojiti ukop u ovalnoj

fortification structure in this place, from the time when stone-built rampart was built at the top of the embankment. This assumption is supported by a three-beaded earring found at the bottom of a large room inside the tower, which can be dated roughly to the period of the 13th-15th centuries. The earthen embankment on which the rampart stands was built in prehistoric times, and the ramparts and tower were subsequently built on top of it. The ditch cannot be dated before the Middle Ages based on the stratigraphic relationships and finds in it.

Church of St. Mary's is a single-nave longitudinal building with a semicircular apse to the east and two pairs of buttresses on the side walls and benches between them. Its outer length is 12.73 m, and the outer width is 4.77 m. The church, in addition to the main entrance on the west, also had a smaller side entrance on the southern wall. Its construction began at the end of the 14th or the beginning of the 15th century. It is mentioned in historical documents in 1421, when Zadar nobleman Ludovik Matafar bequeathed funds to complete the construction of the church (Bianchi 1879: 278). The plastered interior preserved the red and black painting on the walls. Wide strips filled with red net decorated the side walls, while on the northern side, in the central part, a pos-



Istraživanje cisterne i bunara u ulaznoj kuli (foto: M. Šimičić)
Investigation of the cistern and well in the entrance tower (photo: M. Šimičić)

jami pronađen u blizini južnog zida crkve u kojem su se nalazili *in situ* ostaci dvaju pokojnika od kojih je jedan odrasle dobi, a drugi je dijete. Uz kosti odraslog pokojnika pronađeni su željezni čavli, a na prostoru zdjelice željezna pređica u obliku slova D. Na desnoj strani ispod vrata, na prsima djeteta pronađene su 23 male srebrne kružne aplikacije s dvije rupice. Uz navedene ukope, pronađene su dislocirane kosti još jedne osobe. Vjerojatno je riječ o starijem ukopu koji je pomaknut u stranu radi kasnijeg dvojnog pokopa.

Crkva sv. Marcele u povijesnim izvorima vrlo se rijetko spominje, a prvi sigurni podatak potječe tek s karte ninske biskupije iz 1675. godine (Petrić 1983: 119, Faričić 2017: 220-221, K-10). To je jednobrodna longitudinalna građevina kojoj su arheološkim istraživanjima utvrđene barem dvije građevinske faze. U ranijoj fazi crkva sv. Marcele ima jednu polukružnu apsidu na istoku te joj vanjska dužina iznosi 17 m, a vanjska širina 5,28 m. Kasnije je oltarni prostor crkve produžen i proširen, pri čemu su dodane tri polukružne apside i danas očuvane do visine od 2 m te vanjska dužina ovog dijela iznosi 9,21 m, a širina 11,12 m. Oblik i tehnika gradnje, kao i pronađeni arhitektonski ulomci ukazuju da ranija faza pripada gotičkom

sible depiction of a ship painted in black was found.

Archaeological research has revealed at least two construction phases visible through the extension of the buttresses and the closing of the southern entrance. The spolia built into the walls of the church, the remains of an older wall in the SW corner of the church and finds in and around the church testify to the existence of an older, most likely pre-Romanesque church building in its immediate vicinity.

The mentioned assumption is supported by the graves found under the floor of the church, only one of which can be associated with the church of St. Mary, while the others probably belong to the periods before its construction. Among the burials found, one can single out the burial in an oval pit found near the southern wall of the church, in which the remains of two deceased were found *in situ*, one of whom was an adult and the other a child. Iron nails were found next to the bones of the adult deceased, and an iron buckle frame in the shape of the letter D was found in the area of the pelvis. On the right side below the neck, on the child's chest, 23 small silver circular appliqués with two holes were found. Along with the mentioned burials, dislocated bones of another person were found. It is probably an older burial that was moved aside for a later double burial.



razdoblju, dok mlađa vjerojatno potječe iz ranog novog vijeka.

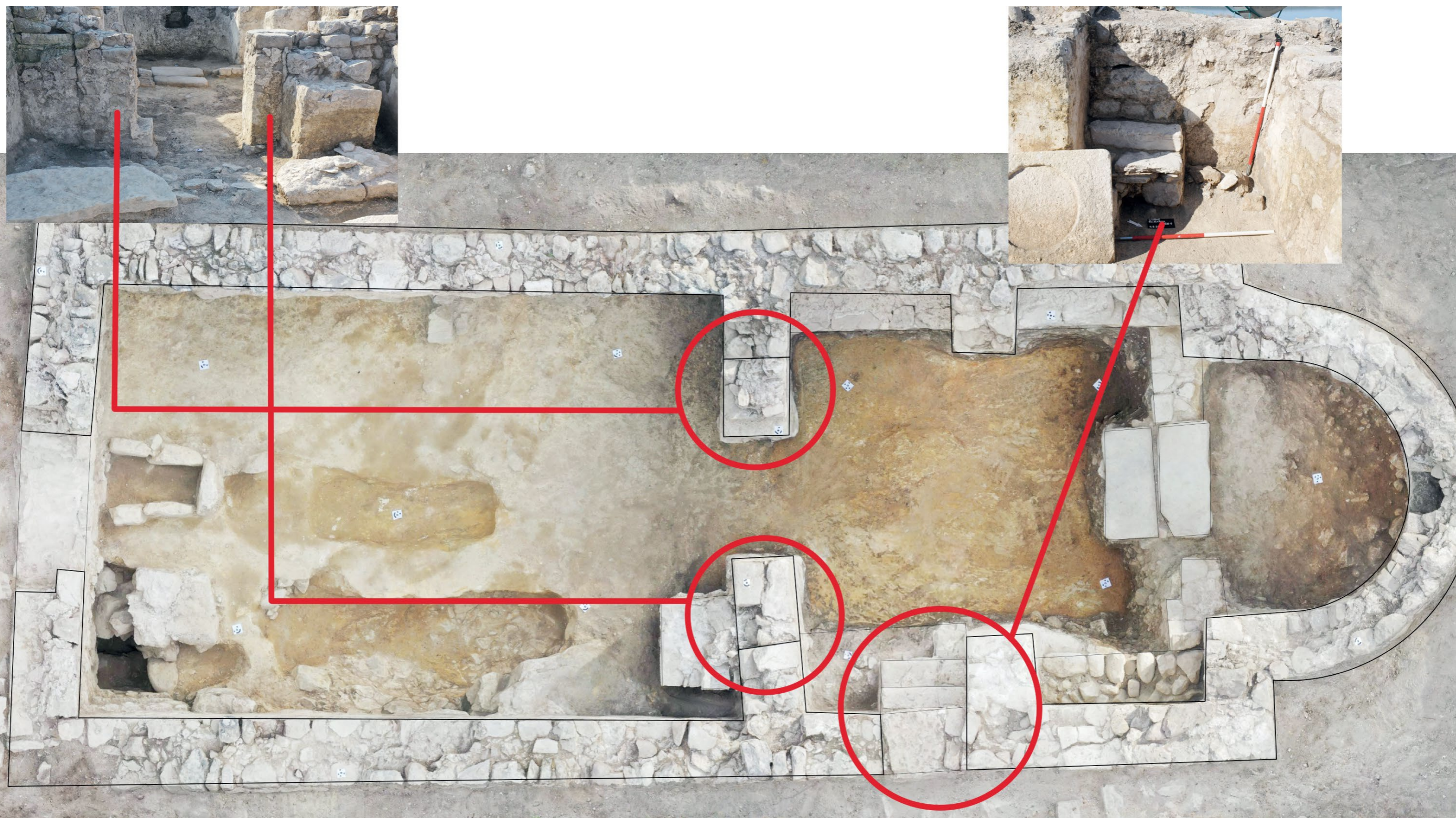
Unutar i uokolo crkve pronađeni su brojni ukopi (za sada su istražena 34 groba) od kojih najstariji potječu iz 10./11. st., a najmlađi pokazuju korištenje grobnog prostora sve do prestanka života na Ljubljani. Grobovi su gusto raspoređeni na malom

Church of St. Marcella is rarely mentioned in historical sources, and the first reliable information comes only from the map of the diocese of Nin from the year 1675 (Petricoli 1983: 119, Faričić 2017: 220–221, K-10). It is a single-nave longitudinal building, with at least two construction phases identified by archaeological research. In the earlier phase, the church of

prostoru na dubinama do 70 cm ispod površine. U mlađim fazama većinom je riječ o jednostavnim ukopima u zemljanu raku dok najstariji ukopi imaju grobnu arhitekturu saganu od amorfno kamenja.

Probna istraživanja uključila su i dijelom devastiranu duboku zidanu grobnicu koja je korištena kao kosturnica u koju su položene kosti najmanje

St. Marcella had one semicircular apse in the east, its outer length was 17 m, and the outer width 5.28 m. Later, the altar area of the church was extended and expanded, whereby three semicircular apses were added and are preserved today up to a height of 2 m. The outer length of this part is 9.21 m, and the width is 11.12 m. The shape and construction tech-



..... Crkva sv. Marije (izradio: D. Vujević)
 Church of St. Mary (made by D. Vujević)

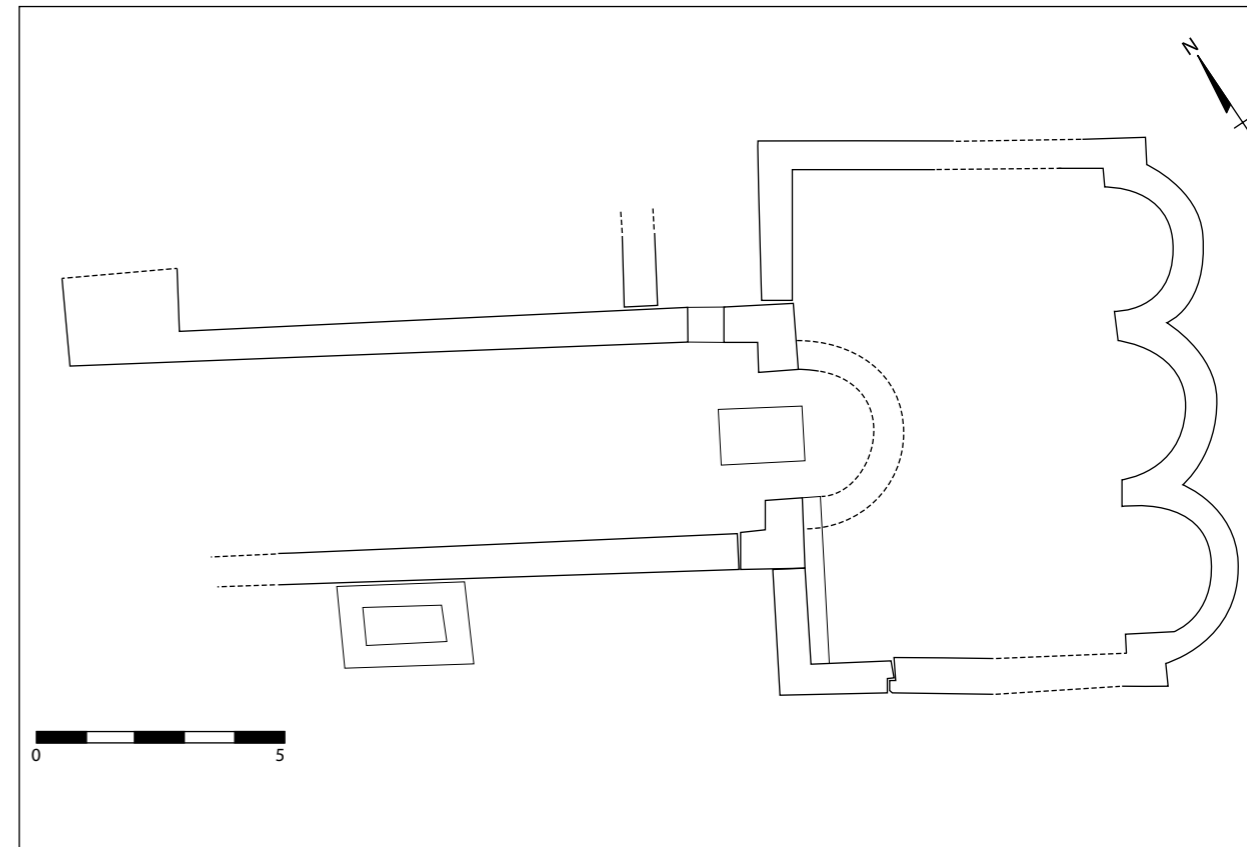




Iskopavanje crkve sv. Marije (foto: L. Bogdanić)
Excavations of the church of St. Mary (photo: L. Bogdanić)



Grob br. 9 u crkvi sv. Marije (foto: M. Šimičić)
Grave no. 9 in the church of St. Mary (photo: M. Šimičić)



Crkva sv. Marcele – tlocrt (izradila: M. Šimičić)
Church of St. Marcella – ground plan (made by M. Šimičić)



Iskopavanje groblja uz crkvu sv. Marcele (foto: M. Šimičić)
Excavation of the cemetery next to the church of St. Marcella (photo: M. Šimičić)



... Kad se male ruke slože (foto: M. Šimičić)
 ... Joint effort (photo: M. Šimičić)

30 pokojnika. U zapuni groba većinom su pronađeni metalni predmeti poput prstenja, kopča i ostalih dijelova pojasne garniture. Nalazi vjerskih medaljica i krunica pokazuju da su se ukapanja vršila najmanje do 17. st., a ¹⁴C analiza pokojnika iz najdubljih slojeva stavlja početak korištenja grobnice u vrijeme između 1298. i 1404. god. (Beta 598675, 610 +/- 30 BP).

Osim već spomenutih sondi čija su istraživanja uglavnom započela u kampanji 2021. godine, istraživanja 2022. godine obuhvatila su dvije nove pozicije. Istraživanja na zapadnoj terasi otkrila su na dubinama od 20 do 45 cm od površine ostatke zidanog objekta kojeg možemo dovesti u vezu s obližnjom jamom u kojoj je pronađena veća količina pokretnog arheološkog materijala. Dijagnostički materijal ukazuje na razdoblje kasnog srednjeg ili ranog novog vijeka. Iskopavanje pak u središtu naselja otkrilo je zidani objekt pravokutnog tlocrta gotovo istih karakteristika kao i onaj na terasi.

Istraživačka kampanja 2022. godine ponudila je odgovore na većinu pitanja, ali i postavila smjernice za sustavna iskopavanja. Kao neki opći zaključak možemo reći da većina vidljivih struktura na Ljubljani pripada razdobljima kasnog srednjeg i

nique, as well as the architectural fragments found, suggest that the earlier phase belongs to the Gothic period, while the younger one probably originates from the early Modern Period.

Numerous burials were found inside and around the church (34 graves have been investigated so far), the oldest of which date to the 10th/11th century, and the youngest show the use of the burial space until the end of life in Ljubljana. The graves are densely distributed in a small area at depths of up to 70 cm below the surface. The younger phases are characterized by simple burials in earthen pits, while the oldest burials have grave architecture made of amorphous stones.

Trial excavations also included a partially devastated deep stone-built tomb that was used as an ossuary in which the bones of at least 30 deceased were laid. Metal objects such as rings, buckles and other belt fittings were mostly found in the filling of the grave. Findings of religious medals and rosaries show that the tomb was used at least until the 17th century, and ¹⁴C analysis of the deceased from the deepest layers dates the beginning of the use of the tomb between 1298 and 1404 (Beta 598675, 610 +/- 30 BP).

In addition to the already mentioned trenches whose excavations mostly started in the 2021 cam-



... Stariji sloj grobova u blizini crkve sv. Marcele (foto: M. Šimičić)
 ... The older layer of graves near the church of St. Marcella (photo: M. Šimičić)

novog vijeka, uključujući i one pronađene na terasama. Dominacija arheološkog materijala iz navedenih razdoblja, uz malu količinu prapovijesnih nalaza ne isključuje gradnju terasa u prapovijesno vrijeme, ali za sada nismo uspjeli dobiti podatke o njihovoj funkciji u tom periodu. Velika količina kamena i zemlje potrebna za gradnju nasipa uokolo naselja, kao i činjenica da su terase ukopane u površinu kose, možda nudi odgovor na to pitanje. Međutim, za sada su jedini tragovi korištenja terasa ostatci zidanog objekta gotovo identičnih karakteristika kao i onaj kojeg smo istraživali u središtu naselja.

Iskopavanja objekta u središnjem dijelu naselja, groblja crkve sv. Marcele kao i istraživanja crkve sv. Marije pokazuju da svi navedeni objekti leže na matičnoj stijeni i zdravici pokazujući da veći dio prostora nije bio iskorišten u prapovijesno vrijeme. Štoviše jedine naznake korištenja prostora u prapovijesti nalazimo ispod istočne polovice crkve sv. Marije, u vidu kulturnog sloja s velikom količinom prapovijesnih nalaza, većinom keramike. Prostorni položaj prapovijesnog kulturnog sloja uklapa se u logiku brojnih prapovijesnih gradina koje za podizanje struktura naselja iskorištavaju upravo prostor uz bedem, ili u slučaju Ljubljane uz veliki

paing, the excavations in 2022 covered two new positions. At depths of 20 to 45 cm from the surface, excavation on the western terrace uncovered the remains of a stone-built building, which can be connected with a nearby pit in which a large number of small archaeological finds were found. The diagnostic material refers to the late Middle Ages or early Modern Period. Excavation in the center of the settlement revealed a stone-built structure with a rectangular floor plan with almost identical characteristics as the one on the terrace.

The 2022 research campaign offered answers to most questions, but also set guidelines for systematic excavations. As a general conclusion, we can say that the majority of visible structures in Ljubljana belong to the late medieval and postmedieval periods, including those found on the terraces. The dominance of archaeological material from the mentioned periods, along with scarce prehistoric finds, does not exclude the construction of terraces in prehistoric times, but so far we have not been able to obtain information about their function in that period. The large amount of stone and earth required for the construction of the embankment around the settlement, as well as the fact that the terraces are dug into the surface of the slope, may





kameno-zemljani nasip. A upravo su istraživanja na ulazu u naselje i presjek preko bedema pokazala da je osnova nasipa podignuta u prapovijesti, a da su naknadno na njega dodani zidani bedemi i kula.

offer an answer to that question. However, for now the only traces of the use of the terraces are the remains of a stone-built structure with almost identical characteristics as the one we explored in the center of the settlement.

The building in the central part of the settlement, the graves next to the church of St. Marcella, as well as the walls of the church of St. Mary stand stratigraphically above the bedrock or natural soil, showing that bigger part of the space was not used in prehistoric times. Moreover, the only indications of the space use in prehistory are found under the eastern half of the church of St. Mary, in the form of a cultural layer with a large number of prehistoric finds, mostly pottery. The spatial position of the prehistoric cultural layer fits into the logic of numerous prehistoric fortifications that use the space next to the rampart, or in the case of Ljubljana, next to a large stone-earth embankment, to build settlement structures. Excavations at the entrance to the settlement and a cross section through the ramparts of Ljubljana showed that the base of the embankment was built in prehistoric times, and later stone-built ramparts and a tower were subsequently added.

ARHEOLOŠKI PREGLED LOKALITETA U SJEVEROISTOČNOM DIJELU ZADARSKE ŽUPANIJE

Archaeological survey of the sites in the northeastern part of Zadar County

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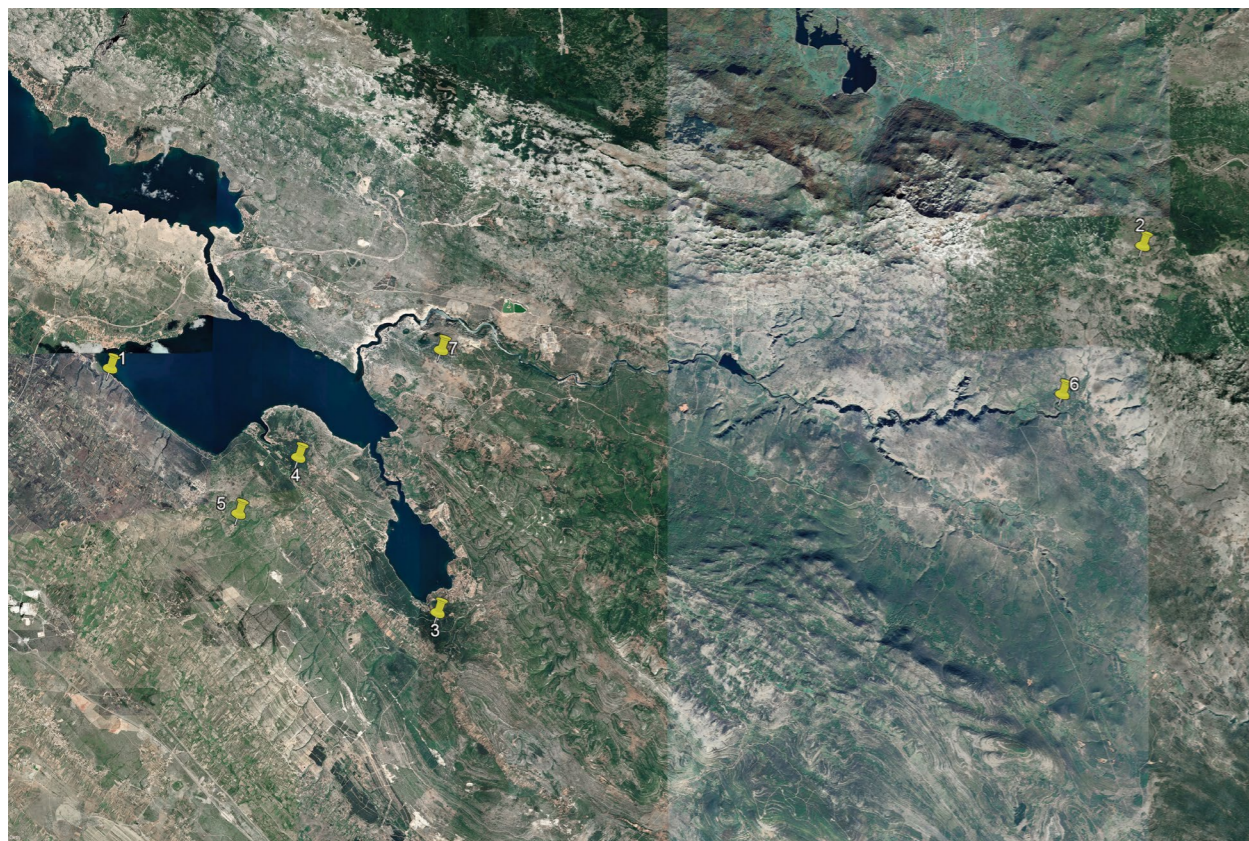
Od 15. listopada 2021. do 15. travnja 2022. pod vodstvom autora ovih redaka obavljeno je arheološko rekognosciranje pojedinih lokaliteta sa šireg područja Benkovca, Gračaca, Novigrada, Obrovca i Posedarja. U tom prostranom dijelu Zadarske županije mnogobrojna su arheološka nalazišta, koja najvećim dijelom do sada nisu bila istraživana. Pripadaju različitim razdobljima, i to od prapovijesti pa sve do ranog novog vijeka.

Budim je smješten između Posedarja i Podgradine, oko 20 km sjeveroistočno od Zadra. Ta je golema liburnska gradina izdužene trapezaste osnove. Na jugu je omeđena visokim masivnim bedemom podignutim pretežno od zemlje. Fortifikacije se dijelom nalaze i na bočnim stranama, ali su znatno niže i uže, jer tu zaštitu čine i strmoglave klisure. Budim se postupno pruža sve do zapadne obale Novigradskog mora, gdje ga je po cijeloj širini pre-

From October 15, 2021 to April 15, 2022, an archaeological reconnaissance of certain sites from the wider area of Benkovac, Gračac, Novigrad, Obrovac and Posedarje was carried out, led by the author of these lines. In this spacious part of Zadar County, there are numerous archaeological sites, most of which have not been explored until now. They belong to different periods, from prehistory to the early Modern Period.

Budim is situated between Posedarje and Podgradina, about 20 km northeast of Zadar. This is a huge Liburnian hillfort with an elongated trapezoidal base. In the south, it is bounded by a high massive rampart made mostly of earth. Fortifications are also partly located on the sides, but they are much lower and narrower, because here protection is also provided by steep gorges. Budim spreads all the way to the western shore of the





Karta rekognosciranih lokaliteta: 1. Budim, 2. gradina – Duboki dol, 3. Gradina – Karin, 4. Gradina – Novigrad, 5. Gradina – Paljuv, 6. Smokovac, 7. Velika gradina
 Map of surveyed sites: 1. Budim, 2. Gradina – Duboki dol, 3. Gradina – Karin, 4. Gradina – Novigrad, 5. Gradina – Paljuv, 6. Smokovac, 7. Velika gradina

sjekla asfaltna cesta. Uz gradinu je i luka iz mlađeg željeznog razdoblja. Njezini arheološki ostatci leže u podmorju do približno 3 m dubine (Parica 2021: 120–123; Šešelj, Ilkić 2022: 169, 178 bilj. 68; Šešelj, Ilkić 2023). Na Budimu su razasuti mnogobrojni ulomci lokalne prapovijesne keramike. Znatno je rjeđa importirana, poput slikane iz helenističkog razdoblja. Tu su još i pojedini ulomci pitosa te ranih amfora, vjerojatno tipa Lamboglia 2. Poznati su i raznovrsni numizmatički nalazi iz predcarskog razdoblja (Ilkić 2016: 99–105; Ilkić, Šešelj 2017: 284–287, kat. br. 12–13, 21, 24–29, 50, T. I, 12, T. II, 1, 9, T. II, 12, T. III, 1–5, T. IV, 12; Šešelj, Ilkić 2022: 182, kat. br. 5; Šešelj, Ilkić 2023). Približno u središnjem dijelu lokaliteta, i to nedaleko od njegova zapadnog ruba, vidljivi su ulomci tegula. Ta građevinska keramika upućuje na život i tijekom Rimskog Carstva, možda u sklopu manje ladanjske vile. Neke su se aktivnosti odvijale i nešto poslije, sudeći po nalazu folisa bizantskog cara Anastazija (Ilkić, Filipčić 2017: 83, kat. br. 1; Šeparović 2021: 12, 182, 265). Na južnom su dijelu Budima ostatci sakralne građevine iz srednjeg i/ili ranog novog vijeka. Smještena je unutar kružnog prostora omeđenog suhozidom. Crkva je pravokutnog tlocrta s polukružnom apsidom na jugoistoku. Uz boč-

Novigrad Sea, where an asphalt road cuts across its entire width. Next to the hillfort is a Late Iron Age harbor. Its archaeological remains lie underwater to a depth of approximately 3 m (Parica 2021: 120–123; Šešelj, Ilkić 2022: 169, 178 note 68; Šešelj, Ilkić 2023). Numerous fragments of local prehistoric pottery are scattered around Budim. Imported pottery, such as painted specimens from the Hellenistic period, is far less common. There are also some fragments of pithoi and early amphorae, probably of the Lamboglia 2 type, as well as various numismatic finds from the pre-imperial period (Ilkić 2016: 99–105; Ilkić, Šešelj 2017: 284–287, cat. no. 12–13, 21, 24–29, 50, T. I, 12, T. II, 1, 9, T. II, 12, T. III, 1–5, T. IV, 12; Šešelj, Ilkić 2022: 182, cat. no. 5; Šešelj, Ilkić 2023). Fragments of tegulae are visible roughly in the central part of the site, not far from its western edge. This ceramic building material suggests life during the Roman Empire as well, perhaps as part of a smaller country villa. Some activities took place somewhat later, judging by the discovery of a follis of the Byzantine emperor Anastasius (Ilkić, Filipčić 2017: 83, cat. no. 1; Šeparović 2021: 12, 182, 265). In the southern part of Budim are the remains of a sacral building from

ni južni zid vidljivi su ostatci prigradnje. Carlo Federico Bianchi ne navodi titulara budimske crkve, ali ističe da je u njoj pokopan Janko Mitrović Deda (Bianchi 2011: 262), sjevernodalmatinski serdar koji se istaknuo u borbama protiv Osmanlija.

Na širem području Novigrada i Obrovca pregledano je pet lokaliteta. Na novigradskom položaju pod imenom Gradina, oko 1 km u pravcu Pridrage, a nedaleko od zaseoka Grgorića, nisu uočeni arheološki ostatci. No, ima ih na istoimenom lokalitetu nedaleko od Paljuva. Gradina je smještena između zaselaka Cvitića i Baraba. Sa sjevera je štiti klisura Mošunje, a na ostalim je stranama suhozidni bedem od amornog kamena. Na Gradini je ponešto ulomaka razasute prapovijesne keramike grublje fature. Lokalitet je dijelom devastiran tijekom Domovinskog rata, a vidljivi su i ostatci eksplozivnih sredstava. To isto vrijedi i za Veliku gradinu oko 5 km zapadno od Obrovca, gdje su, kako nam je rečeno, bili smješteni pripadnici Zaštitnih snaga UN-a. Na tom arheološkom nalazištu ima ulomaka grublje keramike iz prapovijesnog razdoblja. Iz smjera zaseoka Jurica vodi makadamski put koji je presjekao jugoistočni bedem Velike gradine. U njezinu podnožju, a nedaleko od spomenutog zaseoka, dijelom je uočljiv duži pravocrtni suhozid,

the Middle Ages and/or early Modern Period. It is located inside a circular space enclosed by a dry stone wall. The church has a rectangular ground plan with a semicircular apse in the southeast. The remains of the extension are visible along the southern side wall. Carlo Federico Bianchi does not mention the titular of the Budim church, but he emphasizes that Janko Mitrović Deda, north Dalmatian *serdar* who distinguished himself in the battles against the Ottomans, is buried in it (Bianchi 2011: 262).

Five sites were inspected in the wider area of Novigrad and Obrovac. Archaeological remains were not noticed at the Novigrad location called Gradina, about 1 km in the direction of Pridraga, and not far from the Grgorići hamlet. However, the site bearing the same name not far from Paljuv yielded some finds. Gradina is located between the hamlets of Cvitići and Barabe. It is protected from the north by the Mošunje gorge, and on the other sides is a dry stone wall made of amorphous stones. Some scattered fragments of coarse prehistoric pottery were found on Gradina. The site was partly devastated during the Homeland War, and remains of explosive devices are also visible. The same applies to Velika Gradina, about 5 km



Budim kod Posedarja (foto: L. Bogdanić)
 Budim near Posedarje (photo: L. Bogdanić)





Ostatci sakralne građevine na Budimu (foto: L. Bogdanić)
Remains of a sacral building in Budim (photo: L. Bogdanić)

čini se, od neke stare komunikacije. Sličan se nalazi i na području mjesta Krupe, oko 17 km istočno od Obrovca. Vjerojatno je riječ o podzidu trase rimske ceste koja je prolazila uz gradinu Smokovac. S tog višeslojnog arheološkog lokaliteta na sutoku Orovače i Krupe potječe helenistički novac akarnanijskog grada *Oinaidai* (Šešelj, Ilkić 2022: 171, 182 kat. br. 4) te ilirskog vladara Baleja (Ilkić, Šešelj 2017: 286, kat. br. 43, T. IV, 5). Osobito su brojni nalazi iz rimskog carskog razdoblja (Abramić, Colnago 1909, col. 37-44). Nađen je i denar ugarsko-hrvatskog kralja Kolomana (Ilkić 2017: 155). Smokovac je na istoku branjen kamenim bedemom, a na ostalim stranama štiti ga strmoglavi kanjon potoka Oro-

vače. Na lokalitetu je mnoštvo građevnog kamena koji je krčenjem i obradom poljoprivrednog zemljišta najvećim dijelom ugrađen u novovjekovne suhozidne ograde. U njima je tako završilo i ponešto ulomaka tegula. Od Krupe se planinskim prijevojima uspinje makadam. Taj put koji vodi preko južnog Velebita, grana se u nekoliko smjerova kod Dubokog dola. Ne daleko od njega je prapovijesna gradina, oko 10 km jugoistočno od Gračaca. Opasava je bedem približno kružne osnove. Unutar gradine su razasuti mnogobrojni ulomci keramičkih posuda. Nađen je i cjeloviti mali okrugli plosnati predmet. Po sredini ima dvije sitne kružne rupe, a jedna mu je strana ukra-

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Orovača and Krupa came Hellenistic coins of the Akarnanian city of *Oinaidai* (Šešelj, Ilkić 2022: 171, 182, cat. no. 4) and of the Illyrian ruler Ballaios (Ilkić, Šešelj 2017: 286, cat. no. 43, T. IV, 5). Finds from the Roman imperial period are especially numerous (Abramić, Colnago 1909, col. 37-44). A denarius of the Hungarian-Croatian king Coloman was also found (Ilkić 2017: 155). Smokovac is defended on the east by a stone wall, and on the other sides it is protected by the steep canyon of the Orovača stream. There is a large quantity of building stone at the site, most of which was built into modern dry stone wall fences by clearing and cultivating agricultural land. Some fragments of tegulae also ended up in these walls in a similar way.

From Krupa, macadam road winds through mountain passes. That road, which leads across southern Velebit, branches off in several directions near Duboki dol. Not far from it is a prehistoric hillfort, about 10 km southeast of Gračac. It is surrounded by a roughly circular rampart. Numerous fragments of ceramic vessels are scattered inside the hillfort. A complete small round flat object was also found. It has two small circular holes in the middle, and one side is decorated with five radially placed triangular fields with incised lines. An identical, yet unpublished, piece of pottery was discovered in 2016 during an archaeological survey of a prehistoric hillfort on the left bank of the Zrmanja river near the Berberi hamlet in the area of Muškovci.

The field survey included one archaeological site that administratively belongs to the City of Benkovac. It is Gradina in Karin, located about 600 m south of the mouth of the Karišnica river. The site is overgrown with dense forest that was cleared in the western and northern parts along the route of the power-transmission line. To the southeast is a steep cliff, and on the other sides are massive walls made of amorphous stone. Dry stone wall remains of numerous rectangular ground plan dwellings are partially visible within the protected area. There are such structures on some other hillfort settlements in southern Liburnia, for example on Lergova gradina above Slivnica Gornja (Ilkić, Čelhar 2018, 617-620) and Jarebnjak near Brgud. Carthaginian coinage is also represented at Grad-





Smokovac na sutoku Orovače i Krupe (foto: M. Grgurić)
Smokovac at the confluence of Orovača and Krupa (photo: M. Grgurić)



Gradina kod Dubokog dola u vršnoj zoni južnog Velebita (foto: A. Mandić)
Hillfort near Duboki dol in the peak zone of southern Velebit (photo: A. Mandić)

šena s pet radialno postavljenih trokutastih polja s urezanim crtama. Posve isti neobjavljeni primjerak keramike otkriven je 2016. tijekom arheološkog pregleda prapovijesne gradine na lijevoj obali Zrmanje kod zaseoka Berbera na području Muškovca.

Rekognosciranjem je obuhvaćen i jedan arheološki lokalitet koji administrativno pripada Gradu Benkovcu. To je karinska Gradina, smještena oko 600 m južno od ušća Karišnice. Lokalitet je obrastao gustom šumom koja je u zapadnom i sjevernom dijelu iskrčena na trasi dalekovoda. Na jugoistoku je strma litica, a na ostalim su stranama masivni bedemi od amorfnog kamena. Unutar zaštićenog prostora dijelom su vidljivi suhozidni ostatci brojnih nastambi pravokutnog tlocrta. Takvi su objekti na još nekim gradinskim naseljima u južnoj Liburniji, primjerice na Lergovoj gradini poviše Slivnice Gornje (Ilkić, Čelhar 2018, 617–620) i Jarebnjaku kod Brguda. S karinske Gradine potječe novac Kartage (Šešelj, Ilkić 2023). Na površini je vidljivo ponešto ulomaka amfora i liburnske keramike, a zamijećen je i dio helenističkog žrvnja.



Prapovijesni keramički predmet s gradine kod Dubokog dola (foto: M. Ilkić)
Prehistoric ceramic artifact from hillfort near Duboki dol (photo: M. Ilkić)

ina in Karin (Šešelj, Ilkić 2023). Some fragments of amphorae and Liburnian pottery are visible on the surface, and a part of the Hellenistic grindstone was also noticed.

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ARHEOLOŠKI NADZOR I ISTRAŽIVANJA U TUĐMANOVOJ ULICI U ZADRU

Archaeological supervision and excavations in Tuđmanova street in Zadar

U razdoblju od svibnja 2021. do svibnja 2022. godine Odjel za arheologiju proveo je arheološki nadzor nad svim iskopima i zemljanim radovima pri rekonstrukciji Ulice dr. Franje Tuđmana. Unatoč tomu što spomenuta prometnica prolazi kroz srce rimskodobne zadarske nekropole, otkriven je razmjerno mali broj grobova iz tog vremena. Glavni razlog tomu je što je veći dio iskopa, dubok pretežito od 120 do 150 cm, išao kroz slojeve recentnog nasipa. Područje je zbog raznih instalacija i kolektora koji prolazi cijelom trasom mnogo puta prekopavano, a na nekim mjestima starija prometnica je gotovo i metar dublje od današnje.

Tijekom arheološkog nadzora otkriveni su ostatci dvaju pokopa pod tegulama; jedan kod križanja s Kaljskom ulicom, gotovo u potpunosti uništen ranijim iskopima, i drugi kod križanja s ulicom Put Stanova, polovično očuvan grob inhumiranog po-

In the period from May 2021 to May 2022, the Department of Archeology conducted archaeological supervision of all digs and earthworks during the reconstruction of Dr. Franje Tuđmana Street. Despite the fact that the aforementioned road passes through the heart of the Roman-era necropolis of Zadar, a relatively small number of graves from the Roman period were found. The main reason for this


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is that most of the excavation, mostly 120 to 150 cm deep, encompassed the layers of the recent filling. Due to various installations and the collector that runs along the entire route, the area has been dug up many times, and in some places the older road is almost a meter deeper than today.

During the archaeological supervision, remains of two burials under tegulae were discovered; one at the intersection with Kaljska Street, almost completely destroyed by the earlier digs, and the other at the intersection with Put Stanova Street, a half-preserved

kojnika s grobnom konstrukcijom od tegula položenih u obliku krova na dvije vode. Tegule su bez pečata, a grobovi bez nalaza i priloga, tako da preciznija datacija grobova u ovom trenutku nije moguća.

U ulici Put Stanova otkrivena su dva rimskodobna pokopa u kamenim urnama. Cilindrična kamena urna s brojnim staklenim priložima datira se u drugu polovicu 1. stoljeća (Eterović Borzić, Štefanac 2021: 135, 146, 164), otkrivena je prilikom iskopa kanala za struju. Sjeveroistočno od spomenutog groba otkrivena je kvadratna kamena urna s poklopcem i ostacima spaljenog pokojnika, a uz nju su dokumentirana još dva pokopa u keramičkim urnama koje su izrazito loše očuvane. Keramički balzamiriji pronađeni kao prilog uz kamenu i keramičke urne u upotrebi su od 1. st. pr. Kr. te kroz cijelo 1. st. n. Kr. a na našim nekropolama najčešći su tijekom 1. st. n. Kr. (Buljević 2013: 161). Sva tri groba nalazila su se uz staru cijev od odvodnje te su djelomično uništeni prilikom starijeg iskopa kanala.

Uz Samostan sv. Ivana, nakon što su tijekom iskopa otkrivene strukture za koje se pretpostavilo da su dio kamene arhitekture grobova, zaustavljeni su radovi i pokrenuta su zaštitna arheološka istraživanja na površini od 46 m².

inhumation grave made of tegulae laid in the form of a gable roof. The tegulae bore no stamps, and the graves yielded no finds or goods, so that more precise dating of the graves is not possible at the moment.

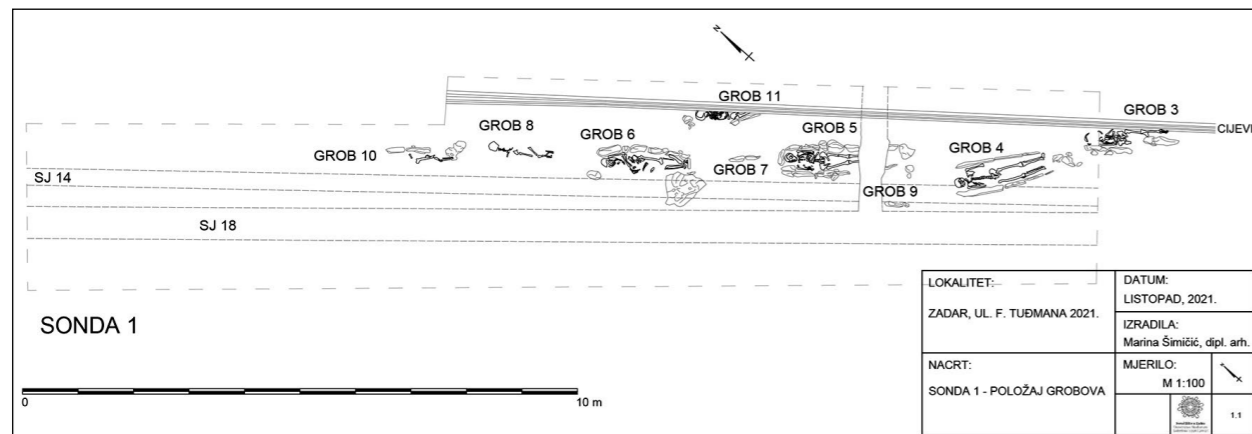
In Put Stanova Street, two Roman-era burials in stone urns were discovered. A cylindrical stone urn containing numerous glass finds was found during works on the electrical grid, dating back to the second half of the 1st century (Eterović Borzić, Štefanac 2021: 135, 146, 164). A square stone urn with a lid and cremated remains was found to the northeast of the mentioned grave. Two more burials in ceramic urns that are extremely poorly preserved were documented next to this urn. Ceramic toilet bottles found as grave goods next to stone and ceramic urns were in use from the 1st century BC and throughout the entire 1st century AD. In our necropolises they are most common during the 1st century AD (Buljević 2013: 161). All three graves were located next to an old drainage pipe and were partially destroyed during the earlier digging of the canal.

Next to the Monastery of St John, after the structures that were assumed to be part of the funerary stone architecture had been accidentally discovered, the works were stopped and rescue archaeological excavations started in an area of 46 m².



Rimskodobni ukop u kamenoj urni, gr. 15 (foto: L. Bogdanić)
Roman-era burial in a stone urn, gr. 15 (photo: L. Bogdanić)





Sonda 1, položaj grobova (izradila: M. Šimičić)
Trench 1, position of the graves (made by M. Šimičić)

Unutar sonde definirano je i istraženo devet grobova inhumiranih pokojnika od kojih je većina više ili manje devastirana ranijim ukopom dvaju kanala, koji prolaze dužinom cijele sonde u smjeru sjeverozapad-jugoistok. Najbolje su očuvani grobovi 3, 4, 5 i 11. Gotovo svi pokopi su u kamenim škrinjama od pločastog kamena položenog na nož s poklopnica-ma od kamenih ploča smješteni u relativno pravilnom nizu. Pokojnici su položeni na leđa u ispruženom položaju, najčešće s jednom rukom na prsima, u smjeru sjeverozapad-jugoistok s glavom na sjeverozapadu. Samo je jedan pokop bez grobne arhitek-

ture, a to je ujedno i jedini grob s nalazima u kojem je otkrivena brončana dvodijelna dvopetljasta kopčica, tzv. ažula. Takve vrste kopčice u upotrebi su od prve polovice 14. stoljeća, rabe se i tijekom 20. stoljeća, a varijante istih se i danas upotrebljavaju (Anzulović 2007: 259). U ostalim grobovima nema priloga ni nalaza, a rezultati 14 C analize kostiju pokojnika iz groba 4 uz vjerojatnost od 68,2 % datiraju grob u vrijeme između 1634. i 1794. godine. Položaj grobova 9 i 11 otvara mogućnost da je paralelno uz liniju istraženih grobova bilo još ukopa položenih u pravilne nizove. Svi su grobovi ukopani u sloj masne crvenice s ostacima rimskodobnog arheološkog materijala, većinom fragmentiranim nalazima stakla, keramike, ponajviše građevinske i tesera. Iako je istražena sonda u neposrednoj blizini antičke nekropole, nije bilo tragova rimskodobnih grobova.



Arheološka istraživanja u sondi 1 (foto: M. Šimičić)
Archaeological excavations in trench 1 (photo: M. Šimičić)



Grob 4 (foto: M. Šimičić)
Grave 4 (photo: M. Šimičić)

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Nakon terenskih istraživanja koja su trajala gotovo godinu dana u tijeku je postterenska obrada prikupljene arheološke građe.

without grave structure, and it is also the only grave with finds, containing a bronze two-part hook-and-eye clasp ("ažula"). Such types of clasps have been in use since the first half of the 14th century, they were also used during the 20th century, and their variants are still in use (Anzulović 2007: 259). There were no grave goods or finds in the other graves, and the results of the 14 C analysis of the bones from grave 4 offered a time frame between 1634 and 1794 with a 68.2% probability. The position of graves 9 and 11 opens up the possibility that there might have been more burials laid in regular rows parallel to the line of investigated graves. All graves were dug into in a layer of greasy terra rossa with remains of Roman-era archaeological material, primarily fragmented finds of glass, pottery, mostly ceramic building material and tesserae. Although the trench is located in the immediate vicinity of the ancient necropolis, there were no traces of Roman-era graves.

After the field work that lasted almost a year, the post-excavation analysis of the collected archaeological finds is underway.

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An aerial photograph of a rural landscape in Islam Grčki, Croatia. The foreground and middle ground are dominated by agricultural fields, some of which are brown and appear to be recently plowed, while others are green. There are several small, dark ponds or depressions scattered throughout the fields. In the background, there are rolling hills and a small town or village. The sky is blue with some light clouds. The text 'PROBNA ISTRAŽIVANJA NEOLITIČKOG NALAZIŠTA U ISLAMU GRČKOM' is overlaid on the right side of the image in a large, black, sans-serif font.

PROBNA
ISTRAŽIVANJA
NEOLITIČKOG
NALAZIŠTA U
ISLAMU GRČKOM

Trial excavations
of a Neolithic site
in Islam Grčki



Tijekom listopada i studenoga 2021., te veljače i lipnja 2022. godine, Odjel za arheologiju Sveučilišta u Zadru proveo je probno arheološko istraživanje na položaju Graduša – Lokve u Islamu Grčkom. Riječ je o položaju gdje je šezdesetih i sedamdesetih godina 20. stoljeća površinski prikupljena bogata arheološka građa pripisana srednjem i kasnom neolitiku. Arheološku građu objavio je Š. Batović (Batović 1987), a na nalazištu nisu vođena arheološka istraživanja. Probno arheološko istraživanje provedeno je s ciljem utvrđivanja potencijala neolitičkog nalazišta za buduća sustavna arheološka istraživanja. Istražene su dvije sonde – sonda A i sonda B. Objekte sonde postavljene su na položajima na kojima su zahvaljujući snimkama dobivenim snimanjem bespilotnom letjelicom tijekom proljeća 2021. uočene tamne površine, a poviše kojih je prikupljena raznovrsna arheološka građa (ulomci keramičkih posuda, artefakti od rožnjaka i opsidijana, ulomci žrnjeva i dr.) uglavnom tipična za srednji neolitik.

Najprije je istražena sonda A veličine 17 m². Na istraženoj površini pronađen je rov presjeka u obliku slova U. Rov je ukopan u sterilnu zdravicu

The Department of Archeology of the University of Zadar conducted archaeological trial trenching at the site of Graduša - Lokve in Islam Grčki in October and November 2021, and February and June 2022. Numerous archaeological finds attributed to the Middle and Late Neolithic were collected on the surface of this site in the 1960s and 1970s. The archaeological finds were published by Š. Batović (Batović 1987), but no archaeological excavation has been conducted at



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the site. Archaeological trial trenching was undertaken with the aim of determining the potential of the Neolithic site for future systematic archaeological research. Two trenches were opened - trench A and trench B, both placed in positions where dark surfaces were observed owing to the images obtained by a drone in the spring of 2021. A variety of archaeological material was collected above these surfaces, including pottery sherds, artifacts made of chert and obsidian, quernstone pieces, etc., mostly typical of the Middle Neolithic.

First trench A with a size of 17 m² was investigated. A ditch with a U-shaped section was found in the excavated area. The ditch was dug into sterile



... Predzdavični sloj i jame ukopane u vrh zapune rova u sondi A (foto: L. Bogdanić)
... Layer above the virgin soil and pits dug into the top of the filling of the ditch in trench A (photo: L. Bogdanić)

do dubine od 2 m. Rov je bio zapunjen s nekoliko superponiranih kulturnih slojeva. U vremenski posljednji od njih ukopane su jame. Sveukupno su evidentirane 22 jame – njih 20 unutar zapune rova i 2 izvan. Većina jama kružnog je tlocrta i ukopana do zdravice. U zapunama jama prikupljen je bogat repertoar nalaza. Svi nalazi pripadaju srednjem neolitiku, tj. danijskoj kulturi. Istoj kulturi pripisan je i materijal prikupljen u ostalim slojevima zapune rova.

Sonda B postavljena je 30-ak metara jugoistočno od sonde A. Veličina sonde iznosila je 6 m². U sondi je već ispod površinskog i potpovršinskog sloja otkriven plitki ukop širine oko 1 m i dubine oko 50 cm koji se pružao u pravcu sjeveroistok-jugozapad. U njegovim dvjema zapunama prikupljena je velika količina keramičkih ulomaka tipičnih za kasni neolitik, odnosno

virgin soil to a depth of 2 m and it was filled with several superimposed cultural layers. The pits were dug into the last of them in terms of chronology. A total of 22 pits were recorded - 20 inside the trench filling and 2 outside. Most of the pits

have circular ground plan and they are dug to the bedrock. Pit fillings yielded a rich repertoire of finds which all belong to the Middle Neolithic and the Danilo culture. The material collected in the other layers of the ditch filling was attributed to the same culture.

Trench B was placed about 30 meters south-east of trench A. The size of the trench was 6 m². In the trench, under

the surface and subsurface layers a shallow burial about 1 m wide and about 50 cm deep was found, extending in the northeast-southwest direction. Its two fillings produced a large amount of pottery



... Ulomak danijske posude iz sonde A (foto: L. Bogdanić)
... Fragment of a Danilo vessel from trench A (photo: L. Bogdanić)



... Obrisi jama i plitkog ukopa u sondi B (foto: M. Šimičić)
... Outlines of pits and the shallow burial in trench B (photo: M. Šimičić)





Sonda A iz zraka (foto: L. Bogdanić)
Trench A, air photo (photo: L. Bogdanić)

sherds typical of the Late Neolithic, i.e. Hvar culture. Mostly these are undecorated fragments of dark colors and sherds decorated with shallow incisions. Some animal bones were collected as well. A total of 18 pits with a circular ground plan were found under the burial and next to it. Some were dug into the cultural layers discovered under the shallow burial, and some in the virgin soil. Ceramic sherds belonging to the Hvar culture and few an-



Nalazi iz sonde A (foto: L. Bogdanić)
Findings from the trench A (photo: L. Bogdanić)

imal bones were found in the fillings of few pits, while the fillings of the other pits did not yield any archaeological finds. An elongated cut feature similar to a smaller ditch, with a U-shaped section, was found beneath the pits in the south-eastern part of the trench, at a depth of 145 cm. This cut feature extends in the northeast-southwest direction, and it was dug into a sterile virgin soil recorded at a depth of 220 cm. The filling of the burial consisted of several layers, two of which are particularly interesting - the one with a large number of carbonized seeds and the other with a deer mandible and an antler.

pravcu sjeveroistok-jugozapad, a ukopana je u sterilnu zdravicu evidentiranu na dubini od 220 cm. Zapuna ukopa sastojala se od nekoliko slojeva, od kojih su posebno zanimljiva dva – onaj s mnoštvom karboniziranih sjemenki i onaj s mandibulom i rogom jelena.

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hvarsku kulturu. Uglavnom je riječ o neukrašenim ulomcima tamnih boja i ulomcima ukrašenim plitkim urezivanjem, uz koje su prikupljene i životinjske kosti. Ispod ukopa i pored njega otkriveno je ukupno 18 jama kružnog tlocrta. Neke su ukopane u kulturne slojeve otkrivene ispod plitkog ukopa, a neke u zdravicu. U zapunama manjeg broja jama pronađeni su ulomci keramičkih posuda hvarske kulture i malobrojne životinjske kosti, dok u zapunama ostalih jama nisu pronađeni nikakvi arheološki nalazi. Ispod jama u jugoistočnom dijelu sonde, na dubini od 145 cm otkrivena je izdužena ukopana tvorevina nalik na manji rov, presjeka u obliku slova U. Ta se ukopana tvorevina pruža u



Nalazi iz sonde A (foto: L. Bogdanić)
Findings from the trench A (photo: L. Bogdanić)





PRILOG POZNAVANJU ZADARSKIH RENESANSNIH UTVRDA - ARHEOLOŠKI NADZOR RADOVA NA OBNOVI STARE TEHNIČKE ŠKOLE

IN SITU - 1/1 (2022)

A contribution to a better understanding of Zadar's Renaissance fortifications - archaeological supervision of works on the restoration of the old Technical School

U razdoblju od listopada 2021. do lipnja 2022. godine proveden je arheološki nadzor radova na obnovi i rekonstrukciji zgrade stare Tehničke škole u Zadru u ulici Šime Vitasovića 1. Radovi su financirani iz Europskog fonda za regio-

Archaeological supervision of works on the renovation and reconstruction of the old Technical School building in Zadar at Šime Vitasovića Street 1 was carried out in the period from October 2021 to June 2022. The works

nalni razvoj (EFRR) u okviru projekta *Sveučilišna znanstveno-nastavna infrastruktura za 21. stoljeće* čiji je nositelj Centar za projekte, znanost i transfer tehnologija Sveučilišta u Zadru. Arheološki nadzor proveo je Odjel za arheologiju Sveučilišta u Zadru, a voditeljicom istraživanja imenovana je dokumentaristica Marina Šimičić.

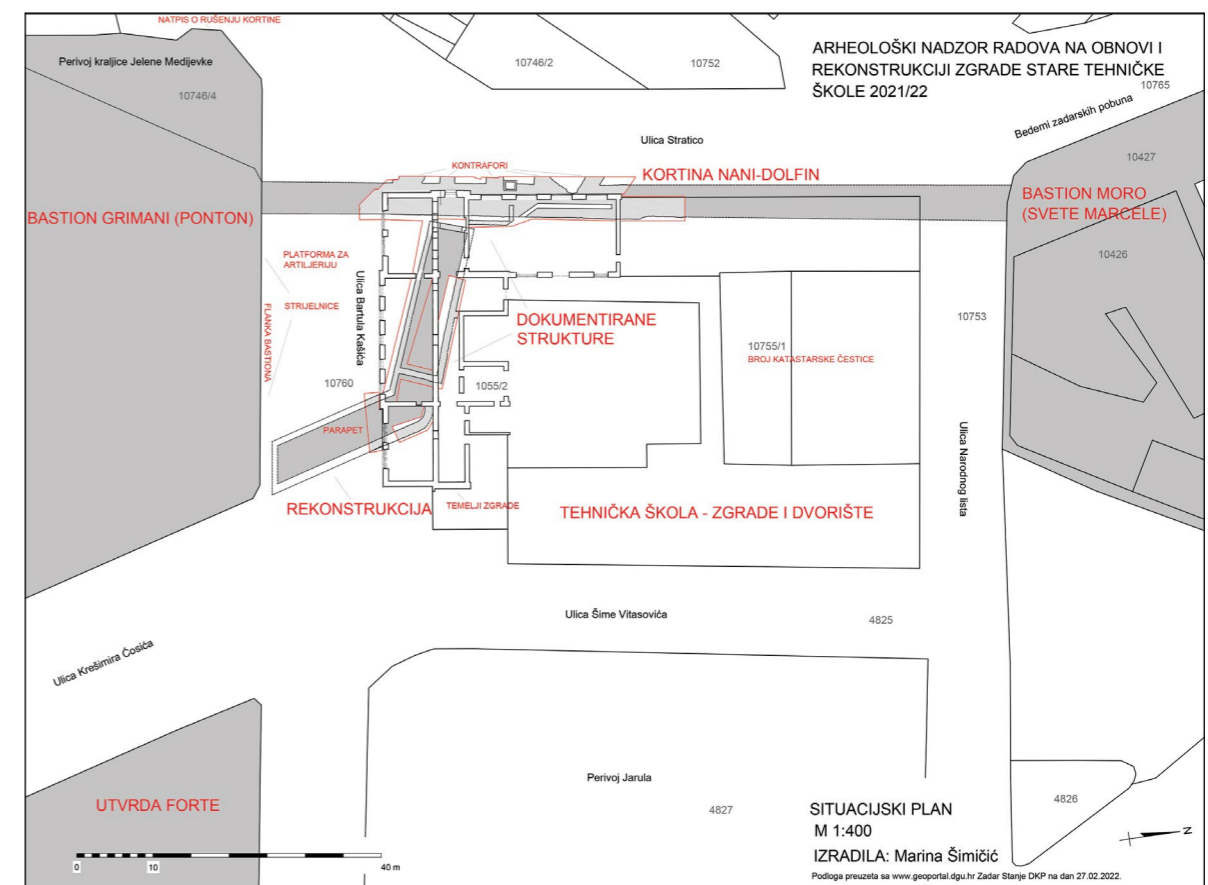
Tijekom arheološkog nadzora dokumentirani su ostatci spojnog bedema Nani-Dolfin, koji je od sredine 16. stoljeća do 1907. godine spajao bastione Moro, poznatog pod imenom bastion sv. Marcele i bastion Grimani (unutar kojeg je danas Perivoj kraljice Jelene Madijeve), koji se u vrijeme izgradnje naziva Ponton te ostatci dodatnog utvrđenja sjeverne flanke, odnosno kraće bočne strane bastiona Ponton.

Spojni bedem Nani-Dolfin, odnosno kortina bedema između bastiona Ponton (Grimani) i bastiona sv. Marcele (Moro) izgrađen je u razdoblju između 1537. i 1565. godine u vrijeme renesansne pregradnje postojećeg fortifikacijskog sustava (Mlikota 2021: 50). Za gradnju su bili angažirani glavni inženjer Mletačke Republike Michele Sanmicheli i njegov nećak Giangiolamo (Žmegač 2003: 209).

were financed by the European Regional Development Fund (ERDF) within the project *University Research and Teaching Infrastructure for the 21st Century*, implemented by the Center for Projects, Science and Technology Transfer of the University of Zadar. Archaeological supervision was carried out by the Department of Archaeology of the University of Zadar, and documentalist Marina Šimičić was appointed as the head of the research.

The remains of the connecting rampart Nani-Dolfin were documented during the archaeological supervision. From the middle of the 16th century until 1907, this rampart connected the Moro bastions, known as the bastion of St. Marcella and the Grimani bastion (presently harboring Queen Jelena Madijevka Park), which was called Ponton at the time of construction. The remains of the additional fortification on the northern flank, i.e. the shorter side of the Ponton bastion were also investigated.

The connecting rampart Nani-Dolfin, i.e. the curtain wall between the Ponton bastion (Grimani) and the bastion of St. Marcella (Moro) was



Situacijski plan istraživanja (izradila: M. Šimičić)
Situation plan of the excavation (made by: M. Šimičić)



IN SITU - 1/1 (2022)



Spomenuti graditelji osmislili su preinake zadar-
skih fortifikacija na jugoistočnom dijelu poluotoka,
koje su podrazumijevale dodavanje bastiona uz
srednjovjekovnu Citadelu i bastiona sv. Marcele te
izgradnju novog bastiona Ponton, između njih. Od

built in the period between 1537 and 1565 dur-
ing the Renaissance reconstruction of the exist-
ing fortification system (Mlikota 2021: 50). The
chief engineer of the Republic of Venice Michele
Sanmicheli and his nephew Giangirolamo were

Citadele izgrađena je kortina koja uglavnom prati
pravac pružanja ranijeg srednjovjekovnog bedema
do bastiona Ponton. Sjeverna flanka bastiona Pon-
ton, odnosno njegova sjeverna bočna kraća strana,
koja se veže s kortinom postavljena je tako da kor-

Pogled na zonu istraživanja sa sjeverozapada
(foto: M. Šimičić)
View of the excavation zone from the northwest
(photo: M. Šimičić)

hired for the construction (Žmegač 2003: 209).
The aforementioned builders devised modifi-
cations to the Zadar fortifications on the south-
eastern part of the peninsula, which entailed
the addition of bastions to the medieval Citadel
and the bastion of St. Marcella and the construc-
tion of the new bastion Ponton between them.
From the Citadel, a curtain wall was built, which
mainly follows the direction of the earlier medie-
val rampart to the Ponton bastion. The northern
flank of the Ponton bastion, i.e. its shorter north-
ern side, which is connected to the curtain wall,
is placed so that it directs the curtain wall, i.e.
the Nani-Dolfin connecting rampart, towards the
north, intersecting with the route of the medieval
rampart. The Ponton bastion with the bastion of
St. Marcella dictates further arrangement of the
bastions, i.e. their distance. The Ponton bastion
is located west of the medieval rampart, and was
built as a result of the introduction of a new po-
lygonal layout of the ramparts due to the need
to protect the city from the north-eastern side,
facing the mainland. During this reconstruction,
a new location was determined for the main en-
trance to the city, southwest of Ponton in the
axis of the existing street, i.e. the location of the
Land Gate (*Porta Terraferma*), which has been
preserved to this day. Sforza Pallavicino designed
a large new fort named Forte which was built in
the southeast, in the continuation of the Zadar
peninsula in its narrowest part, between 1567 and
1570 (Žmegač 2003: 215).

The demolition of the connecting rampart is evi-
denced by the still preserved inscription with the
year 1907 on the Grimani bastion. The connecting
rampart was demolished as part of the regula-
tory plan from around 1906 (*Informative report on
the expansion of the city of Zadar – Relazione in-
formative sul piano d'ampliamento della città di
Zara*) for the purpose of building a road from the
foot of the Moro bastion to the Grimani bastion
towards Relja (Stagličić 2011: 321). The land plot
was assigned (by purchase contract) to Paško
(Pasquale) Bakmaz around 1890. Correspond-
ence on the purchase of the said property is
kept in the State Archives in Zadar (HR-DAZD-99





..... Detalj s istraživanja, uz jugozapadni kut školske zgrade (foto: M. Šimičić)
 Excavation detail, next to the southwestern corner of the school building (photo: M. Šimičić)



..... Prikaz istraživanog dijela – detalji s karata: 1. Kartografski prikaz Zadra i okolice s planom izgradnje novih fortifikacija, 1808. Godine (izvor: Zadar – obnova i izgradnja nakon razaranja u Drugome svjetskom ratu, str. 65 – HR-HD-902, Kartografska zbirka, sig. K_VII_i_180) 2. Plan Zadra iz 1798. G. (izvor: Zadar – obnova i izgradnja nakon razaranja u Drugome svjetskom ratu, str. 60 – HR-HAD-902, Kartografska zbirka, sig. K_VII_i_180)
 Presentation of the investigated part - details from the maps: 1. Cartographic representation of Zadar and its surroundings with a plan for the construction of new fortifications, year 1808 (source: Zadar – obnova i izgradnja nakon razaranja u Drugome svjetskom ratu, str. 65 – HR-HD-902, Kartografska zbirka, sig. K_VII_i_180) 2. Plan of Zadar, year 1798 (source: Zadar – obnova i izgradnja nakon razaranja u Drugome svjetskom ratu, str. 60 – HR-HAD-902, Kartografska zbirka, sig. K_VII_i_180)

tinu, odnosno spojni bedem Nani-Dolfin usmjera-va prema sjeveru križajući se s trasom srednjovjekovnog bedema. Bastion Ponton s bastionom sv. Marcele diktira daljnji raspored bastiona odnosno njihovu udaljenost. Bastion Ponton smješten je za-падnije od srednjovjekovnog bedema, a izgrađen je kao posljedica uvođenja novog poligonalnog rasporeda bedema zbog potrebe zaštite grada i sa sjeveroistočne strane, kojoj se nasuprot nalazi kopno. Tijekom ove pregradnje određeno je i novo mjesto glavnom ulazu u grad jugozapadno od Pontona u osi postojeće ulice, odnosno položaja do danas sačuvanih Kopnenih vrata (*Porta Terraferma*). Između 1567. i 1570. godine jugoistočno, u nastavku zadarskog poluotoka na njegovu najužem dijelu po projektu Sforce Pallavicina podignuta je nova velika utvrda nazvana Forte (Žmegač 2003: 215).

O rušenju spojnog bedema svjedoči do danas sačuvani natpis s godinom 1907. postavljen na bastion Grimani. Spojni je bedem porušen u okviru regulacijskog plana iz oko 1906. godine (*Informativni izvještaj o širenju grada Zadra – Relazione informative sul piano d'ampliamento della città di Zara*) za potrebe izgradnje ceste podno bastiona Moro do bastiona Grimani prema Relji (Stagličić 2011: 321). Nasuto zemljište dodijeljeno je (kupoprodajnim ugovorom) Pašku (Pasqualeu) Bakmazu oko 1890. godine. Korespondencija o otkupu navedenog posjeda čuva se u Državnom arhivu u Zadru (HR-DAZD-99 Pokrajinsko financijsko ravnateljstvo 1813-1918, sv. 66, str 367). Po projektu Enee Nikolića (Nikolich) radovi na izgradnji Tehničke škole *Scuola industriale e d'arti mestieri* (*Škola za obrt i zanate*) na posjedu iz ostavštine Paška Bakmaza započeli su u svibnju 1908., a svečano je otvorena u siječnju 1910. godine (Stagličić 2011: 354). Graditelji Tehničke škole iskoristili su netom porušeni bedem za temeljenje pročelja zgrade prateći njegov pravac pružanja. U unutrašnjosti zgrade nalazi se vanjsko lice bedema, a zid škole bedem dijeli u dva dijela. Unutar zgrade bedem je snižen do razine temelja, dok je s vanjske strane za 2 metra viši. Najveća dokumentirana širina bedema je 4,4 m, a visina 4,8 m. Bedem je s unutarnje strane ojačan kontraforima. Vanjsko lice bedema izrađeno je od pravilnih klesanih kamenih blokova oblikujući eskarpu (kosinu); ispunja bedema sastoji se od manjeg kamenja i vapnenog morta, a njegovo unutarnje lice od nepravilnog kamenja. Na sjevernoj flanki Pontona zazidana su i vidljiva do danas dva otvora za topove. Topovski otvori s odgovarajućim kazetama

Provincial Financial Directorate 1813-1918, vol. 66, p. 367). Based on the design by Enea Nikolić (Nikolich), works on the construction of the Technical School *Scuola industriale e d'arti mestieri* (School of Trades and Crafts) on the property from the legacy of Paško Bakmaz began in May 1908, and it was officially opened in January 1910 (Stagličić 2011 : 354). The builders of the Technical School used recently demolished rampart for the foundation of the front of the building, following the rampart's direction. Inside the building is the outer face of the rampart, and the rampart is divided in two parts by the school wall. Inside the building, the rampart is lowered to the level of the foundation, while on the outside it is 2 meters higher. The largest documented width of the rampart is 4.4 m, and the height is 4.8 m. The rampart is reinforced on the inside with buttresses. Its outer face is made of finely dressed stone blocks forming an escarp (slope); the filling of the rampart consists of smaller stones and lime mortar, and its inner face is made of irregular stones. On the northern flank of Ponton, two embrasures were walled up but they are still visible today. The embrasures with corresponding coffers are laid low under the earlier positions in the flanks. During the archaeological supervision, the remains of the curtain wall and parapet of the northern flank of the Ponton bastion were documented, i.e. the enclosing wall of the artillery platform built at the end of the 18th century when Ponton was used as a storehouse for military equipment and weapons (Žmegač 2009: 45). The platform is surrounded by two parallel walls, the space between which is filled with earth. The width of the outer wall is 85, and the inner wall is 65 cm wide. The largest preserved height is 60 cm. The walls enclose a space 4.5 m wide, and they were damaged during the construction of the foundations of the Technical School building.

Zadar's Renaissance Venetian fortifications, part of which saw the light of day again during the works described here, were conceived and almost completely executed already in the 16th century. They form a unified whole and prove the prominent position of Zadar in relation to other Dalmatian cities of that time. Their historical importance was confirmed in 2017 by the inclusion of the defense system of the city of Zadar on the UNESCO List of World Cultural Heritage as part of the cultural property *Defense systems of the*





nisko su položeni podno ranijih položaja u flankama. Tijekom arheološkog nadzora dokumentirani su ostatci kortine bedema i parapeta sjeverne flanke bastiona Ponton, odnosno ogradnog zida platforme za artiljeriju izgrađenog krajem 18. stoljeća kada je Ponton korišten kao spremište vojne opreme i oružja (Žmegač 2009: 45). Platforma je ograđena dvama usporednim zidovima čiji je međuprostor ispunjen zemljom. Širina vanjskog zida je 85, a unutarnjeg 65 cm, najveća očuvana visina je 60 cm. Zidovi zatvaraju prostor širine 4,5 m i oštećeni su gradnjom temelja zgrade Tehničke škole.

Zadarske renesansne mletačke utvrde čiji je dio ponovno ugledao svjetlo dana tijekom ovdje opisanih radova, koncipirane su i gotovo u potpunosti izvedene već u 16. stoljeću, tvore zaokruženu cjelinu te dokazuju istaknut položaj Zadra u odnosu na ostale dalmatinske gradove tog vremena. Njihova povijesna važnost potvrđena je 2017. godine uvrštavanjem obrambenog sustava grada Zadra na UNESCO-ov Popis Svjetske kulturne baštine kao dio kulturnog dobra *Obrambeni sustavi Republike Venecije 16. i 17. stoljeća*. Stoga bi valjalo ovaj djelić zadarskih fortifikacija u budućnosti uklopiti u urbano tkivo Zadra te na odgovarajući način predstaviti javnosti.

Republic of Venice in the 16th and 17th centuries. Therefore, it would be good to integrate this piece of Zadar's fortifications into the urban structure of Zadar in the future and present it to the public in an appropriate way.

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REZULTATI ARHEOLOŠKOG NADZORA U ULICI STRATICO U ZADRU

Results of archaeological supervision in Stratico Street in Zadar

U listopadu 2022. godine proveden je arheološki nadzor nad iskopom kanala za strujni i vodoopskrbni priključak zgrade stare Tehničke škole. Nadzor je obuhvatio ulice Stratico, Bartola Kašića i Šime Vitasovića.

Sa zapadne strane škole, u Ulici Stratico, pojavile su se arheološke strukture koje je bilo nužno istražiti, a riječ je ostacima četiriju kontrafora koji su bili poznati iz ranijih istraživanja. Ovim iskopom kontrafori su istraženi do kraja čime se dobila njihova puna dužina, a iskop je, čini

se, zahvatio i dio petog, do sada nepoznatog kontrafora. Udaljenost organski vezanog proširenja u smjeru zapada od susjednog kontrafora poklapa se s predviđenim razmakom od oko 430 cm. Kontrafori su sačuvani u dužini od 140 do 157 cm, a širina im se kreće od 143 do 204 cm, šireći se redom od juga prema sjeveru. Ispod drugog kontrafora iz smjera sjevera čini se da postoji starija struktura

In October 2022, archaeological supervision was carried out over the excavation of the canal for the electricity and water supply connection of the old Technical School building. The supervision covered Stratico, Bartola Kašića and Šime Vitasovića streets.

Archaeological structures that needed to be investigated were unearthed on the west side of the school, in Stratico Street. These structures refer to the remains of four buttresses that have already been known from earlier re-

search. With this excavation, the buttresses were explored in their full length, and it seems that the dig also encompassed a part of the fifth buttress, which was previously unknown. The distance of the organically connected extension in the western direction from the adjacent buttress coincides with the assumed distance of about 430 cm. The buttresses are preserved in a length of 140 to 157


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Renesansni bedem s organski vezanom strukturom (foto: Maja Grgurić Srzentić)
 Renaissance rampart with an organically connected structure (photo: Maja Grgurić Srzentić)



Detalj kaldrme (foto: Maja Grgurić Srzentić)
 Detail of the cobble pavement (photo: Maja Grgurić Srzentić)

koja je nešto šira od širine kontrafora. S obzirom na to da nije bilo moguće produbiti iskop, struktura nije dalje definirana. Građa svih kontrafora sastoji se od priklesanog kamena povezanog bijelom žbukom. Opisane strukture pripisane su već otprije poznatom renesansnom bedemu iz 16. stoljeća, odnosno kurtini između dvaju bastiona, Pontona i Sv. Marcele (Žmegač 2003: 109). Tijekom radova, u jugozapadnom dijelu iskopa otkriven je i dio spomenutog bedema. Najveća sačuvana dužina bedema u ovom iskopu iznosi 280 cm, a širina 340 cm.

U sjevernom dijelu iskopa otkrivene su masivne zidane strukture koje se ne poklapaju s orijentacijom renesansnog bedema. Zanimljivo je da zid ori-

cm, and their width ranges from 143 to 204 cm, expanding in order from south to north. Under the second buttress from the north there appears to be an older structure that is slightly wider than the width of the buttress. Given that it was not possible to deepen the trench, the structure was not further defined. All buttresses were made of dressed stone connected with white mortar. The described structures are attributed to the well-known Renaissance rampart from the 16th century, i.e. curtain wall between the two bastions, Ponton and St Marcella (Žmegač 2003: 109). During the works, a part of the aforementioned rampart was discovered in the southwestern part of the trench. The

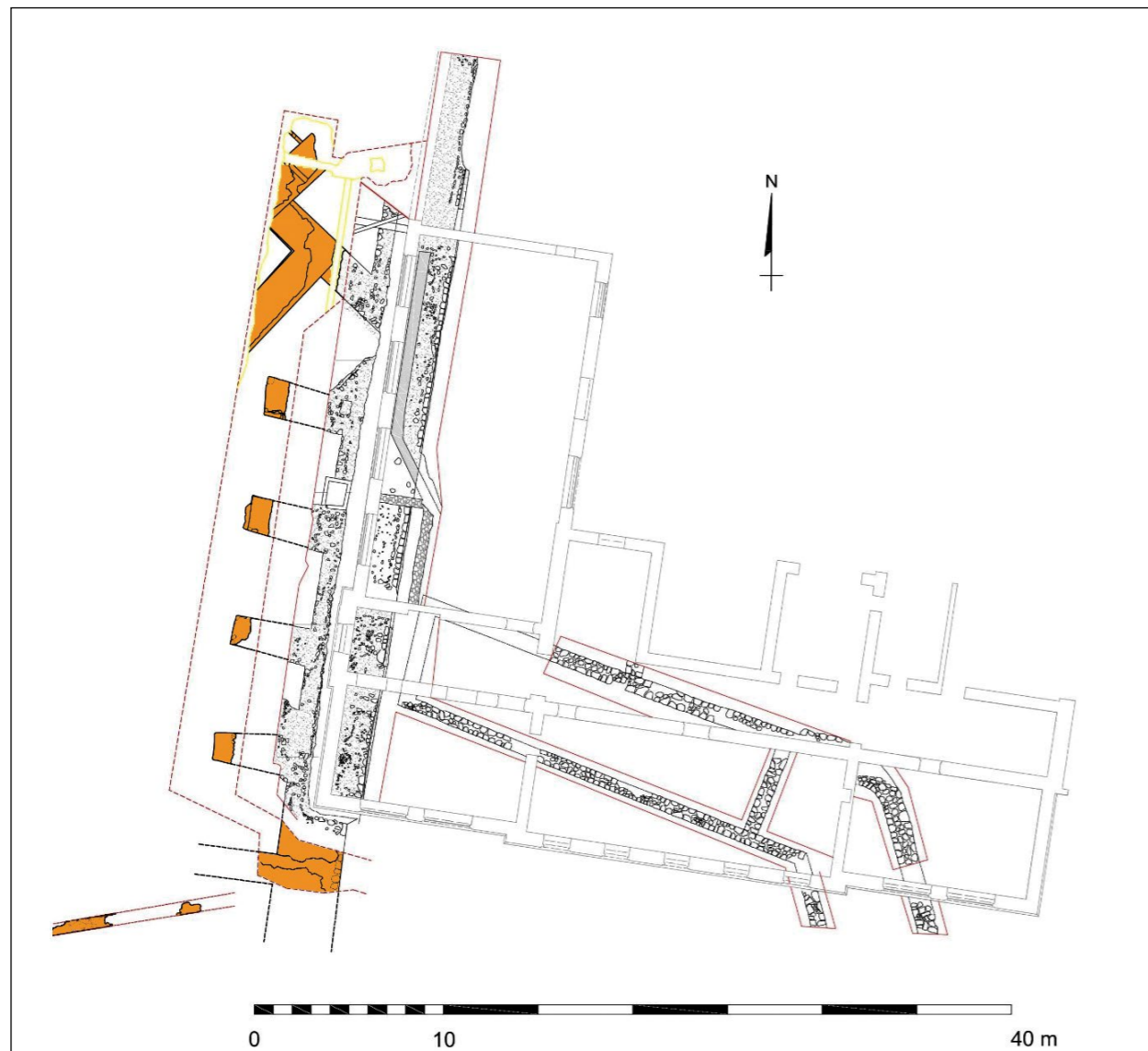
largest preserved length of the rampart in this trench is 280 cm, and the width is 340 cm.

In the northern part of the trench, massive masonry structures were discovered that do not match the orientation of the Renaissance rampart. It is interesting that the wall oriented northwest-southeast follows the grid of the city streets. The width of the walls is from 188 to 195 cm, and one of them continues all the way to the Renais-



Definiranje otkrivenih struktura (foto: Maja Grgurić Srzentić)
 Defining the discovered structures (photo: Maja Grgurić Srzentić)





..... Grafički prikaz istraženih struktura naznačen u žutoj boji (Maja Grgurić Srzentić, modificirano prema Marina Šimičić)
 Graphic representation of the investigated structures marked in yellow (Maja Grgurić Srzentić, modified after Marina Šimičić)

jentacije sjeverozapad-jugoistok prati raster gradskih ulica. Širina zidova iznosi od 188 do 195 cm, a jedan od njih nastavlja se sve do renesansnog bedema. Okomito na spomenuti zid orijentacije sjeverozapad-jugoistok, s južne i sjeverne strane pruža se po još jedan zid. Dok je zid s južne strane organski vezan na prvi, onaj sa sjeverne strane nije, već je prekinut u svojem sjeveroistočnom dijelu. Po sredini istraženog dijela zida pruža se „žlijeb“ orijentacije sjeverozapad-jugoistok u dužini od 104 cm, širine 26 cm. Riječ je o uleknuću na sačuvanoj površini zida koje je građeno od pločastog poliranog kamena. Sa sjeverne strane na spomenuti zid naslanja se uski zid od jednog reda kamena debljine 17 cm. Sjeverno od njega u nasipu je pronađeno više krhotina crjepova te keramike i kostiju pa je moguće da je riječ o ostacima stambene arhitekture. Svi spomenuti zidovi građeni su od grubo

sance rampart. Another wall, perpendicular to the mentioned northwest-southeast oriented wall, extends from the south and north sides. While the wall on the south side is organically connected to the first, the one on the north side is not, but it is interrupted in its northeastern part. In the middle of the investigated part of the wall, there is a “groove” oriented northwest-southeast measuring 104 cm in length and 26 cm in width. It is a depression on the preserved surface of the wall, which was built from polished stone slabs. On the north side, a narrow wall of one row of stones 17 cm thick abuts the aforementioned wall. To the north of it, several fragments of roof tiles, pottery and bones were found in the fill, so it is possible that they are the remains of residential architecture. All the mentioned walls were built of roughly dressed stones with outer and inner faces built of finely modeled

priklesanog kamena s vanjskim i unutarnjim licem građeni od pravilno oblikovanih blokova povezanih žbukom.

Tijekom nadzora nad iskopom za vodoopskrbni priključak jugozapadno od zgrade naišlo se na ostatke kaldrme u dužini od 11 metara s prekidima zbog oštećenja. Vjerojatno je riječ o cesti izgrađenoj nakon rušenja bedema 1907. godine (Petricioli 1958: 70). Nastavak iskopa u smjeru istoka trebao je otkriti i ostatke renesansnog bedema, međutim, ispostavilo se da je u tom dijelu bedem uništen ranijim iskopima.

blocks connected with mortar.

Remains of a cobble pavement in a length of 11 meters with interruptions due to damage were found to the southwest of the building during the supervision of the excavation for the water supply connection. It is probably a road built after the demolition of the ramparts in 1907 (Petricioli 1958: 70). The continuation of the excavation in the direction of the east was supposed to reveal the remains of the Renaissance rampart, however, it turned out that the rampart was destroyed by earlier excavations in that part.

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BIOKOVO – LOKVA





Tumul na Lokvi nalazi se na 1467 m n. v. u predjelu Biokovske vršne zaravni specifične po geomorfološkom fenomenu, poligonalnom kršu (Tamás 2009: 2–22). Uz sam lokalitet nalazi se planinarska kuća „Slobodan Ravlić“ kojom upravlja HPD „Biokovo“ iz Makarske. Oko 80 metara južno od tumula postojale su dvije lokve od kojih je jedna nedavno obnovljena i vraćena u funkciju. Približno 500 metara jugozapadno nalazi se jama ledenica Čavlenovača iz koje su biokovski ledari i ledarice sve do nedavno vadili led za potrebe gostionica, mesnica i makarskih hotela (Jalžić 1999: 53–57).

Nakon dojave planinara i speleologa iz HPD-a „Biokovo“, koji su pri uređenju potpornog zida planinarske kuće uočili oštećene grobove, uslijedio je pregled terena i dokumentiranje zatečenog stanja. Zbog mogućnosti daljnjeg propadanja tumula, odmah se odredila strategija arheološkog istraživanja, koje je financirano namjenskim sredstvima institucijskog istraživačkog projekta Sveučilišta u Zadru – *DisKont*.

Arheološkim istraživanjem utvrđeno je kako se plašt tumula sastojao od nasutog kamenja s kružno postavljenim kamenim obrubom. Odmah na

The tumulus on Lokva is located at 1467 masl, in the area of the Biokovo peak plateau specific for the geomorphological phenomenon, polygonal karst (Tamás 2009: 2–22). Next to the site is the Slobodan Ravlić mountain hut, managed by the HPD [Croatian Mountaineering Association] Biokovo from Makarska. About 80 meters south of the tumulus, there were two puddles, one of which was recently restored resuming its function. Approximately 500 meters to the southwest is

the Čavlenovača ice pit, from which, until recently, the Biokovo icemen and women extracted ice for the needs of inns, butchers and hotels in Makarska (Jalžić 1999: 53–57).

After a report by mountaineers and speleologists from HPD Biokovo, who noticed damaged graves while reinforcing the retaining wall of the mountain hut, an inspection of the terrain followed and documentation of the existing condition. Due to the possibility of further deterioration of the tumulus, an archaeological research strategy was immediately defined, which was financed with the designated funds of the institutional research project of the University of Zadar - *DisKont*.



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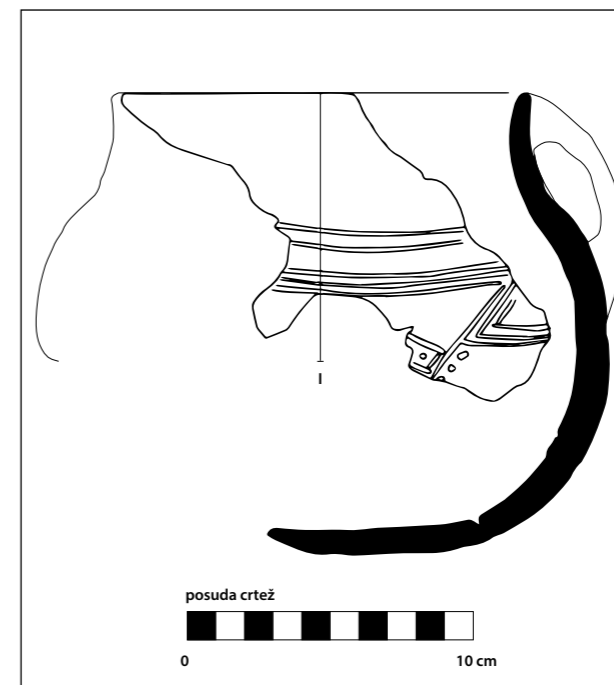
... Dolazak na teren (foto: Ž. Miletić)
... Arrival on the field (photo: Ž. Miletić)

površini nasipa uočene su ploče poklopnice dvaju ukopa, koji su definirani kao grob 1 i grob 2. Arhitekturu groba 1 čini nekoliko većih kamenih ploča i blokova koji su okomito postavljeni na grobnu jamu, tvoreći grobni sanduk. Orijeentacija groba je Z-I s blagim otklonom prema sjeveru, a pokojnik je bio položen u ispruženom položaju. Uz uzglavnicu pronađeni su ostatci jame obložene pravilno poslaganim kamenjem, koja je služila za postavljanje nadgrobno spomenika, moguće drvenog križa. Konstrukciju groba 2 čine velike kamene poklopnice te nekoliko većih nepravilnih kamenih blokova postavljenih uokolo grobne jame. Pokojnik je također bio položen u ispruženom položaju. Antropološka analiza kosturnih ostataka (Novak, Carić 2022: 1–10) potvrdila je kako je u prvom grobu bio pokopan muškarac između 25 i 35 godina starosti. Koštana patologija upućuje na Schmorlove defekte na prsnim i slabinskim kralješcima, koji nastaju zbog prolapsa intervertebralnog diska u tijelo kralješka, a prisutnost tih defekata obično se povezuje s jakim mehaničkim opterećenjima kralježnice. Uz Schmorlov defekt prisutna je i ankiloza dvaju

prsnih kralježaka te degenerativni osteoartritis – kroničan, progresivan proces koji karakterizira trošenje zglobne hrskavice koja se stanjuje do te mjere da na nekim područjima zglobova može potpuno nestati. Razvoju osteoartritisa pridonio je mehanički stres i fizička aktivnost. Dentalna patologija upućuje na kalcificirane zubne naslage na zubima gornje i donje čeljusti, blagu do umjerenu istrošenost griznih ploha zuba, te linearnu hipoplaziju zubne cakline na zubima donje čeljusti. Riječ je o subadultnom poremećaju koji nastaje zbog akutnih, vremenski ograničenih stresova i najčešće se povezuje s gladovanjem, nedostatkom A, C i D vitamina i prisutnošću anemije. Kosturni ostatci pokojnika iz groba 2 nešto su slabije očuvani. Prema antropološkoj analizi vjerojatno je

Archaeological excavation revealed that the tumulus cover consisted of loose stones with a circular stone border. Immediately on the surface of the fill, cover slabs of two burials were observed, which are defined as grave 1 and grave 2. The construction of grave 1 consists of several larger stone slabs and blocks that are placed vertically on the burial pit, forming a burial cist. The orientation of the grave is W-E with a slight deviation towards the north, and the deceased was laid in an extended position. Next to the headstone, the remains of a pit lined with neatly arranged stones were found, which was used to place a grave marker, possibly a wooden cross. The

construction of grave 2 consists of large stone covers and several larger irregular stone blocks placed around the grave pit. The deceased was also laid in an extended position. Anthropological analysis of skeletal remains (Novak, Carić 2022: 1–10) confirmed that a man between 25 and 35 years of age was buried in the first grave. Bone pathology refers to Schmorl's defects on the thoracic and lumbar vertebrae, which are caused by the prolapse of the intervertebral disc into the vertebral body, and the presence of these defects is usually associated with strong mechanical loads on the spine. In addition to Schmorl's defect, there is also ankylosis of two thoracic vertebrae and degenerative osteoarthritis – a chronic, progressive process characterized by wear and tear of the articular cartilage, which thins to the extent that it can completely disappear in some areas of the joint. Mechanical stress and physical activity contributed to the development of osteoarthritis. Dental pathology refers to calcified dental deposits on the teeth of the upper and lower jaw, mild to moderate wear of the biting surfaces of the teeth, and linear hypoplasia of tooth enamel on the teeth of the lower jaw. It is a subadult disorder that occurs due to acute, time-limited stresses and is most often associated with starvation, lack of A, C and D vitamins and the



... Crtež posude iz groba 3 (izradio: L. Bogdanić)
... Illustration of vessel from grave 3 (made by: L. Bogdanić)



Arheološko iskopavanje, dokumentiranje i obrada nalaza (foto: Ž. Miletić)
Archaeological excavation, documentation and processing of findings (photo: Ž. Miletić)





⋮ Dokumentacija nalazišta (foto: Ž. Miletić)
 ⋮ Documentation of the site (photo: Ž. Miletić)



⋮ Istraživačka ekipa (foto: Ž. Miletić)
 ⋮ Research team (photo: Ž. Miletić)

riječ o muškarcu adolescentske dobi, između 16 do 18 godina starosti, bez ikakve dentalne i koštane patologije. Rezultati radiokarbonskih analiza (Beta Analytic Testing Laboratory 614570 i 619015) odredili su starost prvog ukopa od 630 +/- 30 godina, dok su ostatci pronađeni u grobu 2 bili nešto mlađi, točnije 570 +/- 30 godina prije sadašnjosti.

Južno od groba 2, ispod kosturnih ostataka, otkriven je još jedan ukop definiran kao grob 3. Riječ je pokojniku položenom na bok u zgrčenom položaju s ostacima keramičke posude koja je po obliku i ukrasu specifična za ranobrončanu Cetinsku kulturnu grupu (Marović, Čović 1983: 191–213). Uokolo groba 3 u slojevima koji su se nalazili neposredno iznad živca na većoj površini tumula, pronađeni su ostatci još jedne keramičke posude, koja je vrlo vjerojatno, kao dio sepulkralnog kulta, ritualno razbijena. Radiokarbonska analiza kostiju iz groba 3, čiji se rezultati očekuju uskoro, trebala bi odrediti starost primarnog prapovijesnog ukopa, čija je kamena grobna konstrukcija sekundarno poslužila za naknadne ukope u 14. odnosno 15. stoljeću.

presence of anemia. The skeletal remains of the deceased from grave 2 are somewhat less well preserved. According to the anthropological analysis, it is probably an adolescent male, between 16 and 18 years of age, without any dental or bone pathology. The results of radiocarbon analyses (Beta Analytic Testing Laboratory 614570 and 619015) determined the age of the first burial to be 630 +/- 30 years before present, while the remains found in grave 2 were somewhat younger, more precisely 570 +/- 30 years before present.

Another burial marked as grave 3 was discovered under the skeletal remains to the south of grave 2. The deceased was laid on his side in a crouched position with the remains of a ceramic vessel, which is specific to the Early Bronze Age Cetina cultural group in terms of shape and decoration (Marović, Čović 1983: 191–213). Around grave 3, in the layers located immediately above the bedrock on the larger surface of the tumulus, remains of another ceramic vessel were found, which was most likely ritually broken in a sepulchral cult. The radiocarbon analysis of the bones from grave 3, the results of which are expected soon, should determine the age of the primary prehistoric burial, whose stone burial structure was used secondarily for subsequent burials in the 14th and 15th centuries.

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NEOLITIČKO NALAZIŠTE POD JARUGOM

Neolithic site
Pod Jarugom



U ožujku 2022. godine provedeno je probno arheološko istraživanje na položaju Pod jarugom u Podgrađu. Voditeljica istraživanja bila je doc. dr. sc. Kristina Horvat Oštrić, a zamjenik voditelja dipl. arheol. Marina Šimičić, obje s Odjela za arheologiju Sveučilišta u Zadru. Na iskopavanju su sudjelovali i studenti studija arheologije sa Sveučilišta u Zadru: Martin Keretić, Marijan Aničić, Enzo Gabrijević i student poslijediplomskog studija antropologije sa Sveučilišta u Santa Barbari (Kalifornija, SAD) Nicholas Triozzi.

Istraživanje je provedeno s ciljem utvrđivanja stratigrafskih i kulturnih odnosa na nalazištu koje je 1976. podno Perušičke kose otkrio Š. Batović (Batović, Š. 1990: 27), a na kojem prije nisu vođena arheološka istraživanja. Ujedno, cilj je probnog istraživanja bio utvrditi potencijale neolitičkog nalazišta za buduća sustavna arheološka istraživanja.

Istražena je jedna probna sonda veličine 1 x 3 m, odnosno 3 m². Na površini parcele na kojoj je provedeno istraživanje, kao i na okolnima, prije iskopavanja prikupljeno je nekoliko ulomaka keramičkih posuda i nekoliko oruđa izrađenog od lomljenog kamena. Svi nalazi pripisani su srednjem neolitu.

In March 2022, archaeological trial trenching was carried out at the Pod jarugom site in Podgrađe. Doc. dr. sc. Kristina Horvat Oštrić led the research, and Marina Šimičić was the deputy, both from the Department of Archeology of the University of Zadar. Students of archaeology from the University of Zadar also participated in the excavation: Martin Keretić, Marijan Aničić, Enzo Gabrijević and a postgraduate student of anthropology from the University of Santa Barbara (California, USA) Nicholas Triozzi.

The excavation was conducted with the aim of determining the stratigraphic and cultural relationships at the site, which was discovered in 1976 at the foot of Perušička kosa by Š. Batović (Batović, Š. 1990: 27), and which has not been archaeologically investigated. Another aim of the trial excavation was to determine the potential of the Neolithic site for future systematic archaeological research.

A trench measuring 1 x 3 m (3 m²) was investigated. Several pottery sherds and some tools made of knapped stone were collected on the surface of the plot and in the surrounding areas before the excavation. All finds were attributed to the Middle


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... Pogled na sondu tijekom istraživanja (foto: N. Triozzi)
... View of the trench during the excavation (photo: N. Triozzi)

Na istraženoj površini utvrđen je kulturni deposit iz srednjeg neolitika, odnosno danilske kulture. Među kulturnim slojevima, posebno se izdvaja onaj u kojem je pronađeno veće amorfnu kamenje složeno u krug, a između kojeg su evidentirani komadi drva. Osim ulomaka keramičkih predmeta ukrašenih urezivanjem, pronađen je veliki udio neukrašene keramike. Koštani i kameni predmeti zastupljeni su s nekoliko primjeraka, od kojih je posebno zanimljiva cjelovito sačuvana



... Površinski nalaz (foto: K. Horvat Oštrić)
... Surface find (photo: K. Horvat Oštrić)

uglačana koštana alatka. Životinjske kosti su malobrojne. Iz svakog kulturnog sloja uzeti su uzorci za radiokarbonsku analizu te uzorci zemlje za flotaciju, koja je uslijedila nakon istraživanja. Proces flotacije vodila je Doris Vidas, doktorandica sa

Neolithic. A cultural deposit dating to the Middle Neolithic, that is the Danilo culture, was found in the excavated area. The layer with larger amorphous stones arranged in a circle, between which pieces of wood were recorded, is especially noteworthy. Pottery sherds decorated with incising break the monotony of a large proportion of undecorated pottery. Bone and stone artifacts are represented by several specimens, of which completely preserved polished bone tool is particularly interesting. Animal bones are few. Samples were taken from each cultural layer for radiocarbon analysis as well as soil samples for flotation, which followed the excavation. The flotation process was led by Doris Vidas, a PhD student



... Ulomak ručke ritona (foto: M. Šimičić)
... Fragment of a rhyton handle (photo: M. Šimičić)





Površinski nalazi prikupljeni sredinom 20. stoljeća (foto: M. Parica)
Surface finds collected in the middle of 20th Century (photo: M. Parica)

Sveučilišta u Oxfordu. Analiza životinjskih kostiju i stabilnih izotopa prepuštena je doktorandu Nicholasu Triozziju i prof. Sarah McClure s Odjela za antropologiju Sveučilišta u Kaliforniji, Santa Barbara.

from the University of Oxford. The analysis of animal bones and stable isotopes was entrusted to PhD student Nicholas Triozzi and prof. Sarah McClure of the Department of Anthropology, University of California, Santa Barbara.

PROBNO ARHEOLOŠKO ISTRAŽIVANJE NA FRANKOPANSKOM TRGU U SENJU

Archaeological trial excavations at Frankopan Square in Senj

Probno arheološko istraživanje u Senju na Frankopanskom trgu (Glavičić 1965: 291–292) provedeno je u dvjema arheološkim kampanjama tijekom 2022. godine u svrhu definiranja arheološkog potencijala ovog prostora. Istraživanje je provedeno na površini od 53,8 m² na trima pozicijama. Sonda 1, veličine 2 x 7 m, smještena je na području Frankopanskog trga ispred Državnog inspektorata. Istraživanje je provedeno do 1,80 m dubine. Unutar sonde 1 pronađeni su odvodni kanali. Najveći kanal širine je 2,30 m i orijentiran je u smjeru I-Z. Kanal je bio nadsvođen



Archaeological trial excavations were conducted at Frankopan Square in Senj (Glavičić 1965: 291–292), in two archaeological campaigns in 2022 to determine the likelihood that the site holds archaeological potential. The excavations were conducted in an area of 53.8 m² in three positions. Trench 1, measuring 2 x 7 m, is located in the area of Frankopan Square in front of the State Inspectorate. The excavation was carried out to a depth of 1.80 m. Drainage canals were found inside trench 1. The largest canal is 2.30 m wide and oriented in the E-W

bačvastim svodom koji je urušen. Njegovi su bočni zidovi monumentalni te je vjerojatno riječ o glavnom odvodnom kanalu koji je crpio odvodne tokove drugih, manjih kanala. Budući da mu je usmjerenje prema moru, pretpostavljamo da se ulijevao u more. Kanal je ispunjen slojem šute, što se vjerojatno dogodilo u 20. stoljeću u poslijeratnom ure-

direction. The canal was vaulted by a barrel vault that collapsed. Its side walls are monumental, and it is probably the main drainage canal that drained the flows of other, smaller canals. Since it is headed seawards, we assume that it flowed into the sea. The canal was filled with a layer of rubble, probably in the 20th century in the postwar clearance of

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Sonda 1 – pogled na odvodne kanale (foto: V. Glavaš)
Trench 1 – view of drainage canals (photo: V. Glavaš)

denju ruševina Senja stradalog u bombardiranju u 2. svjetskom ratu. Međutim, iako je kanal zapunjen, još uvijek je djelomično u funkciji te crpi dio otpadnih i fekalnih voda te se zbog toga nije moglo iskopavati dublje. To je i razlog zbog čega je strukture moguće datirati samo okvirno u novi vijek.

Sonda 2 otvorena je na području nasuprot gradskoj loži (Ljubović, Martinov 2013), uza zid današnje pekare. Budući da se tijekom otvaranja sonde i uklanjanja betonskih ploča ustanovilo da najveći dio sonde zauzima kanal od kanalizacije, sonda je dodatno proširena prema jugu te je u konačnici njezina površina iznosila 22 m². Istraživanje su na ovom prostoru uvelike ometale instalacije te je iskopavanje provedeno samo do 1,45 m dubine.

Najranija dokumentirana faza na području sonde 2 pripada periodu kasne antike. S kasnoantičkim periodom povezuju se tragovi dviju podnica, segment zida te kulturni sloj s većom količinom kasnoantičke keramike među kojom prevladavaju ulomci amfora. S obzirom na ograničenu površinu istraživanja, nije moguće interpretirati širu sliku ovog objekta koji je u kasnoj antici zasigurno srušen i spaljen što potvrđuje sloj paljevine. Osim toga, kasnoantički je sloj devastiran recentnim ukapanjem cijevi za vodu.

the ruins of Senj, as it was bombed in World War II. However, even though the canal is filled, it is still partially functional and drains some of waste and fecal water, so it was not possible to excavate any deeper. This is also the reason why the structures can only be roughly dated to the post-medieval period.

Trench 2 was opened in the area opposite the city lodge (Ljubović, Martinov 2013), next to the wall of today's bakery. Since during the opening of the trench and the removal of the concrete slabs, it was found that the largest part of the trench was occupied by a sewage channel, the trench was extended further to the south, finally covering an area of 22 m². The investigation in this area was greatly hindered by installations, and excavation was only carried out to a depth of 1.45 m.

The earliest documented phase in the area of trench 2 belongs to Late Antiquity. Traces of two floors, a segment of the wall and a cultural layer with a large amount of late antique pottery, mostly amphora sherds, are associated with the late antique period. Given the limited area of research, it is not possible to interpret the context of this building, which was certainly demolished and burned in Late Antiquity, as evidenced by the soot layer. Fur-

Istočni dio sonde 2 u recentnijem je periodu zahvaćen građevinskim radovima što pokazuje deblji sloj šute koji prekriva starije strukture koje se nalaze na dubini od 1,45 m, koje nije moguće interpretirati jer su prekrivene kompaktnim, zacementiranim slojem šute.

Sonda 3 veličine 8,10 x 2,2 m otvorena je na zapadnom dijelu trga uz zgrade k. č. 699/1 i 700/1. Najveća istražena dubina iznosila je 1,61 m. Budući da je na toj dubini počelo izbijati more, najstariji istraženi sloj je kasnoantički sloj koji sadrži veću količinu kasnoantičke keramike te krupnijih fragmenata životinjskih kostiju (zubi, kljove, vilice, veće kosti). Preliminarna analiza keramike pokazuje da je riječ o sloju koji se za sada može okvirno datirati u 4. stoljeće.

Na taj sloj deponiran je kasnoantički sloj koji sadrži izrazito veliku količinu pokretnog materijala (ulomci amfora, građevinske keramike, kuhinjskog posuđa, afričke *terrae sigillatae*) koji se okvirno može datirati u vremenski period od 4. do 6. stoljeća. Taj sloj presječen je izgradnjom temeljne stope novovjekovnog (?) zida te gradnjom recentnog odvodnog kanala i kabela za struju.

Rezultati probnih istraživanja upućuju na to da oni predjeli Frankopanskog trga koji nisu zahvaće-

thermore, the late antique layer was additionally devastated by recent digging of water pipes.

The eastern part of trench 2 has recently been affected by construction works, leaving a thicker layer of rubble covering older structures located at a depth of 1.45 m, which cannot be interpreted because they are covered by a compact, cemented layer of rubble.

Trench 3, measuring 8.10 x 2.2 m, was opened in the western part of the square next to buildings on cadastral plots 699/1 and 700/1. The greatest investigated depth was 1.61 m. Since the sea began to break out at that depth, the oldest investigated layer is the late antique layer, which contains a large amount of late antique pottery and larger fragments of animal bones (teeth, tusks, jaws, larger bones). A preliminary analysis of the pottery suggests broad dating of the layer to the 4th century.

That layer was overlaid by a late antique layer, which contains exceptionally large quantity of finds (fragments of amphorae, building ceramics, kitchenware, African *terra sigillata*) that can roughly be dated to the period from the 4th to the 6th century. This layer was cut through by the construction of the foundation level of the post-medieval (?) wall and construction of a recent drainage



Sonda 2 – završna situacija (foto: V. Glavaš)
Trench 2 – final situation (photo: V. Glavaš)





Sonda 3 – završna situacija (foto: V. Glavaš)
Trench 3 – final situation (photo: V. Glavaš)

ni recentnim gradnjama i ukopima u 20. stoljeću sadrže bogate kulturne slojeve koji datiraju od kasne antike pa sve do novog vijeka. Kulturni slojevi pojavljuju se na 30-40 cm dubine. Antičke kulturne slojeve, ali i srednjovjekovne i novovjekovne, na Frankopanskom trgu potrebno je očekivati vrlo plitko o čemu treba voditi računa tijekom budućih građevinskih radova.

canal and electricity cable.

The results of trial excavations indicate that those areas of Frankopan Square that were not affected by recent constructions and burials in the 20th century contain rich cultural layers that date from Late Antiquity to the Modern Period. Cultural layers emerge at a depth of 30-40 cm. The Roman-era cultural layers, as well as medieval and modern ones, at Frankopan Square should be expected at very shallow positions, which should be taken into account during future construction works.

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ARHEOLOŠKI NADZOR U SAMOSTANU SV. FRANE U ZADRU

Preliminarni rezultati

Archaeological supervision in the monastery of St. Francis in Zadar

Preliminary results

U razdoblju od svibnja do rujna 2022. godine tijekom preuređenja i obnove zapadne zgrade Samostana sv. Frane u Zadru, Odjel za arheologiju provodio je arheološki nadzor nad svim zemljanim iskopima koji su se provodili u sklopu obnove.

Crkva svetog Frane slovi kao najstarija gotička crkva u Dalmaciji, posvećena je 1280. godine (Vežić 2018: 18–19), a tijekom stoljeća doživjela je brojne promjene (Vežić 2018: 17–46). Samostanski

kompleks koji se nalazi južno od crkve izgrađen je početkom 14. stoljeća i zajedno s južnim zidom crkve zatvara središnji dvorišni prostor – klaustar, koji je do danas manje-više očuvao svoj izvorni oblik (Vežić 2018: 18). Najraniji spomen klaustara jest arhivski dokument iz 1380. godine, kojim tadašnji gvardijan sa-

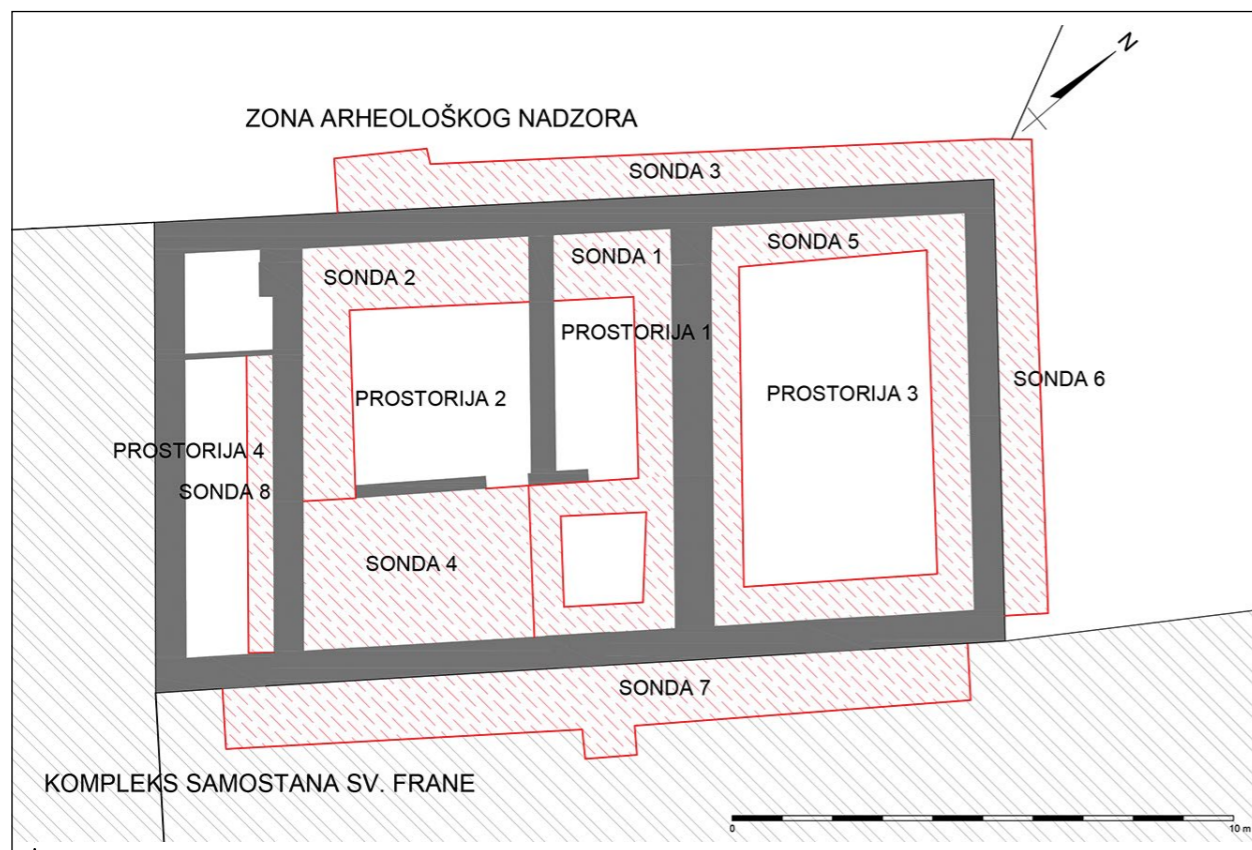
In the period from May to September 2022, during remodeling and renovation of the western building of the Monastery of St. Francis in Zadar, the Department of Archeology carried out archaeological supervision over all earthworks carried out as part of the renovation.

The church of St. Francis is believed to be the oldest Gothic church in Dalmatia, consecrated in 1280 (Vežić 2018: 18–19), and over centuries it underwent numerous

changes (Vežić 2018: 17–46). The monastery complex located south of the church was built at the beginning of the 14th century and, together with the southern wall of the church, encloses the central courtyard space - the cloister, which has more or less preserved its original form to this day (Vežić


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..... Situacijski plan (izradila: M. Šimičić)
 Situation plan (made by M. Šimičić)

mostana Ivanu Jurmaniću dopušta ukapanje unutar klaustra (Velnić 1980: 38; Vežić 2018: 33).

Samostanske zgrade, kao i sama crkva tijekom stoljeća doživjele su brojne preinake i nadogradnje, ali pretpostavka jest da su oblik i dimenzije samostanskog kompleksa ostali jednaki do danas, izuzev južnog dijela samostanskog kompleksa gdje je širenje samostana povezano s izgradnjom renesansnog bedema u 16. stoljeću i promjenom čitave vizure tog dijela grada. U prilog tomu da su samostanske zgrade, pa tako i klaustar imali jednaku tlocrtnu dispoziciju od vremena gradnje do danas idu i očuvane kamene konzole na zidu crkve i samostanskih krila, koje su nosile drveno krovšte izvornog klaustra iz 14. stoljeća, koje je izgorjelo u požaru 1476. godine (Vežić 2018: 28). Klaustar je obnavljan tijekom 16. stoljeća, a gradnja je čini se dovršena 1556. godine (Vežić 2018: 33, 38–39) te je u toj formi očuvan do danas.

Zemljani radovi u sklopu obnove pretežito su bili vezani uz iskope temelja kako bi se mogli dokumentirati i ojačati. Širina iskopa iznosila je najčešće do 100 cm, a dubina je ovisila o dubini samih temelja. Samo je u ulaznom dijelu prostorija 1 i 2 rađena sonda većih dimenzija (Sonda 4) jer je otkrivena podrumski prostorija, čiji su se gabariti trebali definirati. Prostorija je do vrha bila ispunjena depozitom; u jednom di-

2018: 18). We find the earliest mention of the cloister in an archival document from 1380, with which the guardian of the monastery at the time, Ivan Jurmanić, allows burial inside the cloister (Velnić 1980: 38; Vežić 2018: 33).

The monastery buildings, as well as the church itself, have undergone numerous changes and reconstructions over centuries, but the assumption is that the shape and dimensions of the monastery complex have remained the same to this day, with the exception of the southern part of the monastery complex, where the expansion of the monastery is connected with the construction of the Renaissance rampart in the 16th century and change of the entire view of that part of the city. The preserved stone consoles on the wall of the church and the monastery wings supported the wooden roof of the original cloister from the 14th century, which burned down in a fire in 1476 (Vežić 2018: 28). These consoles support the thesis that the monastery buildings, including the cloister, had the same layout from the time of construction to the present day. The cloister was renovated during the 16th century, and the construction seems to have been completed in 1556 (Vežić 2018: 33, 38–39). It has been preserved in this form until today.

jelu nasipom od novovjekovne građevinske šute, a u drugom dijelu slojem ugljena. Na dubini od 200 cm otkriveno je kameno popločanje, koje se ne nalazi na čitavom prostoru, već samo u istočnom dijelu prostorije. Podloga popločanja je sloj narančasto-crvenkaste fine žbuke. Riječ je o mljevenoj cigli pomiješanoj s vapnom, koja se dosta često javlja na baroknim građevinama, npr. u temeljima crkve sv. Nikole građene u drugoj polovici 18. stoljeća (Vrkić 2017: 87), što govori u prilog tomu da prostorija nije iz vremena prvotne gradnje samostana, već je izgrađena naknadno. Od četiri zida koji prostoriju zatvaraju, istočni je zid građen u potpunosti od žutih tankih opeka povezanih crvenom žbukom, dok su ostala tri zidana kombinacijom klesanog kamena i cigle. Svi su očuvani u punoj visini od oko 200 cm, a prema sitnim arheološkim nalazima možemo zaključiti da se podrumski prostorija upotrebljavala do sredine 20. stoljeća.

Iskopi unutar zapadnog dijela samostanskog kompleksa upućuju na to da su najveće dogradnje i promjene nastale u vrijeme baroka u 18. stoljeću. Vanjski zidovi samostanske zgrade i njihove temeljne stope, čini se, počivaju na originalnim temeljima prvotnog samostana građene u 14. stoljeću. Donji dijelovi temelja građeni su od pravilnih, vjerojatno reupotrijebljenih klesanaca, dok su na određenim

Earthworks as part of the renovation were mainly related to excavations of foundations so that they could be documented and reinforced. The width of the trench was usually up to 100 cm, and the depth depended on the depth of the foundations. Only in the entrance part of rooms 1 and 2 was a trench of larger dimensions (Trench 4) opened, because a basement room was discovered, whose dimensions needed to be defined. The room was filled to the brim with deposit; in one part with a fill of modern construction rubble, and in another part with a layer of coal. At a depth of 200 cm, stone paving was discovered, which is not found in the entire area, but only in the eastern part of the room. The paving base is a layer of orange-reddish fine plaster. It is actually ground brick mixed with lime, which appears quite often on baroque buildings, for example in the foundations of the church of St. Nicholas built in the second half of the 18th century (Vrkić 2017: 87), supporting the thesis that the room does not date to the time of the original construction of the monastery, but that it was built later. Of the four walls that enclose the room, the eastern wall is built entirely of thin yellow bricks connected with red plaster, while the other three are built in a com-



..... Sonda 4 (foto: M. Šimičić)
 Trench 4 (photo: M. Šimičić)





mjestima vidljive kasnije intervencije s nepravilno lomljenim kamenom povezanim crvenom žbukom. Ovakvi su popravci zabilježeni najviše u južnom dijelu zapadnog vanjskog zida, dok ih u sjevernom dijelu samostanske zgrade nema.

U temeljima sjevernog vanjskog zida samostana otkriven je najveći broj antičkih spolija, među kojima se definitivno ističe rimskodobni natpis isklesan na većem kamenom bloku. Spominje se namjesnik rimske provincije Dalmacije i gradski vijećnici kolonije *Iader*, koji mu podižu spomenik. U dogovoru s Konzervatorskim odjelom u Zadru i Arheološkim muzejom u Zadru, spomenik je izvađen te se nalazi na restauraciji kako bi se mogao dalje stručno i znanstveno obraditi. Uz istu temeljnu stopu istraženo je 13 cjelovito ili djelomično očuvanih *in situ* pokojnika. Uglavnom su položeni uz same temelje samostana u smjeru sjeverozapad-jugoistok s glavom na sjeverozapadu. Dva su pokojnika na sebi imala kružne brončane kopče s trnom pravokutnog presjeka, koje su čest nalaz na kasnosrednjovjekovnim grobljima i datiraju se u vrijeme od kasnog 13. do 16. stoljeća (Gusar, Vujević 2013: 278). Upravo nam

bination of dressed stone and brick. All of them have been preserved to a full height of about 200 cm, and small archaeological finds indicate that the basement room was used until the middle of the 20th century.

Excavations inside the western part of the monastery complex suggest that the biggest changes took place during the Baroque period in the 18th century. The outer walls of the monastery building and their foundations seem to rest on the original foundations of the initial monastery built in the 14th century. The lower parts of the foundation were built from regular, probably reused stones, while later interventions with irregularly broken stone connected with red plaster can be noticed in certain places. Such repairs are recorded mostly in the southern part of the western outer wall, while there are none in the northern part of the monastery building.

The largest number of ancient spolia elements was discovered in the foundations of the northern outer wall of the monastery. A prominent find is a Roman-era inscription carved on

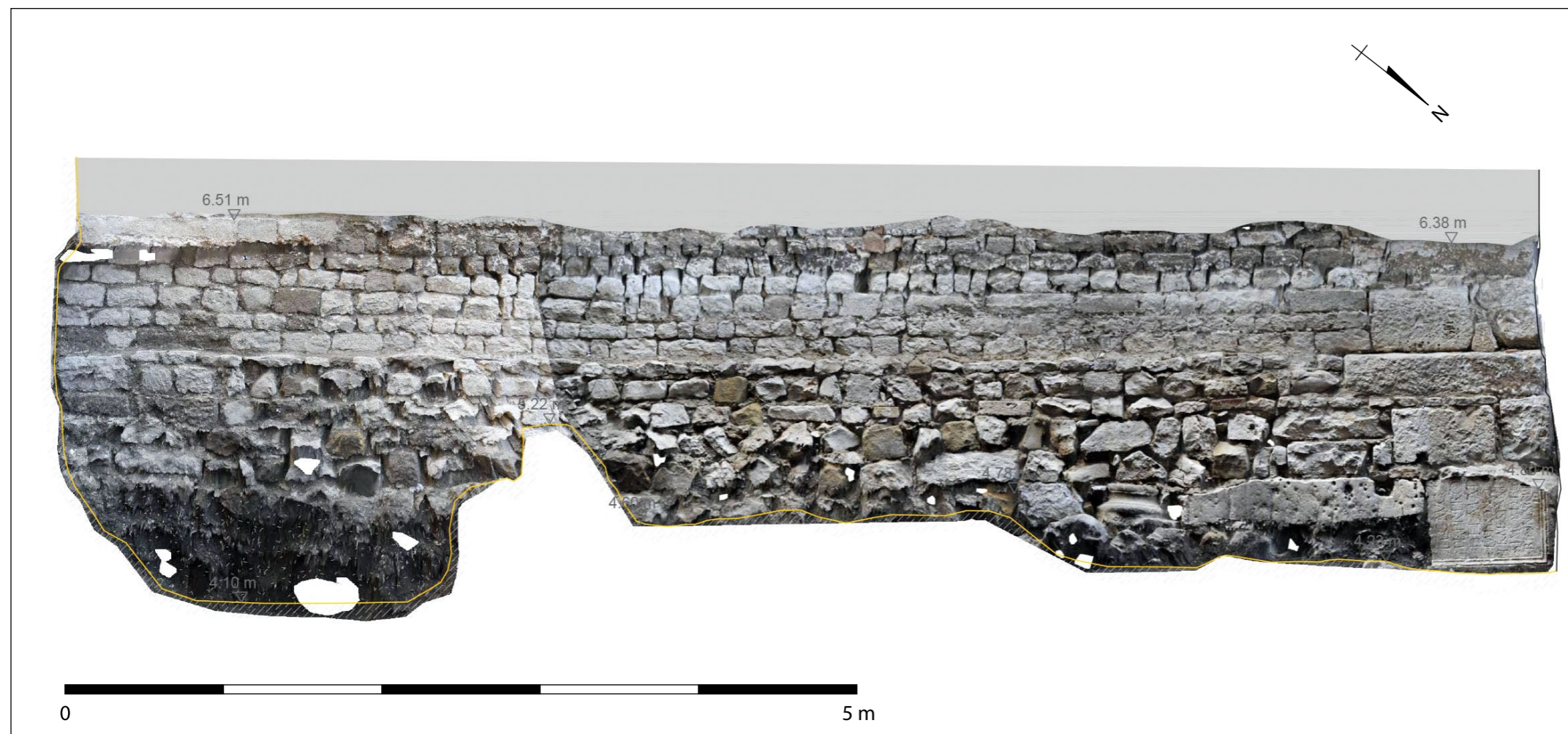


Temeljna stopa zapadnog samostanskog zida (foto: L. Bogdanić)
Footing of the western monastery wall (photo: L. Bogdanić)

nalazi tih pojasnih kopči potvrđuju da je temeljna stopa samostana iz vremena prije 16. stoljeća kada je gornja granica upotrebe spomenutih kopči. Istraženi grobovi i nalazi u njima predstavljaju *terminus ante quem* za izgradnju temeljne stope samostana i potvrđuju pretpostavku da je tlocrtna dispozicija

a larger stone block mentioning the governor of the Roman province of Dalmatia and the town councilors of the *Iader* colony, who erected a monument to him. In agreement with the Conservation Department in Zadar and the Archaeological Museum in Zadar, the monument was removed and is being restored so that it can be further professionally and scientifically analyzed. Along the same footing, 13 completely or partially preserved *in situ* burials were investigated. The deceased were mostly laid next to the foundations of the monastery in the northwest-southeast direction with the head in the northwest. The two deceased were wearing circular bronze buckles with a prong with rectangular cross section, which are common finds in late medieval cemeteries and date from the late 13th to the 16th century (Gusar, Vujević 2013: 278). It is precisely the findings of these belt buckles that confirm that the footing of the monastery dates to the time before the 16th century, when the use of the aforementioned buckles was coming to its end. The investigated graves and the finds in them represent *terminus ante quem* for the construction of the footing of the monastery and confirm the assumption that the layout of this part of the monastery is the same from the time of the construction until today, and that the area next to the monastery was used for burials soon after the construction.

Pogled na temeljnu stopu sjevernog vanjskog zida (izradila: M. Šimičić)
View of the footing of the northern outer wall (made by M. Šimičić)





Detail temeljne stope s kasnijim popravcima (foto: F. Jurković Pešić)
 Detail of the footing with later repairs (photo: F. Jurković Pešić)



Klaustar samostana (foto: Šimičić)
 Monastery cloister (photo: Šimičić)

ovog dijela samostana jednaka od vremena gradnje do danas, te da se uskoro nakon izgradnje prostor uz samostan upotrebljava za pokapanje.

Tijekom iskopa unutar klaustra, očekivano se naišlo na novovjekovne grobnice s višestrukim pokopima i sloj dislociranih kostiju među njima. Dokumentirano je sedam *in situ* pokojnika, koji su položeni u smjeru sjeverozapad-jugoistok, s glavom na sjeverozapadu i s obzirom na to da je iskop bio uzak, svi su ulazili u profil. Zbog potrebe da se iskop širi, u dogovoru s Konzervatorskim odjelom u Zadru pokrenuta su arheološka istraživanja tog dijela klaustra. Arheološka istraživanja vodila je privatna arheološka tvrtka Temenos, tako da nam rezultati arheoloških istraživanja unutar klaustra zasad nisu poznati.

Postmedieval tombs with multiple burials and a layer of dislocated bones among them were found during the excavations inside the cloister, as expected. Seven *in situ* burials were documented, who were laid in the northwest-southeast direction, with their heads in the northwest, and given that the trench was narrow, they were all cut by the profile. Due to the need to expand the excavation, archaeological research commenced in that part of the cloister in agreement with the Conservation Department in Zadar. The archaeological excavation was conducted by the private archaeological company Temenos, so that for now we know nothing about the results of the archaeological excavation inside the cloister.

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NA GRANICI DVAJU SVJETOVA – PROJEKT MIGRASSI

On the border of
two worlds –
the MIGRASSI project



Na krajnjem zapadnom uglu Vranskog jezera, pedesetak metara od njegove obale, nalaze se dvije nekropole odvojene zidom – Crkvina i Maksanova gomila. Po čemu su se za života razlikovali ljudi pokopani na njima da zadnje počivalište nisu mogli naći na istom mjestu? Odgovor na to pitanje u središtu je projekta i istraživanja o kojima je ovdje riječ.

Crkvina je lokalitet poznat još od 19. stoljeća (Bianchi 1879: 411; Jelić 1898: 117–120), a riječ je o crkvi Sv. Marije koja je pripadala srednjovjekovnom selu Zablaće (Baraka 2009: 188). Arheološka su istraživanja pod vodstvom prof. dr. sc. dr. h. c. A. Uglešića započela 2006. godine te je u nizu kampanja do 2016. godine istražena crkva s dijelom dodatnih prostora i objekata te dio groblja, a sve unutar prostora omeđenog ogradnim zidom (Uglešić, Gusar 2014). Tijekom kampanje 2015. godine na obližnjoj parceli vlasnik zemljišta odlučio je ukloniti veliku kamenu gomilu. Sumnjajući kako nanos krije ostatke iz rimskog vremena zbog brojnih ulomaka tegula i amfora na površini gomile zamolili smo vlasnika da nam dopusti nadzor iskopa. No, kako je iskop napredovao, činilo se da smo bili u krivu jer sve do

Two necropolises separated by a wall - Crkvina and Maksanova gomila are located at the westernmost corner of Lake Vrana, about fifty meters from its shore. In what way were the people buried in them different during their lifetime so that they could not find their final repose in the same place? The answer to that question lies at the heart of the project and research discussed here.

The site of Crkvina has been known since the 19th century (Bianchi 1879: 411; Jelić 1898: 117–120), referring to the church of St. Mary which belonged to the medieval village of Zablaće (Baraka 2009: 188). Archaeological research led by prof. ph. d. dr. h. c. Ante Uglešić started in 2006, lasting until 2016 in a series of campaigns. The church with some of additional rooms and buildings and part of the cemetery were investigated, all within the area bounded by the enclosure wall (Uglešić, Gusar 2014). The owner of the land decided to remove a large stone mound from a nearby plot during the 2015 campaign. Suspecting that the stones hide remains from Roman times due to numerous fragments of tegulae and amphorae on the surface of the mound, we asked the owner to allow us to super-



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• Nadgrobnni monolitni spomenici prije početka istraživanja (foto: J. Šučur)
• Monolithic tombstones before the excavation (photo: J. Šučur)

samog kraja nije bilo nikakvih arheoloških tragova. Tek se na samom dnu pod sjeveroistočnim dijelom gomile pojavio polukružni niz masivnog neobrađenog kamena, bez ikakvih drugih tragova, bez nalaza koji bi upućivali na karakter nalazišta, a kamoli vrijeme iz kojeg potječe. Kako to često u arheologiji biva, tek kad smo zagreblili pod zemlju, došli smo do konkretnih spoznaja. Pojedinačne ljudske kosti koje smo pronašli i širenje iskopa za krajnji rezultat imali su istraživanje dvaju grobova s brojnim pokojnicima. Antropološka analiza u jednom je grobu otkrila ostatke najmanje deset, a u drugom dvanaest osoba. Od toga je jedna osoba, ona koja je posljednja položena u grob, bila u anatomski ispravnom položaju, dok su kosti ostalih bile izmiješane unutar, ili čak izvan groba. Doznali smo karakter nalazišta – riječ je o groblju, ali iz kojeg su vremena pokojnici i zašto nisu pokopani unutar ograđenog prostora na Crkvini? Pokretni nalazi bili su rijetki, i većinom nisu kronološki osjetljivi, dok oni databilni, poput venecijanskih kovanica nisu pronađeni u grobovima. Jedino je jedan venecijanski denar pronađen među kostima na poklopnici groba 2, ali toliko loše očuvan da se može samo široko datirati između 1369. i 1485. godine. Dva uzorka iz grobova poslana su na radiokarbonsku analizu te su dati-

vised the excavation. However, as the excavation progressed, it seemed that we were wrong because there were no archaeological traces until the very end. Only at the bottom, under the north-eastern part of the mound, did a semicircular row of massive unworked stones appear, without any other traces, or finds that would indicate the character of the site, let alone the time from which it originates. As it often happens in archaeology, only when we scratched the ground, we obtained some useful information. Individual human bones we found and the expansion of the excavation resulted in the investigation of two graves with a number of buried individuals. Anthropological analysis revealed the remains of at least ten people in one grave, and twelve in the other. Of these, one person, the one who was laid last in the grave, was in an anatomically correct position, while the bones of the others were commingled inside, or even outside the grave. We found out the character of the site – it was a cemetery, but from what time were the deceased and why were they not buried inside the enclosed area in Crkvina? Small finds were rare, and mostly irrelevant in terms of chronology, while datable ones, such as Venetian coins, were not found in graves. Only a Venetian



• Grob 3 s brojnim ukopima odmah po otvaranju (foto: J. Šučur)
• Grave 3 with numerous burials immediately after opening (photo: J. Šučur)





Iskopavanje, definiranje, dokumentiranje i planiranje – sve na istom mjestu (foto: J. Šučur)
Excavating, defining, documenting and planning - all in one place (photo: J. Šučur)

rala ukope od 15. do 16. stoljeća. Uzimajući sve ovo u obzir, ali i povijesne okolnosti, grobovi su pripisani Vlasima koji su se u turbulentnim vremenima kraja srednjeg i početka novog vijeka po osmanskim osvajanjima doselili na ovaj prostor. U prilog tomu idu i nadgrobni spomenici, kamici (stećci), masivno monolitno kamenje drukčijeg karaktera od onog postavljenog nad grobove na Crkvini. Brojne patološke promjene i traume na kostima pokojnika svjedoče o teškim životnim prilikama i nasilnim događajima kakve nam oslikavaju povijesni izvori na granici Mletačke Republike i Osmanskog Carstva (Šučur et al. 2020).

Kako bismo pokušali dobiti nove podatke i primjenom dodatnih analiza provjerili navedene hipoteze, formiran je projektni prijedlog koji je Sveučilište u Zadru prihvatilo za financiranje u dvogodišnjem razdoblju počevši od 1. rujna 2021., i tako je nastao projekt MIGRASSI, punim imenom *Migracije na razmeđu dvaju svjetova – Mletačke Republike i Osmanskog Carstva – u svjetlu analize stabilnih izotopa*. Osnovni je cilj projekta usporedba dviju populacija pomoću analize stabilnih izotopa. U arheološkim su istraživanjima ove analize dosad primarno primijenjene na dvama poljima – pri rekonstrukciji prehrane i pri rekonstrukciji

denarius was found among the bones on the cover slabs of grave 2, but it is so badly preserved that it can only be broadly dated between 1369 and 1485. Two samples from the graves were sent to radiocarbon analysis which dated the burials to the period from the 15th to the 16th century. Taking all this into account, as well as historical circumstances, the graves are attributed to the Vlachs, who moved to this area during the turbulent times of the end of the Middle Ages and the beginning of the Modern Period after the Ottoman conquests. In support of this, there are specific tombstones, *stećci* or *kamici*, massive monolithic stones different from those placed over graves in Crkvina. Numerous pathological changes and traumas on the bones of the deceased bear witness to difficult life circumstances and violent events as depicted by historical sources on the border of the Venetian Republic and the Ottoman Empire (Šučur et al. 2020).

In order to try to obtain new data and verify the stated hypotheses by applying additional analyses, a project proposal was formed that the University of Zadar accepted for financing in a two-year period starting on September 1, 2021, and thus the MIGRASSI project was born, with the full name *Mi-*

migracija. Kemijski elementi i spojevi iz namirnica i okoliša putem biokemijskih procesa ostavljaju materijalne tragove izotopa koji se razlikuju kod pojedinih namirnica, kao i okoliša u kojem je osoba živjela. Za rezultate istraživanja iznimno je bitna razlika u načinu na koji se formiraju kosti i zubi. Kod kostiju se pri ovim analizama upotrebljava protein kolagen (organski dio kosti), a kod zuba apatit (neorganski dio). Izotopi u zubima upućuju na mjesto gdje je osoba provela mladost (vrijeme dok se zub formirao), dok oni u kostima upućuju na posljednje godine života. Predviđene su analize izotopa kisika (^{18}O), ugljika (^{13}C), i dušika (^{15}N), te stroncija ($^{87}\text{Sr}/^{86}\text{Sr}$) i olova ($^{208}\text{Pb}/^{204}\text{Pb}$).

S obzirom na financijski okvir projekta, odlučili smo uzeti uzorke pet osoba pokopanih na Crkvini i jednako toliko od osoba pokopanih pod Maksanovom gomilom, no kako su pod gomilom istražena samo dva groba, prvi korak bilo je dodatno arheološko iskopavanje. U kasnu jesen 2021. započeli smo s istraživanjem, a zanimljivim tempom završili smo ga u travnju 2022. godine, nakon brojnih dogodovština i peripetija, uz neopisivo vrijedan doprinos studenata arheologije. Na kraju je istražen dodatni 21 grob, svi oni ispod nadgrobničkih monolita, a i neki koji ih nisu imali.

gration between two worlds - the Venetian Republic and the Ottoman Empire - in the light of stable isotope analysis. The main objective of the project is to compare two populations using stable isotope analysis. In archaeological research, these analyses have so far been primarily applied in two fields - in the reconstruction of diet and in the reconstruction of migrations. Chemical elements and compounds from food and environment through biochemical processes leave material traces of isotopes that differ in individual foodstuffs, as well as in the environment in which a person lived. The difference in the way bones and teeth are formed is extremely important for the results of the research. For bones, protein collagen (the organic part of the bone) is used in these analyses, and for teeth, apatite (the inorganic part). Isotopes in the teeth indicate the place where the person spent his/her youth (the time when the tooth was formed), while those in the bones are indicative of the last years of life. Analyses of isotopes of oxygen (^{18}O), carbon (^{13}C), and nitrogen (^{15}N), as well as strontium ($^{87}\text{Sr}/^{86}\text{Sr}$) and lead ($^{208}\text{Pb}/^{204}\text{Pb}$) are planned.

Considering the financial framework of the project, we decided to take samples of five individuals buried in the church and the same number of



Istraživanje groba 4 (foto: J. Šučur)
Excavation of grave 4 (photo: J. Šučur)





Dvije su spoznaje potpuno nove u odnosu na prijašnje. Dio grobova ukopan je u crnu zemlju s brojnim ulomcima gara i ugljena, prosljocima pepela i fragmenata životinjskih kostiju. Čini se kako su stanovnici Crkvine izvan zidina imali otpadnu jamu u koju su bacali ostatke jela (životinjske kosti, školjke) i njihove pripreme (pepeo, ugljen), a onda je dio grobova kasnog srednjeg i ranog novog vijeka ukopan kroz te slojeve. Druga zanimljiva okolnost jest pronalazak ranosrednjovjekovnog groba ispod već poznatog horizonta, što govori o tome kako je ranosrednjovjekovni lokalitet obuhvaćao veću površinu u odnosu na ogradni zid Crkvine.

the deceased persons buried under Maksanova gomila, but since only two graves were investigated under the mound, the first step was additional archaeological excavation. In the late autumn of 2021, we started the excavation, and we finished it at an interesting pace in April 2022, after numerous events and vicissitudes, with immensely valuable contribution of archeology students. Finally, additional 21 graves were investigated, all graves under tombstone monoliths, and some without monoliths.

Two realizations are completely new compared to the previous ones. Some of the graves are buried

Osim arheoloških istraživanja, tijekom prve godine projekta provedena je bioarheološka analiza ostataka iz grobova, analizirali su se pokretni nalazi od kojih je dio metalnih izdvojen i predan na konzervaciju, rezultati su prezentirani putem medija, dva međunarodna znanstvena kongresa i nekoliko pisanih radova. Pred članovima tima još je mnogo posla, ali sav je trud opravdan jer je projekt usmjeren na istraživanje još uvijek arheološki malo poznatih razdoblja (kraja srednjeg i početka novog vijeka), na istraživanje arheološki gotovo neistraženih događaja (migracija izazvanih osmanlijskim pohodima), na istraživanje njihovih aktera (jesu li

in black soil with numerous fragments of soot and charcoal, interlayers of ash and fragments of animal bones. It seems that the inhabitants of Crkvina had a waste pit outside the walls in which they threw the remains of food (animal bones, shells) and of its preparation (ashes, charcoal), and then part of the graves dating to the late Middle Ages and early Modern Period were buried through these layers. Another interesting circumstance is the discovery of an early medieval grave under the already known horizon, suggesting that the early medieval site covered a larger area compared to the enclosure wall of Crkvina.



⋮ Nekropola pri kraju istraživanja (foto: J. Šučur)
 ⋮ Necropolis at the end of the excavation (photo: J. Šučur)





došli, ili su tu već bili, što su jeli, od čega su bolovali, koliko su patili). Ovaj projekt želi ispričati priču ljudi s granice koji nisu ostavili pisanog traga, ali to ne znači da njihova priča nije bitna. Dapače, bila je bitna onda, bitna je i u sadašnjem svijetu migracija i pandemije, a bitna je i za budućnost, ako se potrudimo pronaći pouku u tragovima koji su ostali za njima.

In addition to archaeological research, during the first year of the project, a bioarchaeological analysis of the remains from the graves was carried out. Small finds were analyzed, and metal artifacts were separated and handed over for conservation. The results were presented through the media, two international scientific congresses and several written papers. The members of the team still have a lot of work to do, but all the effort is justified because the project is aimed at exploring periods (the end of the Middle Ages and the beginning of the Modern Period) and events (migrations caused by the Ottoman raids) that are still poorly known in terms of archaeological research. The research is also aimed at their protagonists (if they came, or they had already been there; what they ate, what diseases they suffered from, how much they suffered). This project aims to tell the story of people from the border who did not leave a written mark, but that does not mean that their story is not important. On the contrary, it was important then, it is also important in the current world of migrations and pandemics, and it is also important for the future, if we try to find lessons in the traces left behind.

PROBNO ISTRAŽIVANJE TREĆEG ANTIČKOG BRODA NA TRSTENIKU U KAŠTEL SUĆURCU

Trial excavation of the third Roman ship at Trstenik in Kaštel Sućurac

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Godine 2002. Neno Rokov uočio je u plitkom moru na Trsteniku, na istočnom kraju Kaštel Sućurca, cjelovit prošupljeni keramički dolij koji je iste godine izvađen iz mora i pohranjen u Hrvatskom pomorskom muzeju. Iako je podmorski dio nalazišta tek tada uveden u službenu evidenciju, on je već otprije bio poznat lokalnom stanovništvu, o čemu svjedoči podatak objavljen u *Kaštelanskom zborniku* (Delić 1994). Na nalazištu su u isto vrijeme zamijećene i dvije skupine hispanskih globularnih amfora tipa Dressel 20, koje su dijelom

In 2002, Neno Rokov noticed in the shallow sea at Trstenik, at the eastern end of Kaštel Sućurac, a complete perforated ceramic dolium, which was taken out of the sea the same year and housed in the Croatian Maritime Museum. Although the underwater part of the site was only then entered into official records, it had already been known to the local population, as evidenced by the information published in *Kaštelanski zbornik* (Delić 1994). At the same time, two groups of Hispanic globular amphorae of the Dressel 20 type were also noticed at the site,


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istražene tijekom idućih godina. Nastavkom istraživanja potvrđeno je i postojanje linearne strukture izrađene od dasaka i drvenih pilona, koja se proteže paralelno s obalom u dužini od oko 80 metara, a u zapadnom dijelu nalazišta zaokreće prema sjeveru. Riječ je o ostacima operativne obale iz koje je, vjerojatno, pri sredini izlazilo malo pristanište kojem

which were partially explored in the following years. The continuation of the research confirmed the existence of a linear structure made of planks and wooden piles, which runs parallel to the coast for about 80 meters, and in the western part of the site it turns northwards. These are the remains of the operational quay, from which, probably, a small pier came out near the



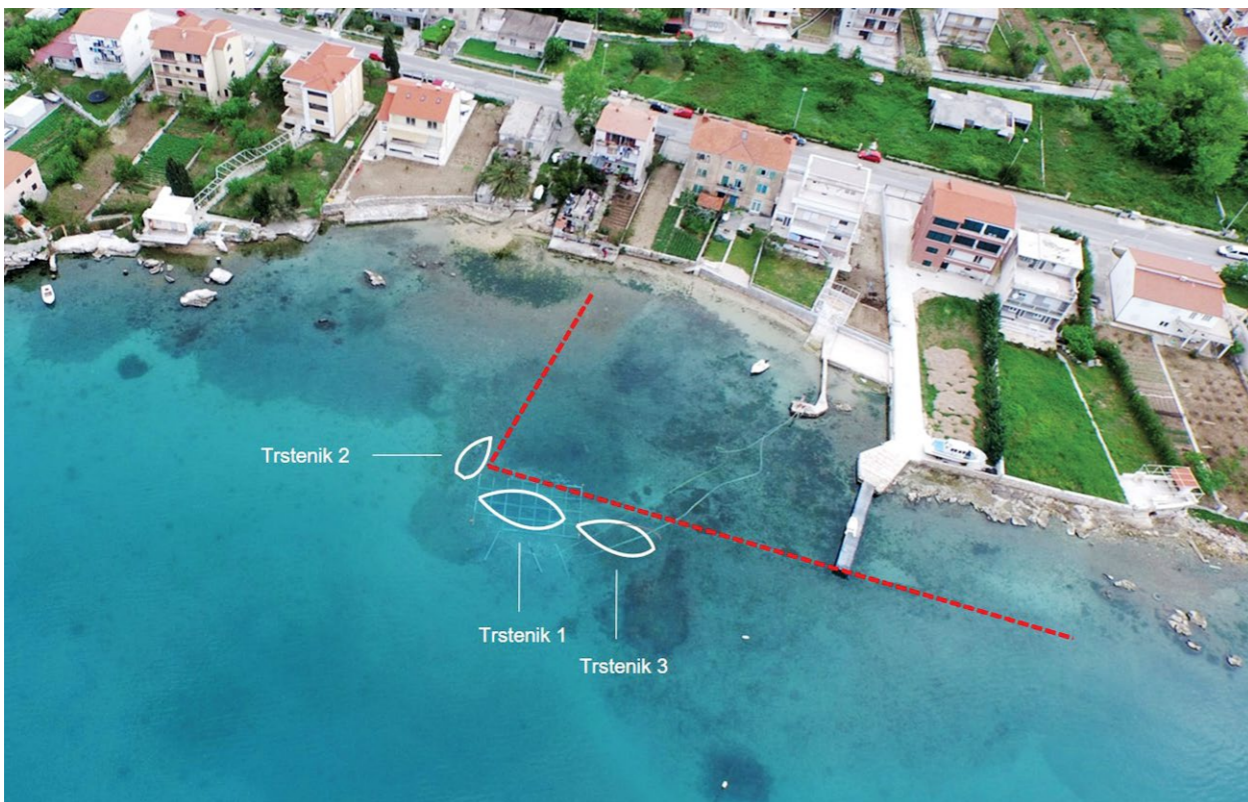


se pristupalo pomoću hodne površine položene na drvene pilone, a bilo je izrađeno pomoću nekoliko desetaka amfora tipa Dressel 20 koje su s istočne i zapadne strane također bile učvršćene drvenim pilonima.

Godine 2006. uz jugozapadni kraj linearne konstrukcije Neven Lete otkrio je ostatke broda ispunjenog velikim kamenjem i namjerno potopljenog s ciljem učvršćenja operativne obale. Godine 2007. provedeno je probno istraživanje kako bi se utvrdilo do koje je mjere brod očuvan, a sustavno istraživanje uslijedilo je 2012., 2015. i 2020. godine (Radić Rossi, Ruff 2021). Nakon toga brodska je konstrukcija omeđena kamenjem, nekad iskorištenim za ispunu broda prije potapanja, a dobivena površina ispunjena je kamenim materijalom kako bi na morskom dnu ostalo zabilježeno mjesto gdje se i dalje nalazi. Tijekom istraživanja 2020. godine Neven Lete i Vedran Dorušić otkrili su ostatke još dvaju brodova. Brod Trstenik 2, koji leži zapadno od broda Trstenik 1, istražen je 2021. godine, a ove je godine brod Trstenik 3, istočno od broda Trstenik 1, detaljno definiran i pripremljen za nastavak istraživanja. Sva tri broda bila su ispunjena velikim kamenjem i namjerno potopljena kako bi se učvrstila priobalna konstrukcija kojom je bila ograđena operativna obala velikog gospodarskog kompleksa

middle, which was accessed by means of a walking surface laid on wooden piles, and it was made using several dozen Dressel 20 amphorae, which were also fixed on the east and west sides with wooden piles.

In 2006, along the southwestern end of the linear structure, Neven Lete discovered the remains of a ship filled with large stones, and scuttled to strengthen the operational quay. In 2007, a trial excavation was conducted to determine to what extent the ship was preserved, and systematic research followed in 2012, 2015 and 2020 (Radić Rossi, Ruff 2021). After that, the ship's structure was bordered with stones, which were once used to fill the ship before sinking, and the resulting surface was filled with stone material in order to mark the place where it is still located on the seabed. During research in 2020, Neven Lete and Vedran Dorušić discovered the remains of two more ships. Ship Trstenik 2, which lies west of ship Trstenik 1, was explored in 2021. This year ship Trstenik 3, east of ship Trstenik 1, was defined in detail and prepared for continuation of the research. All three ships were filled with large rocks and scuttled in order to strengthen the coastal structure that enclosed the operational waterfront of the large economic production center that was located in this area in Roman times. Due to the construction of residential buildings and infrastructure, its remains on land were de-



Okvirni položaj antičkih brodova na nalazištu Trstenik u Kaštel Sućurcu (Arhiva projekta Trstenik)
Approximate location of Roman-era ships at the Trstenik site in Kaštel Sućurac (Archive of the Trstenik project)



Priprema pumpi za pokretanje vodenih sisaljki (foto: J. Glamač)
Preparation of pumps for starting water dredges (photo: J. Glamač)

koji se u rimsko doba nalazio na ovom prostoru. Izgradnjom stambenih objekata i infrastrukture njegovi su ostatci na kopnu već odavno uništeni, ali su se u plitkom moru očuvali jasni tragovi njegova postojanja.

Brod Trstenik 3 položen je u smjeru istok-zapad, s južne strane konstrukcije operativne obale izrađene od okomito postavljenih dasaka i drvenih pilona. Tijekom prvog dana istraživanja pripremljena je oprema za podmorske radove. Iznad nalazišta postavljeno je pomoćno metalno mrežište koje se sastojalo od 2 x 5 kvadrata, sveukupnih dimezija 4 x 10 m. Nakon postavljanja mrežišta uslijedio je podmorski iskop kojim je brodska konstrukcija u cijelosti definirana sa sjeverne i južne strane. Sa sjeverne strane iskopa bovom je označeno mjesto za privremeno odlaganje uklonjenog kamenja. Kao i u slučaju broda Trstenik 1, sa sjeverne je strane brodska konstrukcija odlično očuvana do visine konstrukcije operativne oba-

stroyed long ago, but clear traces of its existence have been preserved in the shallow sea.

Ship Trstenik 3 was laid in the east-west direction, on the south side of the structure of the operational quay made of vertically placed planks and wooden piles. On day one of the excavation, equipment for underwater work was prepared. Above the site, an auxiliary metal grid was placed, consisting of 2 x 5 squares, with overall dimensions of 4 x 10 m. After the grid was installed, underwater excavation followed, which completely defined the ship's structure on the north and south sides. On the north side of the excavation, a place for temporary disposal of the removed stones was marked with a buoy. As in the case of ship Trstenik 1, on the north side the ship's structure was well preserved up to the height of the operational quay structure, while on the south side it gave way under the pressure of the stones. Therefore, it is not clear whether its southern part has been completely recovered or if it is only a part of the



Iskop na prostoru broda Trstenik 3 (foto: I. Radić Rossi)
Excavation in the area of ship Trstenik 3 (photo: L. Bogdanić)





... Krajnji pramčani ili krmeni dio broda Trstenik 3 (foto: M. Martinčak)
 ... The end bow or stern part of ship Trstenik 3 (photo: M. Martinčak)

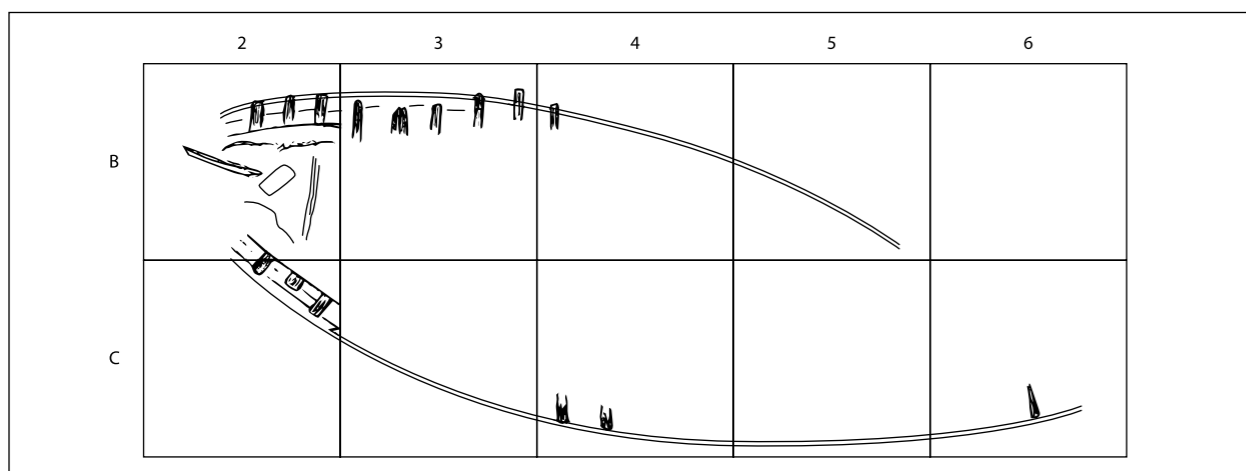
le, dok je s južne strane popustila pod pritiskom kamenja. Nije, stoga, jasno je li njezin južni dio u potpunosti otkriven ili je riječ samo o dijelu broda pod kamenim nabačajem, koji se zapravo proteže i dalje prema jugu.

Gledajući od zapada prema istoku, na brodu je sa sjeverne strane zamijećeno deset rebara, dok se s južne strane raspoznaje njih šest, od kojih su prva tri vjerojatno dijelovi sjevernih rebara. Za potrebe dokumentiranja situacije na morskom dnu sa središnjeg je dijela broda uklonjeno kamenje obraslo travom, tako da je na većini površine preo-

ship under the stone fill, which actually extends further to the south.

Looking from west to east, ten frames of the ship can be noticed on the northern side, while six can be discerned on the southern side, the first three of which are probably parts of the northern frames. For the purposes of documenting the situation on the seabed, rocks overgrown with grass were removed from the central part of the ship, so that only a layer of cleaner stones and accumulated sediment remained on most of the surface.

Simultaneously with the excavation in the area



... Skica otkrivenih obrisa broda Trstenik 3 u odnosu na pomoćno metalno mrežište (crtež: N. Čuk)
 ... Sketch of the uncovered contours of ship Trstenik 3 in relation to the auxiliary metal grid (drawing: N. Čuk)



... Priprema za snimanje referentnih točaka na nalazištu pomoću totalne stanice (foto: N. Čuk)
 ... Preparation for recording reference points at the site using a total station (photo: N. Čuk)

stao samo sloj čisteg kamenja i akumuliranog sedimenta.

Istovremeno s iskopom na prostoru broda Trstenik 3 nastavila se pratiti konstrukcija operativne obale u smjeru sjevera. Otkrivanje okomito zabijene daske na mjestu gdje je zaustavljen prošlogodišnji iskop pokazalo se izrazito zahtjevnim jer je obližnji potok nanio 20 do 30 cm sedimenta nad geotekstil postavljen preko tog dijela nalazišta. Konstrukcija je očišćena u dužini od desetak metara, ali se proteže i dalje prema obali. S njezine istočne strane uočena su još četiri drvena pilona. Iskop se odvijao u izrazito plitkom moru (oko 1 m dubine), što je znatno otežavalo i usporavalo radove. Tijekom posljednjeg dana istraživanja obavljeno je geodetsko pozicioniranje nalaza, brodska je konstrukcija zaštićena geotekstilom koji je potom prekriven slojem kamenja i sedimentom, a geotekstil i kamenje postavljeni su i na konstrukciju operativne obale.

of ship Trstenik 3, the structure of the operational quay in the north direction continued to be monitored. The discovery of the vertically driven board at the place where last year's excavation was stopped turned out to be extremely demanding because the nearby stream deposited 20 to 30 cm of sediment over the geotextile placed over that part of the site. The structure has been cleared in a length of about ten meters, but it still extends further towards the coast. On its eastern side, four more wooden piles were noticed. The excavation took place in an extremely shallow sea (about 1 m deep), which made the work considerably more difficult and slower. During the last day of the excavation, the geodetic positioning of the finds was carried out, the ship's structure was protected with geotextile, which was then covered with a layer of stones and sediment, and geotextile and stones were also placed on the structure of the operational quay.

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ARHEOLOŠKA ISTRAŽIVANJA NA GRADINI SVETOG IVANA NA OTOKU KORČULI

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



Odjel za arheologiju Sveučilišta u Zadru već je neko vrijeme angažiran na proučavanju arheološke baštine otoka Korčule, primjerice potopljenog neolitičkog naselja Soline, željeznodobne gradine Kopila i rimskog ruralnog imanja Beneficij – Gudulija. Institucionalni znanstveno-istraživački projekt Sveučilišta u Zadru *Gradina i luka svetog Ivana – izolirana točka otočnih dodira* (GRIVA 2021-2023, IP.01.2021.02) omogućio je da se taj angažman dodatno proširi, ovaj put na zonu uvale i brežuljka Gradine s crkvom svetog Ivana, smještene na krajnjem zapadnom dijelu otoka. Atraktivna pozicija s koje se nadzire Viški kanal i prilaz korčulanskom kopnu te izvrsne maritimne osobitosti uvale razlozi su tamošnje pojave brojnih arheoloških nalaza datiranih još od prapovijesnih vremena do danas (Borzić 2009; Fisković 1984; Lisičar 1963; Oreb 1972; Radić 2001). Stoga je upravo definiranje naseljenosti tijekom vremena, odnosno praćenje transformacije pejzaža prouzrokovane promjenama u dinamici i karakteru iskorištavanja ove lokacije, istaknuto kao glavni cilj spomenutog projekta. Njegovu postizanju pridonijet će korištenje svih dostupnih arhivskih i prostornih podataka, analiza dosad poznatih, ali i novostečenih arheoloških spoznaja.

U prvoj godini projekta arheološka istraživanja provedena su u razdoblju od 19. do 28. travnja 2022. godine.¹ Pozicioniranje dviju manjih sondi oko danas stojeće kasnosrednjovjekovne crkvice svetog Ivana Krstitelja (Fisković 1984), određeno je slučajnim nalazom kasnoantičkog kapitela (Borzić 2009) te arhivskim spominjanjem različitih crkvenjaka (Foretić 1940), što je bilo dovoljno za pretpostavku o postojanju predkasnosrednjovjekovnih arheoloških slojeva. Istraživanja su njih i potvrdila, a unatoč tomu što se u sondi 1 nije ušlo u trag *in situ* očuvanim ranijim zidanim strukturama, na njihovo postojanje uputio je vrlo izražen sloj urušenja. U njemu su, osim zidnih te terakotno-kamenih krovnih elemenata, nađeni i kameni elementi oltarne mense, koji zajedno s brojnim ulomcima prozorskog stakla potvrđuju postojanje starokršćanske crkve, pretpostavlja se s istim titularom kao i današnja crkvice.

Odgovoru na pitanje u kakvom se kontekstu crkvice nalazila dijelom se pokušalo približiti otvara-

The Department of Archeology of the University of Zadar has been engaged in the study of the archaeological heritage of the island of Korčula for some time, for example the submerged Neolithic settlement of Soline, the Iron Age hillfort Kopila and the Roman rural estate Beneficij - Gudulija. 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) made it possible to further expand this engagement, this time to the area of the bay and hill of Gradina with the church of St. John, located on the far western part of the island. The attractive position overlooking Viški kanal (*Vis channel*), access to the Korčula mainland and excellent maritime characteristics of the bay are the reasons for the presence of numerous archaeological finds dating from prehistoric times to the present day (Borzić 2009; Fisković 1984; Lisičar 1963; Oreb 1972; Radić 2001). Therefore, defining of the population dynamics over time, that is, monitoring the transformation of the landscape caused by changes in the dynamics and character of the use of this loca-

tion, was highlighted as the main aim of the mentioned project. Its achievement will be aided by the use of all available archival and spatial data, analysis of previously known facts and newly acquired archaeological insights.

In the first year of the project, archaeological excavation was carried out in the period from April 19 to 28, 2022.¹ The positioning of the two smaller trenches around the still standing late medieval church of St. John the Baptist (Fisković 1984) was determined by the chance find of a late antique capital (Borzić 2009) and archival mentions by various churchmen (Foretić 1940), which was enough for the assumption about the existence of archaeological layers earlier than the Late Middle Ages. Excavation has attested these layers, and despite the fact that in trench 1 there were no traces of earlier masonry structures preserved *in situ*, their existence was indicated by a very pronounced destruction layer. In it were elements of a wall and terracotta-stone roof as well as stone elements of the altar mensa, which together with numerous fragments of window glass testify to the presence


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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 istog 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.



Pogled na Gradinu sv. Ivana s istoka (foto: L. Bogdanić)
View of Gradina sv. Ivan from east (photo: L. Bogdanić)



Sonda uz apsidu crkvice svetog Ivana Krstitelja (foto: L. Bogdanić)
Trench next to the apse of the church of St. John the Baptist (photo: L. Bogdanić)





njem druge sonde uz žbukom vezani zid koji obilazi glavicu čitavog brežuljka. Rezultati, nažalost, nisu omogućili konkretnije kronološko određenje ove strukture. Ipak, njezina izrazita masivnost na prostoru sonde te defanzivni karakter uz mjestimični pronalazak kasnoantičkih amfora i građevnog ma-

of an early Christian church, presumably with the same title as the present-day church.

In order to define the context of the original church, another trench was opened next to the plastered wall that encircles the top of the entire hill. The results, unfortunately, did not enable a more



Novovjekovni ukopi uz crkvicu svetog Ivana na Gradini (foto: L. Bogdanić)
Postmedieval burials next to the church of St. John the Baptist on Gradina (photo: L. Bogdanić)

terijala, ostavlja mogućnost postojanja ranobizantske utvrde, kakve se pronalaze na brojnim strateški važnim točkama uzduž čitavog istočnojadranskog plovnog puta.

Osim utvrđenih novovjekovnih ukopa, pretpostavljeno korištenje Gradine i u prapovijesnim vremenima dokazano je izoliranjem konkretnog arheološkog sloja naseobinskih odlika neposredno nad matičnom stijenom. Prema preliminarnim analizama ono je datirano u srednje brončano doba, a sadrži znatnu količinu vrlo usitnjene grube keramike te manju količinu životinjskih kostiju i amorfnih brončanih ulomaka.

Istraživanja na Gradini svetog Ivana nastavit će se i sljedeće godine, no već su i ovogodišnja umnogome unaprijedila poznavanje dinamike iskorištavanja ove lokacije i omogućila njezino smještanje u već poznate okvire prapovijesne, antičke, srednje i novovjekovne naseljenosti ne samo otoka Korčule već i čitavog okolnog arhipelaga.

specific chronological determination of this structure. Nevertheless, its distinct massiveness in the area of the trench and its defensive character, along with the sporadic findings of late antique amphorae and building material, allow the possibility of the existence of an early Byzantine fort, of the kind found at numerous points important in terms of strategy,

along the entire eastern Adriatic maritime route.

In addition to the identified postmedieval burials, the assumed use of Gradina in prehistoric times was also proven by defining a specific archaeological layer with settlement features immediately above the bedrock. According to preliminary analyses, it is dated to the Middle Bronze Age, and it contains a considerable amount of highly fragmented coarse pottery and a smaller amount of animal bones and amorphous bronze fragments.

Excavations on Gradina sv. Ivan will continue next year, but this year's campaign has already greatly improved the understanding of the dynamics of the use of this location and enabled its placing within the already known framework of prehistoric, ancient, medieval and modern settlement not only of the island of Korčula, but also of the entire surrounding archipelago.



Ranokršćanski kapitel pronađen na Gradini svetog Ivana (foto: L. Bogdanić)
Early Christian capital found at Gradina svetog Ivan (photo: L. Bogdanić)

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An aerial photograph of a coastal area with turquoise water. In the top left corner, there are buildings and a dock. A small boat is visible in the water. The rest of the image shows the seabed with various textures and colors, indicating a submerged site.

POTOPLJENO
NEOLITIČKO
NALAZIŠTE NA
SOLINAMA
(Korčula)

Submerged
Neolithic site
in Soline
(Korčula)



Lokalitet Soline nalazi se oko 2,5 kilometara jugoistočno od grada Korčule. (Parica 2021; Parica, Radić 2022) Istraživanja iz 2022. godine druga su po redu sistematska istraživanja ovog lokaliteta. Istraživanjima iz 2021. jasno je definiran segment zidane obale koja u obliku sedmerokuta okružuje cijeli lokalitet. Na glavnu liniju obale, s vanjske strane, mjestimično se spajaju manji podzidi koji mogu biti posljedica širenja lokaliteta, ili je pak riječ o konstrukcijama koje bi mogle služiti za izvlačenje plovila.

Jasno definirana zidana obala čini granicu neolitičkog naselja prema moru, stoga je ovogodišnja kampanja bila usmjerena na istraživanje unutrašnjeg dijela naselja. Nedaleko od sonde 1 i 2 iz 2021. godine, prema unutrašnjosti nalazišta, primijećena je depresija koja, u odnosu na okolno područje, nije imala kamenja po površini. Sonde 3 i 4 postavljene su u prostor površinski vidljive depresije, odnosno prostora koji je okružen većom koncentracijom kamena koja je desetak centimetara viša u odnosu na pješčanu površinu u sredini.

Istraživani prostor pokazao je znatno drukčiju strukturu u odnosu na ostale dijelove lokaliteta. Deponirani sloj sastoji se većinom od mulja i drvenih grana, iverja, te komadića ugljena. Na nekim mjestima primijećena je i koncentracija biljnih vlakana nalik na sijeno. Na nekoliko nivoa vide se i urušenja pločastog kamena od okolnih

The site of Soline is located about 2.5 kilometers southeast of the town of Korčula. (Parica 2021; Parica, Radić 2022) The 2022 excavation is the second campaign of the systematic research of this site. The excavations of 2021 clearly defined the segment of the seawall that surrounds the entire site in the form of a heptagon. The main line of the seawall, on the outside, is joined in places by smaller retaining walls that may be the result of the expansion of the site, or they may be structures used to pull out vessels.

A clearly defined seawall forms the border of the Neolithic settlement towards the sea, therefore this year's campaign was focused on investigating the inner part of the settlement. Not far from trenches 1 and 2 opened in 2021, towards the inner part of the site, a depression without stones on the surface was noticed, standing out in the surrounding area. Trenches 3 and 4 were placed in the area of the depression visible on the surface, that is, the area surrounded by a higher concentration of stone that is ten centimeters higher than the sandy surface in the middle.

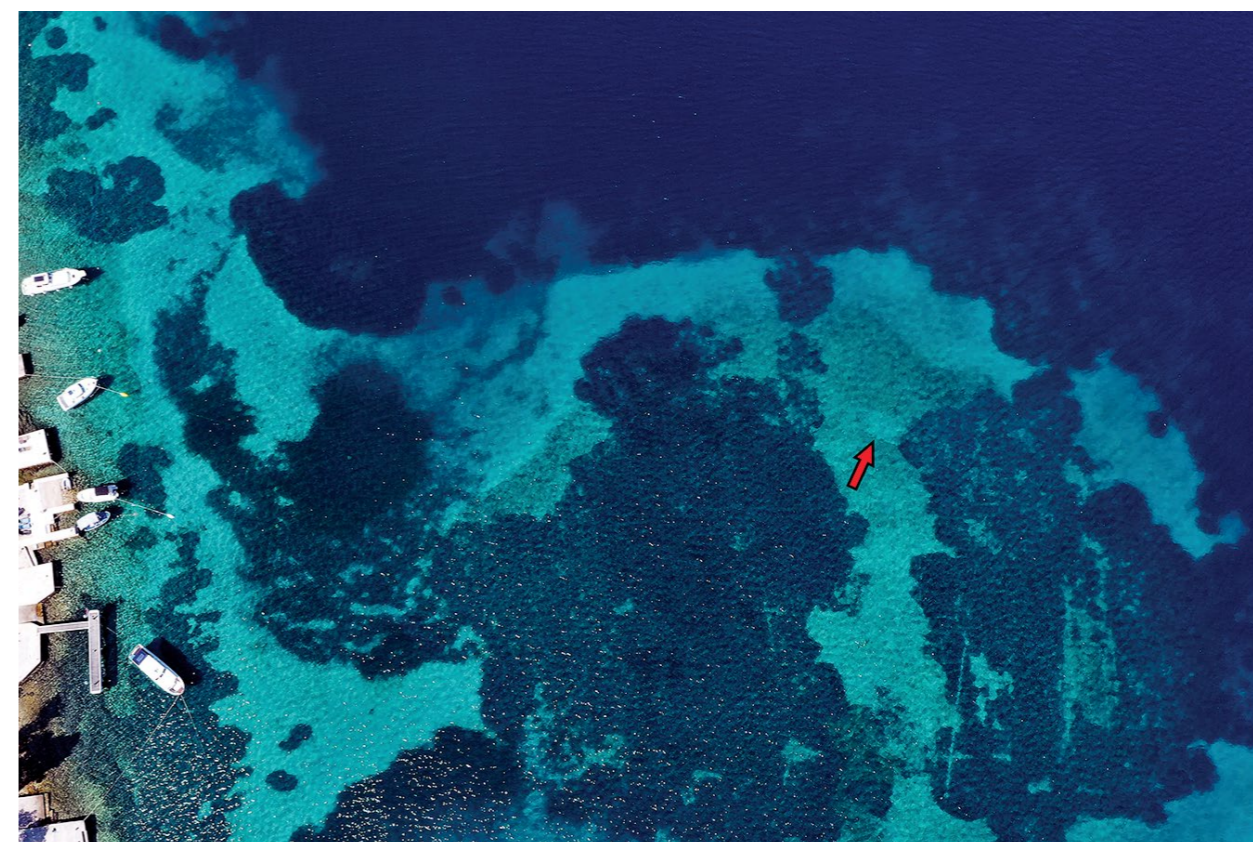
The investigated area showed a significantly different structure compared to other parts of the site. The deposited layer consists mostly of silt and wood branches, splinters, and pieces of coal. A concentration of plant fibers similar to hay was observed in some places. On several levels, one can



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Podvodna fotografija obalnog zida istraženog 2021. godine (foto: E. Visković)
Underwater photo of the seawall explored in 2021 (photo: E. Visković)



Zona bez površinskog kamena vidljiva na zračnoj snimci (foto: B. Kačan)
Zone without surface stones visible on an aerial photo (photo: B. Kačan)



Površinski dio sonde 4 (foto: M. Parica)
Surface part of trench 4 (photo: M. Parica)





Mogući ostatci balastnog kamena (foto: M. Parica)
Possible remains of ballast stone (photo: M. Parica)



Dio bioarheoloških ostataka (foto: Š. Vrkić)
Some of bioarchaeological remains (photo: Š. Vrkić)

konstrukcija. Unutar sloja se nalazila i veća količina keramičkih oblika čiji ukrasi dokazuju vrijeme kasneolitičke hvarske kulture, zatim kremena sječiva i vrhovi kremenih strelica. Osim toga pronađene su i fino obrađene koštane alatke. Od bioarheološkog materijala pronađene su životinjske kosti, te brojne ljušture badema, te tek tri koštice masline.

Površina dna u sondama 3 i 4 nalazila se na 4,1 metar ispod današnje morske razine. Na dnu sonde 3 i 4, oko 140 centimetara dublje od površine dna, nalazi se živa stijena, kamen i veliki kameni oblutci. Ovdje je riječ o izvornom dnu pličine na kojoj je izgrađeno neolitičko naselje. Istraživanje spomenute depresije ostavilo je brojne upitnike u organizaciji naseobinskog prostora neolitičkog nalazišta. Prije svega ne može biti riječ o objektu, jer bi njegovo dno bilo ispod tadašnje morske razine. Deponiranje slojeva u sondama 3 i 4 pokazuje jednu fazu, odnosno izgleda da je za vrijeme funkcioniranja naselja spomenuta depresija bila prazna, poput bazena unutar naselja. Prestankom života na naselju i podizanjem morske razine, more je s površine naselja zapunjavalo prazni prostor arheološkim materijalom, a djelomično i kamenim pločama s okolnih objekata. Južno od istraživane

see the collapse of flat stone from the surrounding constructions. Inside the layer there was also a large amount of ceramic forms whose decorations indicate the time of the Late Neolithic Hvar culture. There were also flint blades and flint arrowheads, and finely worked bone tools. Bioarchaeological material comprised animal bones, numerous almond shells, and only three olive pits.

The bottom surface in trenches 3 and 4 was 4.1 meters below today's sea level. Bedrock, stone and large stone pebbles are found at the bottom of trenches 3 and 4, about 140 centimeters deeper than the surface of the bottom. This is the original bottom of the shoal on which the Neolithic settlement was built. Investigation of the mentioned depression left many open questions about the organization of the settlement area of the Neolithic site. First of all, it cannot be a dwelling because its bottom would have been below the sea level at the time. The deposition of the layers in trenches 3 and 4 shows one phase, that is, it seems that while the settlement was functional, the mentioned depression was empty, like a pool inside the settlement. With the end of life in the settlement and sea level rise, the sea kept filling the empty space from the surface of the settlement with archaeological mate-



površine primjećuju se oblutci većih dimenzija od importiranog kamena koji mogu pripadati balastnom kamenju.

Pretpostavka je da je sav bioarheološki materijal istovremen s neolitičkim naseljem, no, naravno, potrebna je doza opreza sve dok se radiokarbonskom metodom ne datiraju ljušture badema i maslina. Jedan uzorak drvenaste strukture pronađen u prošlogodišnjoj kampanji radiokarbonski je datiran te je pokazao starost od 4938 do 4778 kal. god. prije Krista (90,4 %), što odgovara pronađenim keramičkim oblicima hvarske kulture.

rial, and partly with stone slabs from the surrounding buildings. Imported stone pebbles of larger dimensions, possibly belonging to ballast stones can be noticed to the south of the investigated area.

The assumption is that all bioarchaeological material is synchronous with the Neolithic settlement, but caution is necessary until olive pits and almond shells are dated using the radiocarbon method. Radiocarbon dating of one sample of a wooden structure found in last year's campaign offered a time frame between 4938 and 4778 cal. BC (90.4 %), which corresponds to the recovered ceramic forms of the Hvar culture.

ZAŠTITNO ARHEOLOŠKO ISKOPAVANJE U STINICI

Archaeological rescue excavations in Stinica

Tijekom svibnja 2022. godine provedeno je zaštitno arheološko istraživanje u luci u Stinici na k. č. 2342, k. o. Stinica. Istraživanje je provedeno na području izgradnje tipskog sanitarnog čvora u luci. Budući da su građevinski radovi planirani na području gdje je već prije dokumentiran antički kulturni sloj, glavni cilj ovog iskopavanja bio je istražiti i dokumentirati sve arheološki bitne slojeve i strukture koji će biti zahvaćeni građevinskim radovima. Veličinu sonde od 2,2 x 2,7 m diktirao je opseg građevinskog zahvata.

Tijekom istraživanja dokumentirano je ukupno šest slojeva. Svi depoziti koji su dokumentirani do 1,5 m dubine su recentni slojevi šute koji su nastali nasipavanjem obalnog pojasa i luke u današnjoj Stinici. Kulturni, arheološki sloj definiran je na dubini od 1,5 m. Sloj se sastoji od tamnosmeđe zemlje s dosta amorfnog kamena do 20 cm veličine. Sadrži i veliku količinu antičke keramike među kojom prevladavaju građevna keramika i ulomci amfora. Keramika je izrazito fragmentirana te u dosta lošem stanju. Naime, zbog blizine mora, morska voda koja se tijekom plime diže, izgrizla je površinu keramike zbog čega većini ulomaka nije moguće definirati tip. Ipak, izdvojeni su pojedini dijagnostički ulomci te je dokumentirana prisutnost sigilate 1. i 2. stoljeća (italska, istočna, afrička i kasnocarska) (Šimić, Kanaet 2010:

Archaeological rescue excavations were conducted in the port of Stinica at cadastral plot 2342, of the cadastral municipality Stinica in May 2022. The excavation was conducted in the area of the construction of toilet facilities in the port. Since the construction works were planned in an area where a cultural layer dating to antiquity has already been documented, the main goal of this excavation was to investigate and document all archaeologically relevant layers and structures that will be affected by the construction works. The size of the trench of 2.2 x 2.7 m was dictated by the scope of the construction project.

A total of six layers were documented during the excavations. All deposits documented up to a depth of 1.5 m were recent layers of rubble resulting from filling of the coastal belt and port

in today's Stinica. The cultural, archaeological layer was defined at a depth of 1.5 m. The layer consists of dark brown earth with a lot of amorphous stones up to 20 cm in size. It also contains a large amount of pottery dating to antiquity, dominated by ceramic building material and fragments of amphorae. The pottery is extremely fragmented and in a rather poor condition. Namely, because of the proximity to the sea, the sea water that rises during the tide has eroded the pottery surface, which is why it is not possible to define the type of most of the sherds. However, some diagnostic sherds were singled out. The pres-



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15, 26, 27), zatim ulomak vjerojatno crikveničke amfore (Lipovac Vrkljan 2017) te amfore Dressel 2-4 (Peacock, Williams 1986) što uglavnom korespondira i s rezultatima ranijih podvodnih istraživanja (Miholjek, Stojević 2012). Tijekom iskopavanja nisu pronađene druge vrste arheološkog mate-



... Pozicija sonde u luci u Stinici (foto: V. Glavaš)
 ... The trench position in the port of Stinica (photo: V. Glavaš)

rijala. S obzirom na sadržaj sloja, vjerojatno je riječ o otpadnom ili nivelacijskom sloju. Međutim, površina istraživanja od svega 5,94 m² premala je da bi se to moglo sa sigurnošću tvrditi. Sloj leži na živoj stijeni koja se nalazi na 2 m dubine. Živa stijena je vlažna zbog blizine mora.

Istraživanje u Stinici je pokazalo da se i na ovom području rasprostire kulturni sloj koji se povezuje s razdobljem antičke Ortople (Zaninović 1984: 37)

ence of *terra sigillata* dating to the 1st and 2nd century (Italian, Eastern, African and Late Imperial) was documented (Šimić, Kanaet 2010: 15, 26, 27), as well as a fragment of an amphora probably from Crikvenica (Lipovac Vrkljan 2017) and a sherd of a Dressel 2-4 amphora (Peacock, Williams 1986), cor-

responding largely to the results of earlier underwater research (Miholjek, Stojević 2012). Other types of archaeological material have not been found during the excavation. Considering the content of the layer, it is probably a waste or leveling layer. However, the excavation area of only 5.94 m² is too small to state that with certainty. The layer lies on the bedrock located at a depth of 2 m. The bedrock is damp due to its proximity to the sea.



... Antički sloj SJ5 (foto: V. Glavaš)
 ... Roman-era layer SU5 (photo: V. Glavaš)



... Pogled na južni profil sonde (foto: V. Glavaš)
 ... View of the southern profile of the trench (photo: V. Glavaš)

te u budućnosti nikakvi građevinski radovi ne bi smjeli biti provedeni bez arheološkog nadzora ili zaštitnih arheoloških istraživanja.

The excavations in Stinica have shown that a cultural layer associated with the period of ancient Ortoplea extends in this area as well (Zaninović 1984: 37), and in the future no construction work should be carried out without archaeological supervision or archaeological rescue excavations.

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An underwater photograph of a shipwreck site. The scene is dimly lit with a blue tint. In the foreground, there are large, dark, rectangular objects, possibly parts of the ship's structure or equipment. In the background, several divers are visible, some with their heads and shoulders above water, and others further down. The water is slightly murky, and there are bubbles rising from the divers. The overall atmosphere is somber and historical.

TESTIRANJE OPREME NA NOVOVJEKOVNOM BRODOLOMU OTOČAC

Testing of the
equipment on
the modern era
shipwreck at Otočac



Novovjekovni brodolom nalazi se na južnom dijelu otoka Korčule, na granici mjesta Prižba i Brna, na udaljenosti 90 metara od obale. Nazvan Otočac, prema obližnjem otočiću, brodolom zanimljivog sastava tereta – a još uvijek neistražen – poslužio je kao idealna lokacija za testiranje opreme za elektrokemiju i vizualnu dijagnostiku, s ciljem analize odabranih mikrolokacija te nadopune dokumentacije postojećeg stanja. Nalazište je 1983. godine otkrio Miha Matulj, koralar iz Slovenije koji je informaciju o postojanju lokaliteta dobio od lokalnih ribara. Nakon prvih inspekcijskih pregleda 2003. i 2006. godine, provedenih pod vodstvom Domagoja Perkića iz Uprave za zaštitu kulturne baštine Konzervatorskog odjela u Dubrovniku, nad nalazištem je postavljena trajna zaštita (Perkić 2003; 2006). Pregledi i dokumentacija postojećeg stanja obavljani su i pod vodstvom Odjela za arheologiju Hrvatskog restauratorskog zavoda (Radić Rossi 2005; Miholjek 2016) i Instituta ARS NAUTICA (2019).

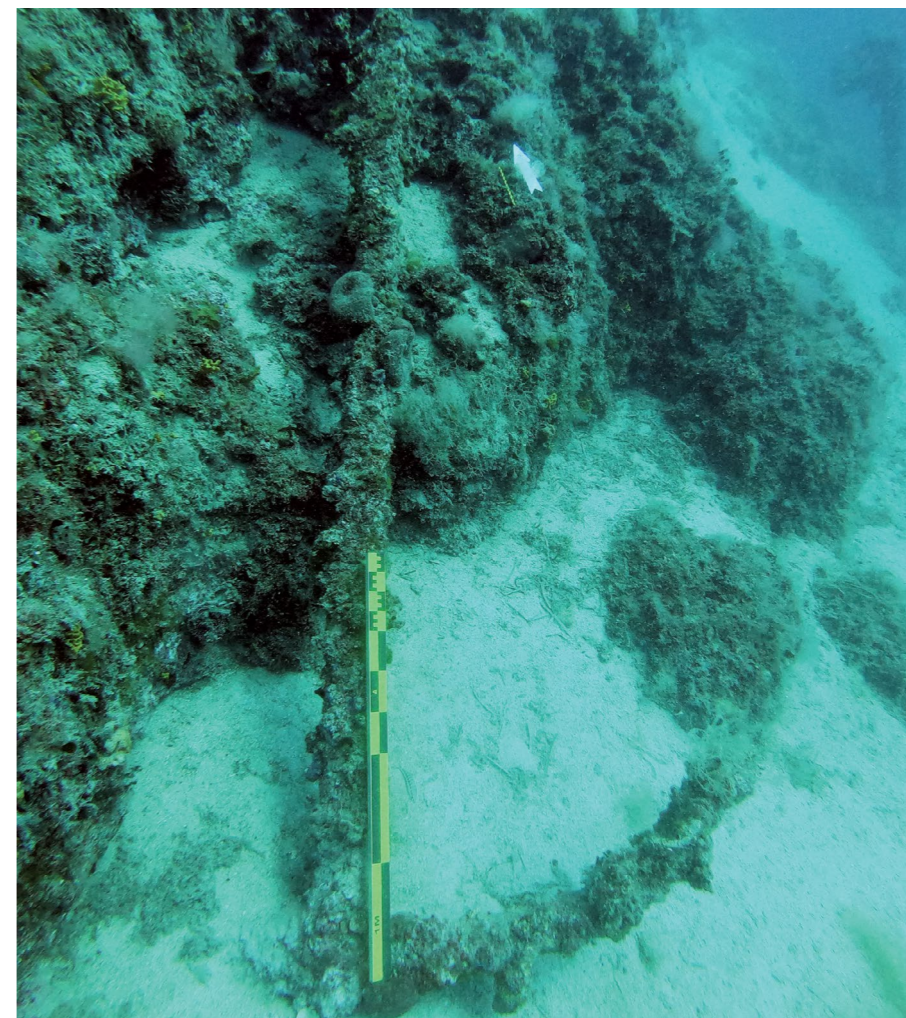
Glavnina tereta i potonuli brod nalaze se na dubini od 20 do 27 metara, na površini od otprilike 200 m². Inventar broskog tereta uključuje željezne korodirane bačve, namotaje željezne žice, željezne

A modern era shipwreck is located on the southern part of the island of Korčula, on the border of Prižba and Brna, at a distance of 90 meters from the coast. This still unexplored shipwreck named Otočac, after the nearby islet, with an interesting cargo, served as an ideal location for testing the equipment for electrochemistry and visual diagnostics, with the objective of analyzing selected micro-locations and supplementing the documentation of the current condition. The site

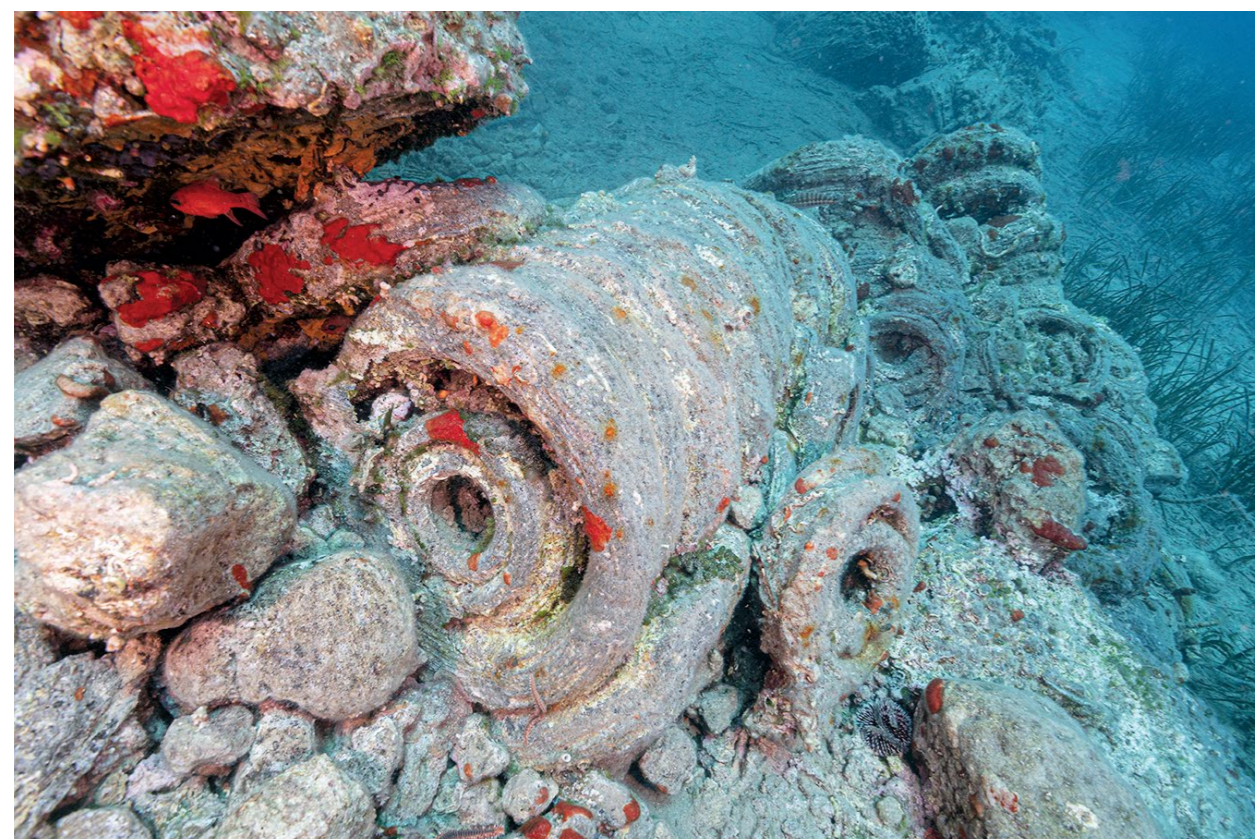

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was discovered in 1983 by Miha Matulj, a coral diver from Slovenia who was informed about the site's existence by local fishermen. After the first surveys in 2003 and 2006, led by Domagoj Perkić from the Administration for the Protection of Cultural Heritage of the Conservation Department in Dubrovnik, the site was permanently protected (Perkić 2003; 2006). Surveys and documenting of the current state were also carried out under the auspices of the Department of Archeology of the Croatian Restoration Institute (Radić Rossi 2005; Miholjek 2016) and the ARS NAUTICA Institute (2019).

The bulk of the cargo and the sunken ship are located at a depth of 20 to 27 meters, in an area of approximately 200 m². The ship's cargo inventory



Jedno od dva željezna sidra očuvana na udaljenosti od 500 m zračne linije jugozapadno od lokaliteta (foto: A. Kiss)
One of two iron anchors preserved southwest of the site at a distance of 500 m in a straight line (photo: A. Kiss)



Namotaji željeznih žica čine glavninu tereta potonulog broda (foto: A. Kiss)
Coils of iron wires make up the bulk of the cargo of the sunken ship (photo: A. Kiss)

šipke, listove lijevanog stakla u četvrtastim kutijama, nepoznate korodirane metalne predmete te grumene žute sirovine (vjerojatno arsenov sulfid – realgar ili pararealgar). Pojedini željezni metalni predmeti korodirali su do neprepoznatljivosti. Na zapadnom dijelu nalazišta iz pijeska izviruje stražnji dio topa, dok su na središnjem dijelu nalazišta, ispod glavne nakupine korodiranih bačava, vidljivi elementi drvene brodske konstrukcije. Na 500 metara jugoistočno od brodoloma, nalaze se još dva sidra visine oko 3 i 4 metra, no nesigurno je pripadaju li navedenom brodu.

ISTRAŽIVAČKA KAMPANJA U 2022. GODINI

Projekt *Primjena i potencijali nedestruktivnih metoda arheoloških istraživanja na primjeru novovjekovnog brodoloma Otočac na Korčuli* pota-

includes corroded iron barrels, coils of iron wire, iron bars, sheets of cast glass in square boxes, undetermined corroded metal objects, and lumps of yellow raw material (probably arsenic sulfide - realgar or pararealgar). Certain iron metal objects corroded beyond recognition. In the western part of the site, the rear part of a cannon protrudes from the sand, while elements of a wooden ship structure are visible in the central part of the site, under the main cluster of corroded barrels. Five hundred meters southeast of the shipwreck, there are two more anchors about 3 and 4 meters high, but it is uncertain whether they belong to the mentioned ship.

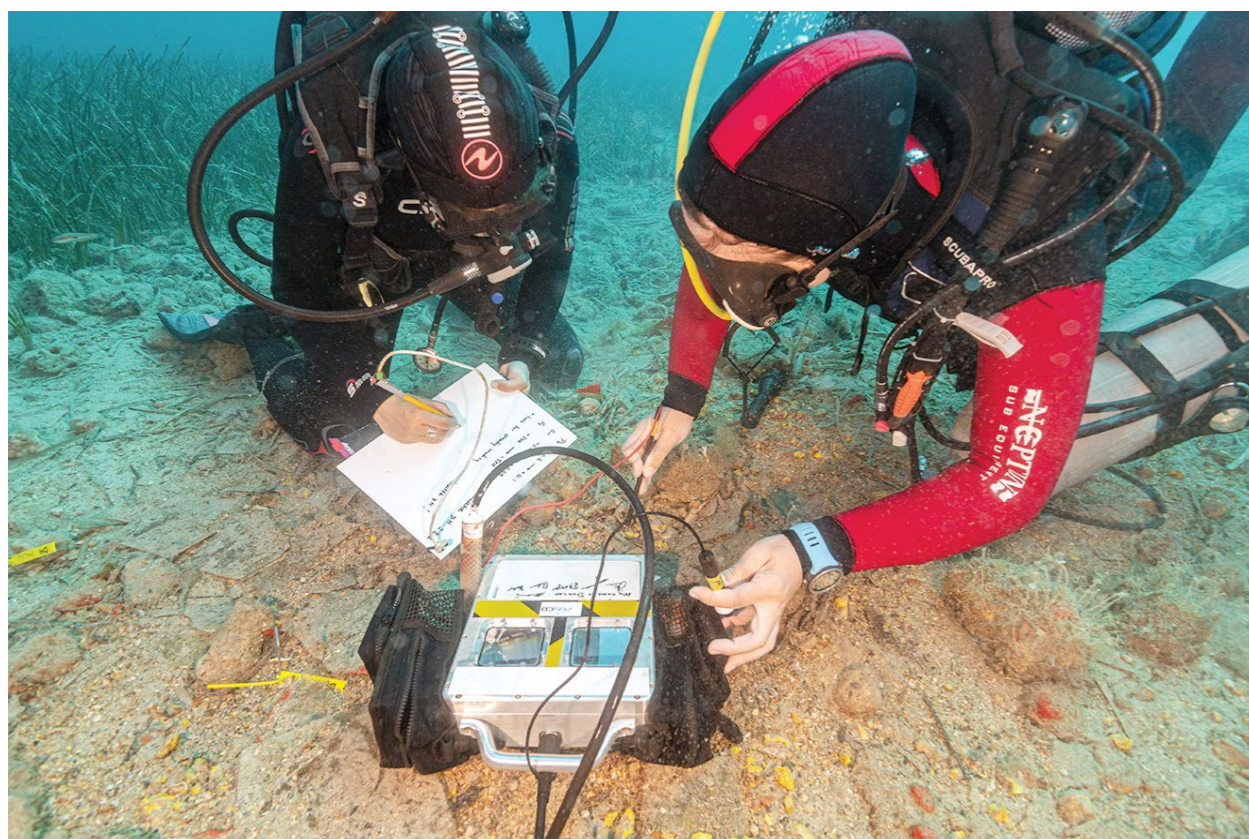
RESEARCH CAMPAIGN OF 2022

The project *Application and potential of non-destructive methods of archaeological research on the example of the post-medieval shipwreck at Otočac*





Preprava pH-metra i multimetra u podvodnom kućištu. Uređaju je dodijeljeno ime Duncan (foto: T. Davidowitz)
Preparation of a pH-meter and a multimeter in an underwater housing. The device is assigned the name Duncan (photo: T. Davidowitz)



Elektrokemijska mjerenja u podmorju (foto: A. Kiss)
Electrochemical measurements in the sea (photo: A. Kiss)

knut je idejom o prikupljanju podataka mjerenjem električnog potencijala i pH-vrijednosti te multispektralnom fotografijom. Projekt je pokrenut s ciljem testiranja nedestruktivnih, cjenovno prihvatljivih i korisniku pristupačnih metoda daljinskog istraživanja za analizu arheoloških nalazišta.

Dio projekta koji uključuje terenski rad proveden je u razdoblju od 13. do 17. lipnja 2022. godine. Za potrebe elektrokemijskih mjerenja korišteni su pH-mjerač i digitalni multimetar, smješteni u podvodnom kućištu od aluminijske legure oblikovanom po mjeri instrumenata. Za multispektralno snimanje korištene su Survey 3N kamere povezane u stereopar.

Iako je obrada podataka još uvijek u tijeku, trenutačno je ustanovljena vrsta materijala, tj. metala u sastavu brodskog tereta, debljina sloja korozije željeznih predmeta i disperzija metala u okolini na udaljenosti od 30 cm. Generirani su multispektralni indeksi i georeferencirani model nalazišta, te referentni podatci elektrokemijskih mjerenja. Podatci prikupljeni po mikrozonama od interesa obradit će se s ciljem detekcije različitih materijala na površini nalazišta.

Projekt je sufinanciran sredstvima organizacije Women Divers Hall of Fame (WDHOF Cecelia Connelly Graduate Scholarship in Underwater Archaeology), Hrvatske elektroprivrede (HEP) i Odjela za arheologiju, uz logističku potporu Ronilačkog centra Prišćapac i Međunarodnog centra za podvodnu arheologiju u Zadru.

on the island of Korčula was motivated by the idea of collecting data by measuring electrical potential, pH value and multispectral imaging. The project was launched with the aim of testing non-destructive, affordable and user-friendly remote sensing methods for the analysis of archaeological sites.

The part of the project that includes field work was carried out in the period from June 13 to 17, 2022. For the purposes of electrochemical measurements, a pH-meter and a digital multimeter were used, placed in an underwater custom-made housing made of aluminum alloy. Survey 3N cameras connected in a stereo pair were used for multispectral imaging.

Although the data processing is still ongoing, we have currently established the type of material, i.e. the metal in the composition of the ship's cargo, the thickness of the corrosion layer of the iron objects and the dispersion of the metal in the environment at a distance of 30 cm. Multispectral indices and a georeferenced model of the site were generated, as well as reference data of electrochemical measurements. Data collected in microzones of interest will be processed with the aim of detecting different materials on the surface of the site.

The project was co-financed by the Women Divers Hall of Fame (WDHOF Cecelia Connelly Graduate Scholarship in Underwater Archaeology), Hrvatska elektroprivreda (HEP) and the Department of Archaeology, with logistic support from the Prišćapac Diving Center and the International Center for Underwater Archeology in Zadar.

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PEĆINA ČELINJAK





U sklopu projekta *EpiC* Hrvatske zaklade za znanost (IP-2019-04-6115) tijekom 2022. godine nastavljena su probna istraživanja pećine Čelinjak na Dugom otoku. Pećina se nalazi s istočne strane istoimenog brda na 111 m nadmorske visine, a već na prvi pogled odaje arheološki potencijal. Lagani prilaz vodi do ulaza orijentiranog prema jugoistoku, širokog oko 20 metara koji se lako prepoznaje iako je obrastao raslinjem i pregrađen suhozidom visine 1 metra. Dalje prema unutrašnjosti špilje, na 3-4 m od ulaza, nalazi se još jedna suhozidna pregrada rustičnijeg izgleda koja je za svoju osnovu iskoristila velike kamene blokove urušene sa stropa.

Pećina se sastoji od glavne dvorane nepravilnog pravokutnog oblika u tlocrtu, najveće širine oko 22 metra i dubine oko 12 metara. Svod glavne dvorane relativno je nizak, a pod prekriven velikom količinom amorfnog kamenja. Međutim, na većini površine može se normalno stajati, dok na najvišem dijelu svod doseže i do 3 metra. Po sredini pećine nalazi se manja suhozidna konstrukcija nepravilnog pravokutnog oblika i nepoznate namjene koja zatvara prostor dimenzija 2,3 x 1,9 m.

Iz glavne prostorije, kroz uski prolaz na istočnoj stijeni, može se doći do sporednih prostorija. Ulaz širine 1,5 m prvo vodi u manju prostoriju ispunjenu velikim kamenim blokovima koji ne dopuštaju stajanje. Iz nje se može pristupiti još jednoj galeriji. Ona je veća od prethodne, ovalnog je oblika, a visina svoda dopušta stajanje na središnjim dijelovima. Na cijeloj površini pod čini matična stijena te naslage kamenja, među kojima se mogu pronaći ostatci životinjskih kostiju i ulomci keramike.

Pregled terena pokazuje da je komunikacija između unutarnjih prostorija i vanjske galerije tek u recentnije vrijeme svedena na već spomenuti uski prolaz, dok je u razdobljima prije cijeli prostor bio jedinstvena dvorana. Pa ipak, čišćenjem rubnog prostora nasipa koji se prelijeva u unutarnje prostorije pokazuje se da ni u razdobljima kada su dvije prostorije bile jedinstvena cjelina ovaj dio pećine nije bio pretjerano korišten. Nalazi se većinom nalaze na samoj površini i u kamenom nasipu, dok se ispod prostire sterilna zdravica poremećena tek ostatcima jazbina.

Početna istraživanja podrazumijevala su nekoliko manjih potpovršinskih pregleda, dok je probna

Trial excavations of Čelinjak cave on Dugi otok continued in 2022 within the *EpiC* project of the Croatian Science Foundation (IP-2019-04-6115). The cave is located on the eastern side of the hill of the same name at an altitude of 111 meters above sea level, and already at first glance it reveals its archaeological potential. An easy access leads to an entrance oriented towards the southeast, about 20 meters wide, which is easily recognizable even though it is overgrown with vegetation and blocked by a 1-meter-high dry-stone wall. Further towards the interior of the cave, 3-4 m from the entrance, there is another dry-stone wall partition of a more rustic appearance, which used large stone blocks collapsed from the ceiling as its base.

The cave consists of a main hall of irregular rectangular shape, with the largest width of about 22 meters and a depth of about 12 meters. The vault of the main hall is relatively low, and the floor is covered with a large amount of amorphous stones. However, one can stand upright on most of the surface, while in the highest part the vault reaches up to 3 meters. In the middle of the cave is a smaller dry-stone wall construction of irregular rectangular shape and unknown purpose, which encloses an area measuring

2.3 x 1.9 m. From the main room, through a narrow passage on the eastern rock, one can reach the side rooms. The 1.5 m wide entrance first leads to a smaller room filled with large stone blocks that do not allow standing. Another gallery can be accessed from it. It is larger than the previous one, oval in shape, and the height of the vault allows standing in the central parts. Remains of animal bones and pottery sherds can be found on the floor that consists of bedrock and stone deposits on the entire surface.

Field survey has shown that the communication between the inner rooms and the outer gallery was reduced to the aforementioned narrow passage only in recent times, while in earlier periods the entire space was a single hall. And yet, by cleaning the marginal area of the filling that overflows into the inner rooms, it is revealed that even in the periods when the two rooms were a single unit, this part of the cave was not intensively used. The artifacts are mostly found on the



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Dokumentarist u akciji (foto: K. Crnović)
Documentalist at work (photo: K. Crnović)

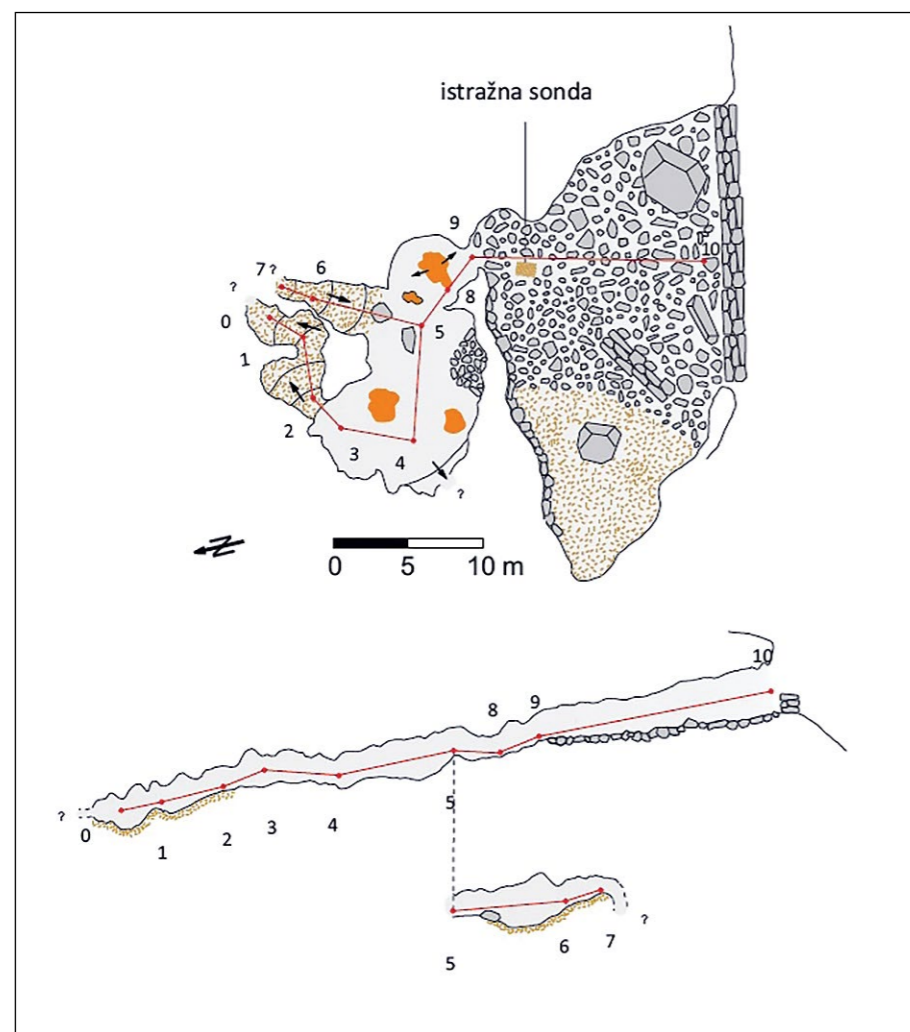




Ulaz u pećinu (foto: K. Crnović)
Cave entrance (photo: K. Crnović)



Potruga za blagom (foto: K. Crnović)
Treasure hunt (photo: K. Crnović)



Tlocrt i presjek pećine (prema: N. Kuharić)
Ground plan and cross section of the cave (after: N. Kuharić)

sonda veličine 1,5 x 1 m postavljena na istočnom dijelu pećine, nekoliko metara od ulaza u spomenutu bočnu galeriju. Na vrhu sonde nalazilo se recenno vatrište, dok se ispod njega, do dubine od oko 30 cm, nalazio sloj rahle smeđe zemlje s primjesama gareži i sitnog amorfnog kamenja. U njemu je pronađena veća količina kostiju domaćih životinja, te ulomci keramike izrađene na lončarskom kolu, tamnih, gotovo crnih stijenki i S-profila s kratkim vratom. Jedan od pronađenih ulomaka ukrašen je valovnicom ukolo koje je prostor šrafiran kosim linijama. Na temelju tehnološko-tipoloških karakteristika i ukrasa na keramičkom materijalu, ovaj sloj moguće je datirati u kasni srednji ili rani novi vijek.

Sljedeća faza također je odijeljena ostatcima vatrišta od kojeg započinje sloj smeđe zemlje s primjesama gareži, koji ide do dubine od 70 cm. Nalazi u njemu pokazuju drukčije odlike od prethodnog prije svega u pogledu keramike. Manji broj dijagnostičkog materijala otežava dataciju, ali ulomak sjevernoafričke amfore i ulomak s ukrasom

surface and in the stone filling, while below lies a sterile bedrock disturbed only by the remains of burrows.

The next phase is also separated by the remains of the hearth, wherefrom begins a layer of brown earth with inclusions of soot, which reaches a depth of 70 cm. The finds in it show different characteristics from the previous ones, primarily in terms of pottery. The small number of diagnostic finds aggravates dating, but a sherd of a North African amphora and a fragment with wavy-line decoration suggest Late Antiquity.

The last level is separated from the previous ones by a thin layer of flowstone, under which there is a layer of gray-brown soil with some soot. In it, we still come across bones of domestic animals (sheep/goat), shells and snails (limpets and periwinkles), but the pottery finds are of older provenance. Fragments of pottery with coarser fabric, S-profile with vertically placed handles can

valovnice upućuju na razdoblje kasne antike.

Posljednja razina odijeljena je od prethodnih tankim slojem sigovine ispod koje se nalazi sloj si-vo-smeđe zemlje s malo primjesa gareži. U njemu i dalje nailazimo na kosti domaćih životinja (ovca/koza), školjke i puževe (priljepci i ogrci), no nalazi keramike starije su provenijencije. Ulomke keramike grublje fature, S-profila s vertikalno postavljenim ručkama prema dijagnostičkim karakteristikama moguće je okvirno datirati u brončano doba.

Kulturna slika dobivena iz probne sonde u potpunosti odgovara nalazima prikupljenim na površini ili u nasipima uz rub pećine.

be roughly dated to the Bronze Age according to diagnostic characteristics.

The cultural image obtained from the trench fully corresponds to the finds collected on the surface or in the fillings along the edge of the cave.



KOZJA PEĆ





Nakon nekoliko kratkih probnih kampanja kojima je cilj bio utvrditi arheološki potencijal, tijekom 2022. godine započela su sustavna iskopavanja Kozje peći na Dugom otoku. Pećina se nalazi na sredini otoka na visini od oko 200 m nad morem, otprilike kilometar sjeverozapadno od ulaza u radarsku postaju na Veljoj straži. Iskopavanja su obavljena u sklopu projekta *EpiC* Hrvatske zaklade za znanost (IP-2019-04-6115).

Kozja peć je jednostavan, ali velik speleološki objekt nastao urušavanjem stropa velike podzemne dvorane koje je otkrilo prostoriju ovalnog oblika dugu oko 40 m. Tek se uz rubove, prije svega južni i istočni rub, sačuvao dio originalne kalote, dok njezine ostatke pronalazimo rasute na gotovo cijeloj površini. Ulaz u dvoranu moguć je s jugozapadne strane, dok je s ostalih onemogućen visokim stijenama.

Površina dvorane prekrivena je slojem amorfne kamena, a tek je južni rub nešto čišći. Na tom se mjestu na zidu pećine primjećuju tragovi paljenja vatre što pokazuje da su aktivnosti bile usmjerene na ovaj dio, što je pak moglo utjecati na to da se držao relativno čistim. Jedini prostor u

Systematic excavations of Kozja peć on the island of Dugi otok began in 2022, after several short trial excavation campaigns aimed at determining its archaeological potential. The cave is located in the middle of the island at a height of about 200 meters above sea level, about a kilometer northwest of the entrance to the radar station on Vela straža. The excavations were carried out as part of the *EpiC* project of the Croatian Science Foundation (IP-2019-04-6115).



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Kozja peć is a simple but large speleological feature created by the collapse of the ceiling of a large underground hall, which revealed an oval-shaped room about 40 m long. A part of the original calotte has been preserved only along the edges, primarily the southern and eastern edge, while calotte remains are found scattered over most of the interior. The entrance to the hall is possible from the southwestern side, while it is blocked from the other sides by high rocks.

The surface of the hall is covered with a layer of amorphous stones, and only the southern edge is somewhat cleaner. In that place, traces of fire can be seen on the wall of the cave, suggesting that

pećini lišen nanosa amornog kamena odredio je i poziciju za probnu sondu, kao i za kasnija sustavna iskopavanja.

Probna iskopavanja rezultirala su skoro 4 m debelim depozitom u kojem se izmjenjuju svega nekoliko centimetara tanki slojevi paljevine, sivog praškastog sedimenta i žute pjeskovite zemlje. Povremeno su se među njima nalazili i slojevi smeđeg kompaktnijeg depozita u kojima je pronađena i većina pokretnog kulturnog materijala. Izmjena sterilnih slojeva s kulturnim depozitima upućuje na izmjenu prirodnih procesa poput erozije i djelovanja vode s antropogenim aktivnostima poput čišćenja i paljenja organskog materijala.

Iako su potrebne dodatne analize sedimenta, na osnovi makroskopskog uvida moguće je napraviti paralelu s depozitima iz Pupićine peći u Istri gdje su facijesi tzv. „slojevitih torta“, sličnog makroskopskog izgleda i sastava interpretirani kao posljedica cikličkog spaljivanja stajskog otpada (Boschian 2006: 157). Ovakva sedimentologija slojeva, uz nalaze kostiju ovikaprda, govori u prilog sezonskom korištenju Kozje peći za držanje stada ovaca i koza.

Različite slojeve prati i kulturni materijal koji upućuje na korištenje pećine od kasnog neolitika/

activities were focused on this part, which could have influenced the fact that it was kept relatively clean. The only space in the cave devoid of deposits of amorphous stones also determined the position of the trench, as well as the subsequent systematic excavations.

Only a few centimeters thin layers of soot, gray powdery sediment and yellow sandy soil alternate in the nearly 4 meters thick deposit uncovered in the trial excavations. From time to time, layers of brown, more compact deposits were also found among them, in which most of the small finds were found. Alteration of sterile layers with cultural deposits indicates the alteration of natural processes such as erosion and water action with anthropogenic activities such as cleaning and burning of organic material.

Although additional analyses of the sediments are needed, on the basis of macroscopic inspection it is possible to draw a parallel with the deposits from Pupićina peć in Istria, where the facies of the so-called “layer-cakes”, with a similar macroscopic appearance and composition, were interpreted as a consequence of the cyclic burning of stable waste (Boschian 2006: 157). This sedimentology of the layers, together with the finds of ovicaprid bones, supports the seasonal use of Kozja peć for



⋮ Sonda B (foto: M. Bodružić)
⋮ Trench B (photo: M. Bodružić)



⋮ Čišćenje podnice (foto: M. Bodružić)
⋮ Cleaning the floor (photo: M. Bodružić)





Antički objekt (foto: M. Bodružić)
Roman-era structure (photo: M. Bodružić)



Arheološki profil (foto: M. Bodružić)
Archaeological profile (photo: M. Bodružić)



Brončana kopča (foto: K. Crnović)
Bronze buckle (photo: K. Crnović)

ranog eneolitika. Nisu isključena niti starija razdoblja jer su probna iskopavanja zaustavljena na dubini od 3,8 m, ne zbog pojave zdravice ili matične stijene nego zbog smanjenog prostora za iskopavanje.

Bogat kulturni depozit, uz mnoštvo slojeva s prepoznatljivim nalazima, te činjenica da kulturni slojevi idu i ispod razine istražene tijekom probnih iskopavanja, zahtijevao je nastavak istraživanja i prelazak na sustavna iskopavanja. Ona se trenutno izvode na prostoru od 20 m² što bi trebalo biti dovoljno za neometan rad na dubljim slojevima.

Iskopavanjem je definirano 12 razina hodnih površina koje pokazuju kulturnu sliku kakvu smo vidjeli u probnoj sondi. Jedino nalaza kasnog srednjeg ili novog vijeka gotovo da i nema, nego se gotovo od početka počinju pojavljivati nalazi s karakteristikama antičkog razdoblja.

Na dubini od 40 cm pronađeni su ostatci suhozidnog objekta, identičnog dvama čiji se obrisi i

keeping herds of sheep and goats.

The different layers are accompanied by cultural material suggesting that the cave was used from the late Neolithic/early Eneolithic. Older periods are not excluded either, because the trial excavations were stopped at a depth of 3.8 m, not because of the appearance of the matrix soil or bedrock but because of the reduced space for excavation.

A rich cultural deposit, along with many layers with recognizable finds, and the fact that the cultural layers go below the level explored during the trial excavations, required the continuation of research and the transition to systematic excavations. They are currently carried out in an area of 20 m², which should be enough for undisturbed work on deeper layers.

The excavation defined 12 levels of walking surfaces that show the cultural image recorded in the trench. Only medieval and post-medieval finds are almost completely lacking, but finds with the characteristics of Roman period start to appear almost from the beginning.





danas vide prislonjeni uz južni zid pećine na dijelu bliže ulazu. Riječ je o kutu objekta koji je građen u suhozidnoj tehnici s dva lica od krupnijeg kamenja i ispunom od sitnog kamenja. Prekid uz južnu stijenju pećine otkriva ulaz, dodatno naglašen velikim kamenim blokom. Stratigrafija i kulturni materijal u slojevima uokolo upućuju na antičku provenijenciju objekta, a ona je dodatno potvrđena datiranjem uzorka ugljena iz njegove podnice. Datum kronološki smješta ovaj objekt u razdoblje 2. i početka 3. st. po Kr. (1870 +/-30 BP, 2S 116 - 239 cal AD/84-96 cal AD; Beta-634031).

Antička faza zaokružena je slojevima na kojima objekt leži, među kojima se posebno ističe debeli sloj pepela nastao pod utjecajem velikog vatrišta čiji je dio istražen već u probnoj sondi. Datumi dobiveni za ovo vatrište odlično se uklapaju u one dobivene datiranjem objekta ili keramičkog materijala i pokazuju da je vatrište nastalo na prelasku era (Beta-634032, 2060 +/-30 BP, 2S 162 cal BC - 17 cal AD). U ovim slojevima primjetno je i povećanje broja nalaza grube keramike s prapovijesnim karakteristikama koji nagoviještaju slijed prapovijesnih slojeva ispod, no oni će pričekati sljedeću kampanju istraživanja.

At a depth of 40 cm, the remains of a dry-stone wall building were found, identical to the two whose outlines can still be seen leaning against the southern wall of the cave in the part closer to the entrance. It is the corner of the building, which was built in the dry-stone wall technique with two faces of larger stones and an infill of small stones. A break along the southern rock of the cave reveals the entrance, additionally emphasized by a large stone block. The stratigraphy and cultural material in the surrounding layers suggest Roman-era provenance of the building, which was additionally confirmed by the dating of a charcoal sample from its floor. The date chronologically places this building in the period of the 2nd and the beginning of the 3rd century AD (1870 +/-30 BP, 2S 116 - 239 cal AD/84-96 cal AD; Beta-634031).

The Roman-era phase also encompasses the layers on which the structure lies, with especially prominent thick layer of ash formed by a large hearth, part of which has already been explored in the trench. The dates obtained for this hearth correspond well to those obtained by dating the building or ceramic finds and show that the hearth was formed at the transition of eras (Beta-634032, 2060 +/-30 BP, 2S 162 cal BC - 17 cal AD). In these layers, there is also an increase in the number of finds of coarse pottery with prehistoric characteristics that suggest the sequence of prehistoric layers below, but they will have to wait for the next research campaign.

ZAŠTITNA ARHEOLOŠKA ISTRAŽIVANJA U SEGETU DONJEM

Archaeological rescue excavations in Seget Donji

UVOD

U sklopu pripremnih radova za uređenje dijela obale istočno od marine Baotić u naselju Segetu Donjem, Sveučilište u Zadru, Odjel za arheologiju i tvrtka Stratum d. o. o. proveli su zaštitna arheološka istraživanja s ciljem utvrđivanja postojanja eventualnih arheoloških ostataka na spomenutom području. Kopnena i podmorska arheološka istraživanja provedena su u razdoblju od 27. lipnja do 6. srpnja 2022. godine, voditelj zaštitnih arheoloških istraživanja bio je Mate Parica, a zamjenica voditelja Aleksandra Matura.

Na zapadnom rubu trogirskog Malog polja okruženog brdima Svetim Ilijom, Vlaškom, Plećem i Krbanom, zapadno od grada Trogira, smješteno je naselje Seget. Trogirsko Malo polje, uključujući i današnje naselje Seget, sadrži brojna arheološka svjedočanstva o životu na ovom prostoru još od antičkog razdoblja kao što su, primjerice, ostatci rimskih komunikacija (Koprivnjak 2019: 238; Babić 2014: 26), vila rustika, grobnica i crkava (Bulić 1914: 98–102; Jeličić 1981: 97–98; Babić 1991: 53). Također, u okolišu crkve Gospe od Konacvina, na

INTRODUCTION

Within the preparatory works for the development of the part of the coast east of the Baotić marina in Seget Donji, the University of Zadar, the Department of Archeology and the Stratum d. o. o. company carried out archaeological rescue excavations with the aim of determining the presence of possible archaeological remains in the mentioned area. Both land and underwater archaeological excavations were carried out in the period from June 27 to July 6, 2022. Mate Parica led archaeological rescue excavations, and Aleksandra Matura was the deputy.

The village of Seget is situated on the western edge of Malo Polje in Trogir, surrounded by hills Sveti Ilija, Vlaška, Pleć and Krban, west of the town of Trogir. Malo Polje in Trogir, including present-day Seget, contains numerous archaeological evidence of life in this area since antiquity, such as, for example, remains of Roman communication routes (Koprivnjak 2019: 238; Babić 2014: 26), as well as of *villae rusticae*, tombs and churches (Bulić 1914: 98–102; Jeličić 1981: 97–98; Babić 1991:



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- Satelitska snimka s označenim sondama (izradili: A. Matura, D. Žanić, izvor: Geoportal)
- Satellite image with marked trenches (made by A. Matura, D. Žanić, source: Geoportal)

prostoru današnjeg segetskog groblja pronađen je nalaz posvećen božici Magna Mater, a s istog područja potječu i nalazi kamenih urni s poklopcem unutar kojih su bile položene staklene urne kao i drugi stakleni, keramički i metalni inventar (Jeličić 1981: 97; Slade Šilović 1950–1951: 268; Babić 2014: 71).

ZAŠTITNA ARHEOLOŠKA ISTRAŽIVANJA NA KOPNU

Na kopnenom dijelu, istočno od marine Baotić, istražene su tri sonde. Sonda 1 i 3 dimenzija su 4 x 4 metra, dok sonda 2 predstavlja čišćenje kamenog podzida u dužini od oko 4,3 m i širine između 0,4 i 0,6 m. Sonda 1 u svim stratigrafskim jedinicama pokazuje novovjekovni materijal; glaziranu keramiku i ulomke rožnjaka te recentni otpad zajedno s amorfnim kamenjem i pokojim betonskim blokom. Očigledno je riječ o nasipavanju cjelokupnog prostora zemljom i amorfnim kamenjem, dok se izvor pokretnog arheološkog materijala zasad ne može odrediti. Sonda je istražena do dubine od 1,7 metara, a dublje iskopavanje onemogućilo je prodiranje podzemnih voda u visini morske razine.

53). Also, in the surroundings of the church of Our Lady of Konacvin, in the area of today's Seget cemetery, a find dedicated to the goddess Magna Mater was found, and the same area also yielded finds of lidded stone urns containing glass urns, as well as other glass, ceramic and metal artifacts (Jeličić 1981: 97; Slade Šilović 1950–1951: 268; Babić 2014: 71).

ARCHAEOLOGICAL RESCUE EXCAVATION ON LAND

Three trenches were investigated on the land part, east of the Baotić marina. Trenches 1 and 3 measure 4 x 4 meters, while trench 2 refers to cleaning of a stone retaining wall in a length of about 4.3 m and a width between 0.4 and 0.6 m. Trench 1 shows postmedieval material in all stratigraphic units; glazed pottery and chert pieces as well as recent waste together with amorphous stones and some concrete blocks. Apparently, the entire space was filled with earth and amorphous stones, while the source of the movable archaeological finds cannot be determined as yet. The trench was explored to a depth of 1.7 meters, and





Snimka podzida obale (izradila: A. Matura)
Image of the retaining wall (made by A. Matura)

Sonda 2 obuhvaća vidljive ostatke podzida građenog u tehnici suhozida smještenog uz samu obalu. Čišćenjem podzida utvrdilo se kako je riječ o jednorodnom suhozidu recentnijeg datuma, nanizano od 17 većih i manjih, amorfnih i ugrubo otklesanih rubnih kamenja čije dimenzije u prosjeku iznose između 0,3 i 0,7 m, a na istočnom dijelu zida prisutni su i betonski blokovi. Sačuvanu visinu zida nije bilo moguće u potpunosti utvrditi zbog prodiranja mora s južne strane. Također, prema riječima lokalnih stanovnika, taj se zid prije dvadesetak godina učvrstio betonskom armiranom gredom i betonskim blokovima, koji su prisutni na istočnoj strani zida. Sonda 3 pokazuje ostatke recentnog nasipavanja obale, bez pokretnog arheološkog materijala.

PODvodNA ARHEOLOŠKA ISTRAŽIVANJA

Anomalije u podmorju Segeta Donjeg primijećene su na zračnim snimkama koje je snimio I. Šuta 2007. godine. U podmorju istočno od marine Baotić primijećene su potopljene strukture koje izgledaju kao pravilna konstrukcija obale, danas ispod morske razine. Veći dio struktura koje se jasno vide 2007. godine danas se nalazi prekriven muljem i morskom algom. Širenjem marine, te gradnjom dodatnih lukobrana vjerojatno je smanjeno kretanje morskih struja što je direktno utjecalo na deponiranje mulja.

Na zračnoj snimci iz 2007. godine jasno je vidljivo postojanje čitavog kompleksa uređene obale u podmorju šireg područja istočno od marine Baotić. Pravocrtna obala koja se pruža u smjeru

deeper excavation was prevented by the penetration of underground water at the height of sea level.

Trench 2 encompasses visible remains of a retaining wall built in the dry stone wall technique located right next to the coast. Cleaning of the retaining wall revealed that it is a single-row dry stone wall of a more recent date, made of 17 larger and smaller, amorphous and roughly dressed curb stones, the dimensions of which are on average between 0.3 and 0.7 m, and on the eastern part of the wall there are also concrete blocks. The preserved height of the wall could not be fully determined due to the penetration of the sea from the south side. Also, according to local residents, that wall was underpinned twenty years ago with a reinforced concrete beam and concrete blocks, which are visible on the eastern side of the wall. Trench 3 shows the remains of recent filling of the coast, without movable archaeological finds.

UNDERWATER ARCHAEOLOGICAL EXCAVATION

Anomalies on the seabed of Seget Donji were noticed on aerial photographs taken by I. Šuta in 2007. Submerged structures looking like regular coastal structures have been noticed in the sea to the east of the Baotić marina. Most of the structures clearly visible in 2007 are now covered with silt and seaweed. The expansion of the marina and the construction of additional breakwaters probably reduced the movement of sea currents, which directly affected the deposition of silt.

An aerial photograph from 2007 clearly shows

istok-zapad, može se pratiti i s druge strane dvaju modernih gatova, ukupne vidljive dužine oko 200 metara. Pravilne forme obale, te dubina od oko 1,5 do 1,7 metara u odnosu na današnju morsk razinu, upućuju na formaciju obale iz antičkog razdoblja.

Sonde 1 i 2 (2 x 4 m) postavljene su jedna uz drugu, kako bi se dobio uvid u presjek vidljivog kamenog nasipa. Sastav obiju sondi je identičan, počevši od površine dna vidljiv je nasip od amorfno kamena različitih dimenzija i do 60 cm dužine. Na samoj površini vidi se desetak centimetara tamnijeg mulja, a ispod njega nalazi se sivi mulj. Kamene nasip jednake strukture ide sve do oko 70 centimetara dubine. Nakon toga je vidljiv sloj sivog mulja s manje kamenja, dok se dublje javlja gušća koncentracija sitnijeg kamena i žala, ukupno 40 centimetara debljine. Na dnu se došlo do sloja zdravice koju čini crvenica s amorfnim kamenom. Od arheoloških nalaza pronađeni su ulomci antičke keramike i amfora. Nalazi su raspoređeni kroz cijeli sloj kamenog nasipa, te je pretpostavka da su nasuti zajedno s amorfnim kamenom pri gradnji obale.

Za dataciju materijala najpogodniji su ostatci amfora. Među pronađenim nalazima možemo izdvojiti dvije amfore. Dijagnostičko je grlo amfore Grado 1 ili jadranske amfore s trakastim obodom koje su služile za transport ribljih umaka, a datiraju se od 1. do 3. stoljeća (Carre et al. 2009). Ulomci druge amfore, s bifidnim ručkama predstavljaju klasičnu dressel 2-4 amforu koja se datira u 1. stoljeće nakon Krista (Starac 2006: 89-90).

Uzimajući u obzir sve navedeno, antička obala, udaljena oko 30 metara od današnje obale, formirana je nasipavanjem većeg amorfno kamena

the existence of an entire complex of developed coastline in the wider area east of the Baotić marina. The rectilinear coast that spreads in the east-west direction can also be followed from the other side of two modern piers, with a total visible length of about 200 meters. The regular forms of the coast, and the depth of about 1.5 to 1.7 meters compared to today's sea level, suggest the formation of the coast in antiquity.

Trenches 1 and 2 (2 x 4 m) were placed next to each other, in order to get an insight into the cross-section of the visible stone bank. The composition of both trenches is identical, starting from the surface of the bottom, there is a fill of amorphous stones of different dimensions and up to 60 cm in length. Ten centimeters of darker mud can be seen on the surface, and below it is gray mud. A stone fill of the same structure continues to about 70 centimeters deep. After that, a layer of gray silt with fewer stones is visible, while deeper segment is marked by a denser concentration of smaller stones and gravel, 40 centimeters thick. At the bottom, we reached a layer of virgin soil made of terra rossa with amorphous stone. Archaeological finds are represented by fragments of ancient pottery and amphorae. The finds are distributed throughout the entire layer of the bank, and it is assumed that they were filled together with amorphous stones during the construction of the coast.

Amphora remains are most suitable for dating the material. Two amphorae can be singled out among the finds. The diagnostic neck belongs to the Grado 1 amphora, or the Adriatic amphora with a strip-shaped rim, which was used to transport fish sauces and dates to the period from the 1st to the 3rd century (Carre et al. 2009). Fragments of the second amphora, with bifid handles, represent a classic Dressel 2-4 amphora dating to the 1st century AD (Starac 2006: 89-90).

Considering all of the above, the ancient coast, located about 30 meters from the present-day coast, was formed by dumping larger amorphous stones on the beach of that time, which was formed over terra rossa with amorphous stones. The main reason for this formation is to modify the coast and prevent the erosion of fertile soil. There





... Zračna snimka lokaliteta iz 2007., s označenom potopljenom obalom (foto: I. Šuta)
 ... Aerial photo of the site in 2007, with submerged coast marked (photo: I. Šuta)



... Dio antičke keramike iz kamenog nasipa potopljene obale (foto: E. Visković)
 ... Part of ancient pottery from the bank of the submerged coast (photo: E. Visković)



... Zračna snimka iz 1968. s označenom mogućom trasom od antičkih kamenoloma do obale (izvor: Geoportal)
 ... Aerial photograph from 1968 with marked possible route from the ancient quarries to the coast (source: Geoportal)

na tadašnju plažu koja je formirana nad crvenicom s amorfnim kamenom. Osnovni razlog ove formacije jest uređenje obale i sprječavanje erodiranja plodnog zemljišta. U zaleđu se nalazi vrlo plodna zemlja, zatim veliku gospodarsku važnost imaju i segetski kamenolomi na brdu Sv. Iliji (Maršić 2007; Parica, Horvat 2020), čiji se kvalitetni kamen zasigurno izvezio brodovima, i na koncu postoji niz drugih gospodarskih aktivnosti koje su se mogle koristiti antičkom obalom (Paraman 2018). Cesta koja se spušta s antičkih kamenoloma na brdu Sv. Ilija, preklapa se s današnjim putovima, a glavni pravac označen je na zračnoj fotografiji iz 1968., koji završava na području marine Baotić. Prema usmenoj obavijesti kolegice Lujane Paraman iz Muzeja grada Trogira, doznajemo da je upravo na navedenom mjestu pronađen veliki nedovršeni antički kapitel, što navodi na zaključak da su ostatci operativne obale služili za ukrcaj kvalitetnog kamena sa Sv. Ilije u brodove. Moguće je i kako su najveći kameni elementi zadarskog foruma izgrađeni od kamena iz spomenutog kamenoloma (Parica, Horvat 2020: 218).

Navedena obala mogla je funkcionirati kao antičko pristanište izgrađeno od 1. do 3. stoljeća i bez klasičnog lukobrana kakve su uobičajeno imale

is some very fertile soil in the hinterland, and exceptional economic resources were also the Seget quarries on Sv. Ilija hill (Maršić 2007; Parica, Horvat 2020), whose quality stone was certainly exported by ship, and finally there are a number of other economic activities that could be practiced along the ancient coast (Paraman 2018). The road that descends from the ancient quarries on the hill of Sv. Ilija, overlaps with today's roads, and the main direction is marked on the aerial photo from 1968, which ends in the area of the Baotić marina. In personal communication with the colleague Lujana Paraman from the Museum of the City of Trogir, we learned that a large unfinished ancient capital was found in the mentioned place, which leads to the conclusion that the remains of the quay were used for loading of quality stone from Sv. Ilija into the ships. It is also possible that the largest stone elements of the Zadar forum were built from stone from the aforementioned quarry (Parica, Horvat 2020: 218).

The aforementioned coast could have functioned as an ancient quay built from the 1st to the 3rd century and without the classic breakwater that ancient harbors usually had, because the area is naturally well protected from waves. In the



antičke luke zato što je prostor prirodno dobro zaštićen od valova. U stoljećima koja su uslijedila, do današnjih dana, podizanje morske razine preplavilo je antičku obalu, te se ona danas nalazi oko 30 metara udaljena od današnje obale.

centuries that followed, until the present day, the rise of the sea level flooded the ancient coast, and today it is located about 30 meters away from the current coast.

ARHEOLOŠKO ISTRAŽIVANJE LOKALITETA BURNUM – AMFITEATAR

Archaeological excavations of the Burnum - amphitheater site

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Arheološko istraživanje lokaliteta Burnum – Amfiteatar za 2022. godinu realizirano je prema važećem Rješenju Uprave za zaštitu kulturne baštine, Konzervatorski odjel u Šibeniku, a financirano sredstvima znanstveno-stručnog projekta „Burnum“, kojeg zajednički realiziraju Sveučilište u Zadru i JU „Nacionalni park Krka“. Arheološka iskopavanja trajala su kontinuirano od 28. lipnja do 11. kolovoza 2022., nastavljena su od 18. do 21. listopada kada su zbog loših vremenskih prilika prekinuta. Uz vođenje propisane terenske dokumentacije i preliminarnu obradu nalaza, istraživanja je vodio prof. dr. sc. Miroslav Glavičić. Stručnu ekipu činili su Dijana Čorić, dipl. arheologinja i doktorandica na PDS-u Arheologija istočnog Jadrana i Rudolf Pirak-Šepak, student arheologije, koji su aktivno participirali u izvođenju svih terenskih poslova i preliminarnoj obradi nalaza. Logističku pomoć pri provedbi arheoloških istraživanja pružio je prof. Joško Zaninović, voditelj Arheološke zbirke Burnum u Puljanima, a Anamarija Šokčević Purušić, dipl. arheologinja, dokumentirala je izdvojene posebne nalaze i inventarizirala ih u elektroničkoj bazi te izradila 3D model Sonde 58.



Archaeological excavations of the Burnum - Amphitheater site for the year 2022 were carried out according to the valid Decision of the Administration for the Protection of Cultural Heritage, Conservation Department in Šibenik, and financed with the funds of the scientific and professional project *Burnum*, which is jointly implemented by the University of Zadar and Krka National Park. Archaeological excavations lasted from June 28 to August 11, 2022, and continued from October 18 to 21, when they were interrupted due to inclement weather. Prof. dr. Miroslav Glavičić led the excavations, alongside managing prescribed field documentation and preliminary treatment of finds. The professional team consisted of Dijana Čorić, archaeologist and doctoral student at the postgraduate doctoral study *Archaeology of the Eastern Adriatic* and Rudolf Pirak-Šepak, archaeology student, who actively participated in the performance of all field work and preliminary treatment of the finds. Logistical assistance during the archaeological excavations was provided by prof. Joško Zaninović, head of the Burnum Archaeological Collection in Puljani, and Anamarija Šokčević Purušić, archaeologist, who





Kao logični slijed dosadašnjih istraživačkih radnji na amfiteatru i u njegovoj blizini arheološka istraživanja nastavljena su iskopavanjem Sonde 58, koja je dijelom već bila istražena tijekom 2020. godine, sa svrhom prikupljanja relevantnih podataka o kulturnim slojevima nastalim tijekom nivelacije terena i pripremi radova za gradnju amfiteatra i vojnog vježbališta. Sonda 58 (dimenzije 5 x 6 m) locirana je u sjevernom dijelu vježbališta, otprilike u visini desnog bočnog zida lijevka na južnom ulazu u amfiteatar, a između vanjskog (sjevernog) zida s kontraforima i unutarnjeg (južnog) zida objekta. Istraživanje je nastavljeno iskopavanjem slojeva SJ 2 i SJ 3, koji su nastali nasipavanjem raznovrsnog materijala tijekom radova

documented isolated special finds, inventoried them in an electronic database and created a 3D model of Probe 58.

As a logical sequence of previous research activities at the amphitheater and in its vicinity, archaeological research continued with the excavation of Probe 58, which had already been partly explored during 2020, with the purpose of collecting relevant data on the cultural layers created during the leveling of the terrain and preparatory works for the construction of the amphitheater and military training ground. Probe 58 (dimensions 5 x 6 m) is located in the northern part of the training ground, approximately at the height of the right side wall of the funnel at the southern entrance to the am-

na nivelaciji šireg prostora amfiteatra i sadržavaju veću količinu keramičkog materijala (pretežito uloma kuhinjskog posuđa, amfora i nešto fine keramike), brojne metalne nalaze, sporadično koštane predmete i ulomke stakla te životinjske kosti. Tijekom terenskog rada obavljena je preliminarna stručna obrada i selekcija nalaza, pronađeni keramički materijal, ulomci stakla i životinjske kosti su očišćeni i oprani na lokalitetu te potom u kutijama prebačeni u depo Arheološke zbirke u Puljanima. Predmeti za koje je procijenjeno da su važniji za interpretaciju izdvojeni su kao posebni nalazi, koji su pojedinačno dokumentirani na terenu i poslije inventarizirani u elektroničkoj bazi (ukupno 139 kataloških jedinica). Svi metalni i drugi nalazi ade-

phitheater, and between the outer (northern) wall with buttresses and the inner (southern) wall of the structure. The research continued with the excavation of layers SU 2 and SU 3, which were created by filling of various materials during the work on leveling the wider area of the amphitheater and contain a large amount of ceramic material (predominantly fragments of kitchenware, amphorae and some fine pottery), numerous metal finds, sporadic bone artifacts and fragments of glass and animal bones. During the fieldwork, a preliminary professional treatment and selection of finds was carried out: recovered pottery sherds, glass fragments and animal bones were cleaned and washed on the site and then transferred in boxes to the depot of the Archaeological Collection in Puljani. Artifacts that were estimated to be more important for interpretation were singled out as special finds, which were individually documented during the excavations and later inventoried in the electronic database (a total of 139 catalog items). All metal and other finds were adequately taken care of in the restoration workshop and stored in the museum collection.

The leveling layer of the karst terrain (SU 3) contains a large amount of ceramic material, especially fragments of kitchenware, mostly bowls and pots probably of local production (black and dark brown, coarse fabric with visible grains of calcite), better quality vessels (jugs, bowls, etc.) in reddish, yellowish or grayish color, parts of amphora and several lids. Fine pottery sherds are sporadic, but there are some special finds such as the fragments of the so-called Sarius cups decorated with relief motifs and bearing the master potter's name *CLEMENS*, the bottom of the bowl with a stamp in the shape of a small foot (*in planta pedis*) (Fig. 7), pieces of the rim and the bottom of the plate (*Conspicuum* 20.4) with relief animal decorations. Small fragments of terra sigillata were also documented as well as fragments of oil lamps with a female figural representation. Finds of luxury glassware fragments are not rare, for example a fragment of a glass bowl made in the mosaic technique of opaque amber and white glass with the so-called *millefiori* pattern or a fragment of the belly of a glass bowl made in the mosaic technique from opaque cobalt blue and white glass with the so-



Položaj Sonde 58 u sjevernom krilu vojnog vježbališta (foto: F. Levarda)
Location of Probe 58 in the northern wing of the military training ground (photo: F. Levarda)





Burnum - Amfiteatar
Sonda 58 - 58 A
26. 7. 2022.

Sonda 58 s proširenjem 58A u zapadnom dijelu (stanje 26. 07. 2022.) (foto: M. Glavičić)
Probe 58 with extension 58A in the western part (situation on 26. 07. 2022) (photo: M. Glavičić)

kvatno su zbrinuti u restauratorskoj radionici i pohranjeni u muzejskoj zbirci.

Sloj nivelacije krškog terena (SJ 3) sadrži veću količinu keramičkog materijala, osobito ulomaka kuhinjskog posuđa, pretežito zdjela i lonaca, vjerojatno lokalne produkcije (crne i tamnosmeđe boje, grube fakture s vidljivim zrcima kalcita), kvalitetnijeg posuđa (vrčevi, zdjelice i dr.) crvenkaste, žučkaste ili sivkaste boje, dijelova amfora i nekoliko poklopaca. Nalazi ulomaka fine kera-

called *millefiori* pattern. Beads made of glass paste were also found, and an agate gem with a depiction of a roe-buck (deer) stands out as an extraordinary find, which may have fallen out of the bezel of an iron ring found in the same place.

In layer SU 3, a large number of iron objects were found, most often nails, wedges, links and hooks, and special finds include a pyramidal top of a pilum, spatula with a fan-shaped extension at the ends, several tools, hinge, nails from military



Ulomak dna zdjelice s pečatom u obliku malog stopala (lijevo), ulomak poluloptaste zdjelice s reljefnim ljuskastim ornamentom (desno) (foto: M. Glavičić)
Fragment of the bottom of a bowl with a stamp in the shape of a small foot (left), fragment of a hemispherical bowl with a scaly relief ornament (right) (photo: M. Glavičić)

mike su sporadični, međutim kao posebni nalazi izdvojeni su ulomci tzv. *Sarius* šalice ukrašene reljefnim motivima i s imenom majstora *CLEMENS*, dno zdjelice s pečatom u obliku malog stopala (*in planta pedis*), ulomci oboda i dna tanjura (*Conspetus 20.4*) s reljefnim animalnim ukrasima. Dokumentirani su i drugi sitni ulomci *terae sigillatae* te fragmenti lucerna sa ženskim figuralnim prikazom i drugi. Nalazi fragmenata luksuznog staklenog posuđa nisu rijetki, npr. pronađen je ulomak staklene zdjelice izrađene u mozaičnoj tehnici od neprozirnog stakla jantarne i bijele boje s tzv. uzorkom *millefiori* i ulomak trbuha staklene zdjelice izrađene u mozaičnoj tehnici od neprozirnog stakla kobaltno plave i bijele boje s tzv. uzorkom *millefiori*. Pronađene su i perle izrađene od staklene paste, a kao izvanredan nalaz posebno se ističe gema od ahata s prikazom srndaća (jelena), koja je mogućće ispala iz utora željeznog prstena pronađenog na istom mjestu.

U sloju SJ 3 pronađen je veći broj željeznih predmeta, najčešće čavala, klinova, alki i kuka, a kao posebni nalazi izdvojeni su piramidalni vrh piluma, spatula s lepezastim proširenjem na krajevima, više alatki, brtvela, brukvice s potplata vojničke obuće, projektil stožasta oblika, vrh piluma, fragment drška bodeža i noževi/britve. Osobito je važan nalaz željeznog vojničkog bodeža (*pugio*), koji je pronađen uz rub zapadnog profila sonde. Bodež je bio prelomljen na dva dijela (balčak i sječivo) koji se izravno ne spajaju lom na lom, međutim činjenica da su pronađeni jedan do drugoga i da je XRF analiza pokazala da je riječ o istom materijalu od kojeg su izrađeni, siguran su dokaz da se radi o dijelovima istog predmeta. Jedinstven je nalaz cjelovito sačuvanih konjskih žvala.

shoe soles, conical projectiles, pilum tip, piece of a dagger's handle and knives/razors. A particularly significant find was an iron soldier's dagger (*pugio*), which was found by the edge of the western profile of the probe. The dagger was broken in two parts (hilt and blade) which cannot be directly conjoined, however, the facts that they were found

next to each other and that the XRF analysis showed that they were made of the same material, are definite proofs that they are parts of the same object. Completely preserved horse bit is a unique find.

Bronze artifacts include standard finds of the Aucissa-type fibula, appliqués, belt plates (*cingulum*) with engraved decorations and silver plating, ring-key, horse harness pendants, medical probes (*spathomela* and *speculum*), buckle of *lorica segmentata*, fragment of shield fittings and others. Recovered coins are represented by asses minted during the reign of Tiberius with the image of Divine Augustus (RIC I, 72, 81 Tiberius), quadrantes minted during the reign of Augustus (RIC I, 420, 465 Augustus), as of Caligula (RIC I, 38 Gaius), as of Claudius (RIC I, 95 Claudius) and several corroded whole and halved asses and quadrantes that could not be identified. There was also a republican denarius minted in 58 BC (RRC 442/1b) and the so-called legionary denarius of Mark Antony (RRC 544/14).

Several fragments of a grinding stone and a stone ball for ejection from a ballista were singled out as interesting finds.

Objects made of bone are represented by half of a bone handle of a tool or knife, a fragment of a bone handle with perforation and a pair of antler tines that possibly did not have a utilitarian function. A very attractive find is a bone gaming dice. In layer SU 3, a large number of fragmented bones of domestic (pig, cattle, sheep) and wild animals



Bodež (pugio) (foto: M. Glavičić)
Dagger (pugio) (photo: M. Glavičić)



AE, as, Tiberius, 21.-22. godina, RIC I, 44 (Tiberius) (foto: M. Glavičić)
 AE, as, Tiberius, year 21-22, RIC I, 44 (Tiberius) (photo: M. Glavičić)

Brončane nalaze predstavljaju standardni nalazi fibula tipa *Aucissa*, applike, pojasne pločice (*cingulum*) s graviranim ukrasima i posrebrenjem, prsten-ključ, privjesci konjske orme, medicinske sonde (*spathomela* i *speculum*), kopča obručastog oklopa (*locrica segmentata*), ulomak okova štita i dr. Pronađene kovanice reprezentiraju asses kovani za Tiberija s prikazom Božanskog Augusta (RIC I, 72, 81 Tiberius), *quadrantes* kovani za Augusta (RIC I, 420, 465 Augustus), as Kaligule (RIC I, 38 Gaius), as Klaudija (RIC I, 95 Claudius) te nekoliko korodiranih cijelih i prepolovljenih asa i kvadransa koji se nisu mogli identificirati. Pronađen je također republikanski denar kovan 58. godine prije Krista (RRC 442/1b) i tzv. legionarski denar Marka Antonija (RRC 544/14).

Kao zanimljiv nalaz izdvojeno je više fragmenata brusnog kamena te kamena kugla za izbacivanje iz baliste.

Predmete izrađene od kosti predstavlja polovica koštane drške neke alatke ili noža, ulomak koštane drške s perforacijom i par parožaka koji možda nisu imali utilitarnu funkciju. Veoma je atraktivan nalaz koštane kockice za igru. U sloju SJ 3 dokumentiran je veći broj fragmentiranih kostiju do-



Ulomci lucerne s figurom žene (foto: M. Glavičić)
 Fragments of an oil lamp depicting a female figure (photo: M. Glavičić)



Gema s prilazom srndaća (foto: M. Glavičić)
 Gem with depiction of a roe-buck (photo: M. Glavičić)

maćih (svinja, govedo, ovca) i divljih životinja (jelen, srna, vepar) te više ljuštura školjke kamenice. Sve su to otpadci konzumirane hrane i pripadaju kuhinjskom otpadu bačenom na smetlište. U isti kontekst treba uključiti i rijetke depozite sivog pepela i gareži, u kojima su sporadično pronađeni ulomci keramike i životinjske kosti.



Koštana kockica za igru (foto: M. Glavičić)
 Bone gaming dice (photo: M. Glavičić)

(deer, roe deer, boar) and several oyster shells were documented as wastes of consumed food and belong to the kitchen waste thrown to the garbage dump. In the same context, we should also include rare deposits of gray ash and soot, in which pottery sherds and animal bones were sporadically found.





ISTRAŽIVANJE
BRODOLOMA
KOD OTOČIĆA
GNALIĆA

(Gagliana grossa, 1583.)

Research of the
shipwreck near
the islet of Gnalić
(Gagliana grossa, 1583)



Istraživanje brodoloma kod otočića Gnalića započelo je krajem šezdesetih godina prošlog stoljeća, pod vodstvom Ive Petricioli i Ksenije Radulić, u suradnji sa Sofijom Petricioli i Božidarom Vilharom, zaduženima za prihvatanje i konzervaciju izvađenih nalaza (Petricioli, Uranija 1970). U vremenu od 1967. do 1973. godine realizirano je pet zaštitnih istraživačkih kampanja (Petricioli 1981), a 1996. godine Zdenko Brusić pokušao je ponovno pokrenuti istraživanje, nažalost bez trajnijih rezultata. Nakon višegodišnjih nastojanja u tom smjeru, istraživanje je nastavljeno u sustavnom obliku 2012. godine, pod vodstvom Odjela za arheologiju Sveučilišta u Zadru. Tijekom proteklih godina utvrđeno je da se na morskom dnu nalaze ostatci velikog trgovačkog broda koji je prilikom potonuća legao na desni bok, s pramcem okrenutim u smjeru istoka, a krmom u smjeru zapada. Detaljno istraživanje u Državnom arhivu u Veneciji rezultiralo je pronalaskom više desetaka dokumenata dostatnih za identifikaciju broda koji je u trenutku potonuća nosio ime *Gagliana grossa* (Radić Rossi, Nicolardi 2019).

Osim hrvatskih stručnjaka, studenata arheologije i ronilaca, u istraživanju provedenom u vremenu

The research of the shipwreck near the Gnalić islet began at the end of the 1960s, led by Ivo Petricioli and Ksenija Radulić, in cooperation with Sofija Petricioli and Božidar Vilhar, who were in charge of reception and conservation of the recovered finds (Petricioli, Urania 1970). Five rescue excavation campaigns were carried out between 1967 and 1973, (Petricioli 1981), and in 1996 Zdenko Brusić tried to reinstate the investigation, unfortunately without lasting results. After several years



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of efforts in this direction, the excavation was continued in a systematic form in 2012, under the auspices of the Department of Archeology of the University of Zadar. Over the past years, it has been established that on the seabed are the remains of a large merchant ship which, when she sank, lay on the right side, with the bow to the east and the stern to the west. Detailed research in the State Archives in Venice resulted in the discovery of dozens of documents sufficient to identify the ship that bore the name *Gagliana grossa* at the time of sinking (Radić Rossi, Nicolardi 2019).

Members of the research team from Germany, Spain, Turkey, Oman, Iran, Japan, the United States of America and Canada participated in the exca-



Istraživačka ekipa tijekom prvog dijela istraživanja 2022. godine (foto: D. Kurtin)
Research team during the first part of excavations in 2022 (photo: D. Kurtin)



Glave malih drvenih bačava s pečatima trgovaca olovnim bjelilom (foto: I. Radić Rossi)
Heads of small wooden barrels with seals of merchants trading in lead white (photo: I. Radić Rossi)

od 5. srpnja do 5. kolovoza 2022. godine sudjelovali su članovi istraživačkog tima iz Njemačke, Španjolske, Turske, Omana, Irana, Japana, Sjedinjenih Američkih Država i Kanade. Istraživačku kampanju financirali su Hrvatska zaklada za znanost (Projekt *NEREAS – Numerical Reconstruction in the Archaeology of Seafaring*, IP-2020-02-3420), njemačka udruga za promidžbu podvodne arheologije FUWA e.V. iz Koblenza, Sveučilište u Zadru i Institut za pomorsku baštinu ARS NAUTICA iz Pašmana.

Podmorskim istraživanjem bio je zahvaćen dio duž brodske kobilice, od sredine broda u smjeru pramca te središnji dio broda, u razini prve palube. U tom dijelu nalazi se niz malih bačava ispunjenih ingotima olovnog bjelila, od kojih je šest izvađeno i pohranjeno na desalinizaciju. Na trima glavama bačava očuvali su se pečati trgovaca. Iskopom u smjeru istoka potvrđeno je kako se niz malih bačava nastavlja, odlično očuvan, pod šljunkom iskorištenim u funkciji brodske balasta. U smjeru istoka

conducted between July 5 and August 5, 2022, in addition to Croatian experts, students of archaeology and divers. The research campaign was funded by the Croatian Science Foundation (Project *NEREAS – Numerical Reconstruction in the Archaeology of Seafaring*, IP-2020-02-3420), the German association for the promotion of underwater archeology FUWA e.V. from Koblenz, the University of Zadar and the Institute for Maritime Heritage ARS NAUTICA from Pašman.

The underwater excavation encompassed the part along the ship's keel, from the middle of the ship in the direction of the bow, and the central part of the ship, at the level of the first deck. That part yielded a number of small barrels filled with ingots of lead white, six of which were removed and stored for desalination. Merchants' seals have been preserved on three barrel heads. Excavation in the eastward direction confirmed that the series of small barrels continues, well preserved, under the gravel used as ship's ballast. The beams of the first deck





Izvadak iz virtualnog 3D modela dijela nalazišta s gredama prve palube (model: K. Yamafune)
Segment of the virtual 3D model of the part of the site with beams of the first deck (model: K. Yamafune)

nastavilo se također pratiti grede prve palube nad kojima se pronalaze nizovi ravnih prozorskih stakala i stakala za ogledala.

Tijekom 2021. godine oslobođen je pristup glavnom brodskom rebru koje se nalazilo u sredini broda. Ove godine nastavilo se s otkrivanjem površine pod kojom se nalaze rebreni nastavci koji pripadaju glavnom rebru, kako bi se utvrdio osnovni oblik broda. Krajem istraživanja, u jednom od kvadrata u središnjem dijelu broda otkriven je olovni pečat s natpisom na objema stranama. Natpis je u trenutku pronalaska djelovao potpuno nečitko, ali su preliminarno čišćenje i konzervacija omogućili njegovu daljnju analizu, koja je još uvijek u tijeku. Iako je zbog velike količine brodskog balasta istraživanje relativno sporo napredovalo, ove je godine središnji dio broda pripremljen za detaljno čišćenje tijekom sljedeće istraživačke kampanje.

Arheološko i arhivsko istraživanje brodoloma broda *Gagliana grossa* rezultirali su pokušajem usporedbe veličine broda s veličinom

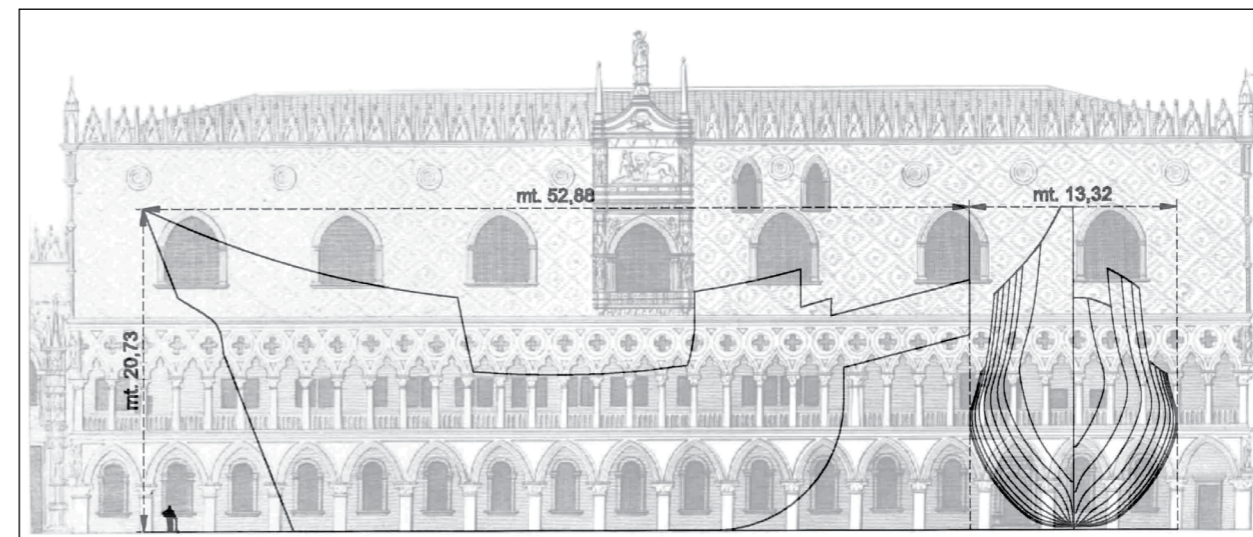


Olovni pečat (foto: N. Lete)
Lead seal (photo: N. Lete)

continued spreading in the east direction, topped by rows of flat window panes and mirror glass.

Access to the main frame, located in the middle of the ship, was cleared in 2021. This year was also marked by continuation of the works on the surface under which the futtocks belonging to the main frame are located, in order to determine the basic shape of the ship. At the end of the research, a lead seal with an inscription on both sides was discovered in one of the squares in the central part of the ship. The inscription seemed completely illegible at the time of the discovery, but preliminary cleaning and conservation enabled its further analysis, which is still ongoing. Although the excavation progressed relatively slowly due to the large amount of ship ballast, this year the central part of the ship was prepared for detailed cleaning in the next research campaign.

Archaeological and archival research of the shipwreck of the ship *Gagliano Grossa* resulted in an attempt to compare the size of the



Usporedba veličine broda s veličinom Duždeve palače u Veneciji (crtež: M. Bondioli)
Comparison of the size of the ship with the size of the Doge's Palace in Venice (drawing by M. Bondioli)

Duždeve palače u Veneciji. Na manifestaciji *Europski dani arheologije*, održanoj od 17. do 19. lipnja 2022. godine, u Arheološkom muzeju u Zagrebu prikazan je dokumentarni film *The Voyages of Gagliana Grossa. Exciting Story of a Late Renaissance Venetian Merchant Ship*, realiziran sredstvima projekta PIMo (*People in Motion: Entangled Histories of Displacement across the Mediterranean, 1492–1923*), financiranog u okviru europskog programa COST (Gostinski 2022: 20). Dokumentarni film dostupan je na poveznici: <https://www.youtube.com/watch?v=3WxVEDzR120>.

ship with the size of the Doge's Palace in Venice. At the *European Days of Archeology*, held from June 17 to 19, 2022, the documentary film *The Voyages of Gagliana Grossa. Exciting Story of a Late Renaissance Venetian Merchant Ship* was shown in the Archaeological Museum in Zagreb, realized with the funds of the PIMo project (*People in Motion: Entangled Histories of Displacement across the Mediterranean, 1492–1923*), financed within the European COST program (Gostinski 2022: 20). The documentary film is available at the link: <https://www.youtube.com/watch?v=3WxVEDzR120>.

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PEĆINA VLAKNO NA DUGOM OTOKU

Vlakno cave on
Dugi otok



Pećina Vlakno smjestila se na središnjem dijelu Dugog otoka nasuprot otoka Rave. 40 m² iskoristivog prostora, u kombinaciji s velikim ulazom okrenutim prema jugoistoku i izvorom vode u blizini pokazalo se kao izvrsno mjesto za boravak manjih zajednica tijekom kasnog paleolitika i ranog mezolitika.

Pećina Vlakno na Dugom otoku već je dugi niz godina u fokusu znanstvene, a nerijetko i šire javnosti, zbog rezultata arheoloških istraživanja koja se u njoj provode još od 2004. godine. Do danas je u pećini arheološkim istraživanjima dosegnuta dubina od 5 m, s kulturnim slojevima koji se u kontinuitetu mogu pratiti sve do 19,500 god. prije sadašnjosti, iako dosegnuta dubina nije konačna u smislu kulturnih slojeva. U već standardnom terminu u rujnu 2022. godine započela je 18. arheo-

Vlakno cave is located in the central part of Dugi otok opposite the island of Rava. With 40 m² of usable space, combined with a large entrance facing southeast and a water source nearby, the cave proved to be an excellent dwelling place for smaller communities during the late Palaeolithic and early Mesolithic.

Vlakno cave on Dugi otok has been in the focus of the scholarly community for many years, and often also of the general public, due to the results of archaeological research conducted there since 2004. To date, archaeological research has reached a depth of 5 m in the cave, with cultural layers that can be traced back to 19,500 years ago before present, although the depth reached is not final in terms of cultural layers. The 18th archaeological campaign, financed



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loška kampanja, financirana kroz projekt *Epigravetijenske zajednice sjeverne Dalmacije* Hrvatske zaklade za znanost. Uz autore, u istraživanjima su sudjelovali suradnici na projektu iz različitih europskih znanstvenih institucija, kao i studenti arheologije Sveučilišta u Zadru.

Stratigrafskom sekvencom pećine Vlakno još od najdublje dosegnutih razina dominiraju slojevi s nalazima epigravetijenske kulture. Ovogodišnja kampanja usmjerena je na istraživanje onih koji se datiraju u razdoblja prije 17000 godina. Vrijeme je to u kojem je jadranski okoliš izgledao potpuno drugačije. Ledeno doba upravo je izašlo iz svog vrhunca, ali izrazito hladna klimatska slika i dalje je prisutna. Zbog zadržavanja vode u ledenjacima na sjevernom dijelu hemisfere svjetska razina mora je pala za preko 120 m (Surić 2006) Jadransko more je bilo svedeno na poluzatvoreni bazen dok je sjeverni dio današnjeg mora bila prostrana dolina rijeke

by the *EpiC* project of the Croatian Science Foundation, began, traditionally by now, in September 2022. In the excavations, the authors were joined by collaborators on the project from various European scientific institutions, as well as archeology students from the University of Zadar.

The stratigraphic sequence of Vlakno cave is dominated by layers with finds of the Epigravetian culture, from the deepest levels reached. This year's campaign was focused on investigating those dating back to 17,000 years ago. It was a time when the Adriatic environment looked completely different. The peak of the Ice Age had just finished, but the extremely cold climate was still present. Due to the retention of water in the glaciers in the northern part of the hemisphere, the world sea level fell by more than 120 m (Surić 2006). The Adriatic Sea was reduced to a semi-closed basin, while the northern part of today's sea was the vast valley of the river Po. Back then, the cave was located high above the surrounding area, and the entire Dugi otok had the shape of a ridge 100 to 400 m high above the valleys (Vujević 2016). Unlike most sites of that time on the eastern coast of the Adriatic, cultural layers and finds from Vlakno, explored during 2022, show that even at a time when most of the European continent was under permanent ice, communities visited the cave and stayed in it.

The defined phases do not differ from those already discovered in the previous Stratum 8 regarding deposition. Hardly recognizable and short-lived hearths still appear in the central part, although located more towards the cave wall, while the rest of the space is covered by different floors. It is a compact, greasy soil with pieces of coal that is lost along the edges of the research area, primarily along the northern part where there is a loose layer full of calcite that crumbles from the cave walls. The uniform deposits of the Stratum 9 phases, currently the focus of research, are also uniform in the cultural material, although it is less abundant. Despite the reduced number, all categories of finds are represented. The material is dominated by the remains of fauna, and that of large ruminants. Among them, the discovery of the skull of a wild donkey (*Equus hydruntinus*) stands out as it was an animal that was a favorite of Paleolithic hunters on the Adriatic. Finds of this type are present at the Upper Paleo-



Iskopavanje slojeva Stratum 9 (snimio: L. Bogdanić)
Excavation of Stratum 9 layers (photo: L. Bogdanić)





Po. Pećina se tada nalazila visoko iznad okolnog prostora, a cijeli Dugi otok je imao oblik grebena visokog od 100 do 400 m iznad tadašnjih dolina (Vujević 2016). Za razliku od većine nalazišta tog vremena na istočnoj obali Jadrana, kulturni slojevi i nalazi iz Vlakna, istraženi tijekom 2022. godine pokazuju da čak i u vrijeme kada je većina europskog kontinenta pod stalnim ledom, zajednice posjećuju pećinu i borave u njoj.

Depozicijski gledano definirane faze ne razlikuju se od onih već otkrivenih u proteklom Stratumu 8. Slabo izražena i kratkotrajna vatrišta i dalje se pojavljuju na središnjem dijelu, iako više pomaknuta prema zidu pećine, dok ostatak prostora prekrivaju različite podnice. Riječ je o kompaktnoj, masnoj zemlji s komadićima ugljena koja se gubi uz same rubove istraživačkog prostora, prije svega uz sjeverni dio gdje je prisutan rahli sloj prepun kalcita koji se trusi sa zidova pećine. Ujednačeni depoziti faza Stratuma 9, trenutno u fokusu istraživanja, ujednačeni su i u kulturnom materijalu, iako se on pronalazi u sve manjem broju. Pa ipak, unatoč smanjenoj brojnosti zastupljene su sve kategorije nalaza. Materijalom dominiraju ostaci faune i to velikih preživača. Među njima posebno se ističe pronalazak lubanje divljeg magarca (*Eguus hydruntinus*), živo-

lithic sites, but well-preserved, complete remains, especially a skull, are exceptionally rare.

The differences compared to the previous strata are primarily noticed in the lithic material. The lithic assemblage shows three characteristics: on the one hand, we have a greater number of points made on blades, although most of the typological categories consist of backed bladelets and points made on bladelets. The average larger dimensions of the lithic tools in the investigated phases probably suggest a tradition inherited from the early phases of the Epigravettian, which we are approaching through excavation. The last characteristic of the lithic assemblage is the decreasing number of endscrapers, although the thumbnail endscrapers are still the most numerous. Stone raw material for making tools originates in smaller quantities from local sources still visible today on Dugi otok, while most of the raw material comes from deposits at greater distances, especially from the Italian regions of Marche and Umbria.

Bone finds are scarce and limited to pointed types, and personal ornaments are rare. Among the items that can be characterized as jewelry, we can mention two pierced deer teeth and several specimens of pierced *Tritia neritea* snails.



⋮ Mokro prosijavanje depozita (foto: A. Jagić)
 ⋮ Wet sieving of the deposit (photo: A. Jagić)



⋮ Čišćenje lubanje *E. Hydruntinusa* (foto: M. Mandarić)
 ⋮ Cleaning the skull of *E. hydruntinus* (photo: M. Mandarić)





tinje koja je bila omiljena paleolitičkim lovcima na Jadranu. Nalazi ove vrste prisutni su na nalazištima iz vremena gornjeg paleolitika, no izrazito je rijetko pronaći dobro sačuvane, cjelovite ostatke, pogotovo lubanju.

Razlike u odnosu na prethodne stratume prvenstveno se vide u litičkom materijalu. Litički skup pokazuje tri karakteristike: s jedne strane imamo veći broj šiljaka izrađenih na sječivima, iako većinu tipoloških kategorija čine pločice s hrptom i šiljci izrađeni na pločicama. Prosječno veće dimenzija litičkog oruđa u istraženim fazama vjerojatno ukazuju na tradiciju naslijeđenu iz ranih faza epigravetijena kojima se iskopavanjem približavamo. Posljednja karakteristika litičkog skupa je sve manji broj grebala, iako su i dalje najbrojnija noktolika grebala. Kamena sirovina za izradu alata potječe u manjoj količini iz lokalnih izvora i danas vidljivih na Dugom otoku, dok većina sirovine dolazi s ležišta na većim udaljenostima, pogotovo s područja talijanskih regija Marche i Umbria.

Koštani inventar je malobrojan i svodi se na zašiljene tipove, a osobni ukrasi su rijetki. Od predmeta koji se mogu okarakterizirati kao nakit pronađena su dva probušena zuba jelena te nekoliko primjера ka probušenih puževa *Tritia neritea*.



⋮ Litički nalazi (foto: K. Crnović)
⋮ Lithic finds (photo: K. Crnović)



⋮ Definiranje hodne površine (foto: K. Crnović)
⋮ Defining walking surface (photo: K. Crnović)

Općenito gledajući kako idemo prema starijim fazama može se primijetiti opadanje broja nalaza iako se kategorije ne mijenjaju. Također primjetno je da su ostatci faune puno manjih dimenzija, tj. kosti su izrazito fragmentirane. Ono što začuđuje je što se na ovim razinama u probnoj sondi nalazio debeli, gotovo sterilni sloj kršja dok je u sustavnim iskopavanjima on sveden tek na kontaktnu zonu prema probnoj sondi. Na dijelu pećine obuhvaćenim sustavnim iskopavanjima i dalje se, bez vidljivog u prekida u stratigrafiji, nižu kulturni slojevi i hodne površine. Čini se da je kroz ovo vrijeme pećina bila korištena na manjoj površini u odnosu na kasnije, mlađe faze, ali njeno korištenje nije prestalo u tolikoj mjeri da bi ostavilo tragove u stratigrafiji.

Generally speaking, as we move towards the older phases, we can notice a decrease in the number of finds, although the categories do not change. Also, it is noticeable that the remains of the fauna are much smaller, i.e. the bones are extremely fragmented. What is surprising is that at these levels in the test trench there was a thick, almost sterile layer of debris, while in systematic excavations it was reduced only to the contact zone towards the test trench. In the part of the cave encompassed by systematic excavations, the cultural layers and walking surfaces still continue, without a visible break in the stratigraphy. It seems that during this time the cave was used on a smaller surface compared to later, younger phases, but its use did not stop to such an extent as to leave traces in the stratigraphy.

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SUSTAVNO ISTRAŽIVANJE OSTATAKA ANTIČKOG BRODOLOMA IZ 2. ST. PO KR. KOD OTOKA ILOVIKA

Systematic excavation of the remains of a 2nd-century AD Roman shipwreck off the island of Ilovik

Otok Ilovik nalazi se na jugozapadnom kraju Kvarnerskog zaljeva, a s otocima Lošinjem, Kozjakom i Sv. Petrom definira prostor Ilovičkih vrata. Kanal koji se proteže između otoka Sv. Petra i Ilovika, dug 2,5 km i širok oko 300 m, popularno je sidrište koje pruža zaklon od gotovo svih vjetrova. Na važnost plovidbene rute koja je od antičkih vremena prolazila ovim prostorom višestruko je ukazano u stručnoj literaturi (usp. npr. Serventi 2012, gdje je navedena ostala literatura).

Godine 1962. na sjevernom ulazu u kanal, uz otok Sv. Petar, otkriven je odlično očuvan teret potonulog rimskog broda. Do 1970. godine površina nalazišta bila je temeljito opljačkana, ali se tijekom zaštitnih istraživanja, provedenih od 1978. do 1980. godine pod vodstvom Marijana Orlića, ipak ušlo u trag mnogim zanimljivim nalazima (Orlić 1986). Brodski teret sastojao se od nekoliko tipova amfora, među kojima

The island of Ilovik is located at the southwestern end of Kvarner Bay, and with the islands of Lošinj, Kozjak and Sv. Petar it defines the space of Ilovička vrata. The channel that extends between the island of Sv. Petar and Ilovik, 2.5 km long and about 300 m wide, is a popular anchorage that provides shelter from almost all winds. The importance of the navigation route that has passed through this area since ancient times has been emphasized repeatedly in the professional literature (e.g. Serventi 2012, where other literature is listed).

In 1962, well-preserved cargo of a sunken Roman ship was discovered at the northern entrance to the channel, off the island of Sv. Petar. Until 1970, the surface of the site was thoroughly looted, but many interesting finds were recovered during the rescue excavations conducted from 1978 to 1980 under the leadership of Marijan Orlić (Orlić 1986). The ship's cargo consisted of several ampho-


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Istraživački brod usidren nad nalazištem kraj otoka Sv. Petra (foto: D. Kalogjera)
Research ship anchored over the site off the island of Sv. Petar (photo: D. Kalogjera)



Čišćenje drvenih elemenata brodske konstrukcije (foto: M. Brzac)
Cleaning of wooden elements of the ship's structure (photo: M. Brzac)



Uzorkovanje drvene građe (foto: M. Brzac)
Sampling of timber (photo: M. Brzac)





su najbrojnije bile jadranske amfore ravnog dna, u literaturi poznate kao tip Forlimpopoli, proizvedene tijekom 1. i 2. st. po Kr. Neobični luksuzni nalazi, poput cjelovitog staklenog posuđa, brončanog vrča za vino (enochoja) ukrašenog glavom Satira i plitice (patera) na dugoj dršci ukrašenoj lavljom protomom, sugerirali su prisutnost bogatih putnika, tj. pripadnika viših društvenih slojeva, a pronalazak sestercija cara Trajana ukazao je na datiranje brodoloma u početak 2. st. po Kr.

Godine 1999. potpuno očuvan helenistički brončani kip grčkog atleta izvađen je iz mora kod južnog rta otoka Velih Orjula, udaljenog manje od 2 NM sjeveroistočno od Ilovičkih vrata (Karniše et alii. 2008). Kako u blizini kipa nije pronađena olupina antičkog broda, Marijan Orlić na osnovi nekih je činjenica pretpostavio njegovu povezanost s brodolomom kod otoka Ilovika (Karniše et al. 2008: 28; Radić Rossi, Buxton 2022).

Njegova je pretpostavka poslužila kao jedan od poticaja za pokretanje sustavnog istraživanja prethodno zaštitno istraženog nalazišta.

Prva sustavna istraživačka kampanja provedena je u vremenu od 2. do 30. listopada 2022. godine u suradnji Sveučilišta u Zadru i Sveučilišta Rhode Island. U njoj su sudjelovali stručnjaci i studenti iz Hrvatske, Sjedinjenih Američkih Država, Novog Zelanda, Egipta i Japana, a istraživačkoj ekipi pridružila se i skupina studenata iz Njemačke, Španjolske, Grčke i Rumunjske, koja je u okviru studijskog programa EU-Conexus odabrala izbori kolegij *Introduction to underwater archaeology*. Financijska sredstva potrebna za realizaciju istraživanja donirao je američki poduzetnik Alfred Hagen, koji je tijekom dva tjedna i sam sudjelovao u istraživačkim aktivnostima na terenu.

Nalazište je smješteno na prosječnoj dubini od 24 m, na gotovo ravnom morskom dnu. Površina

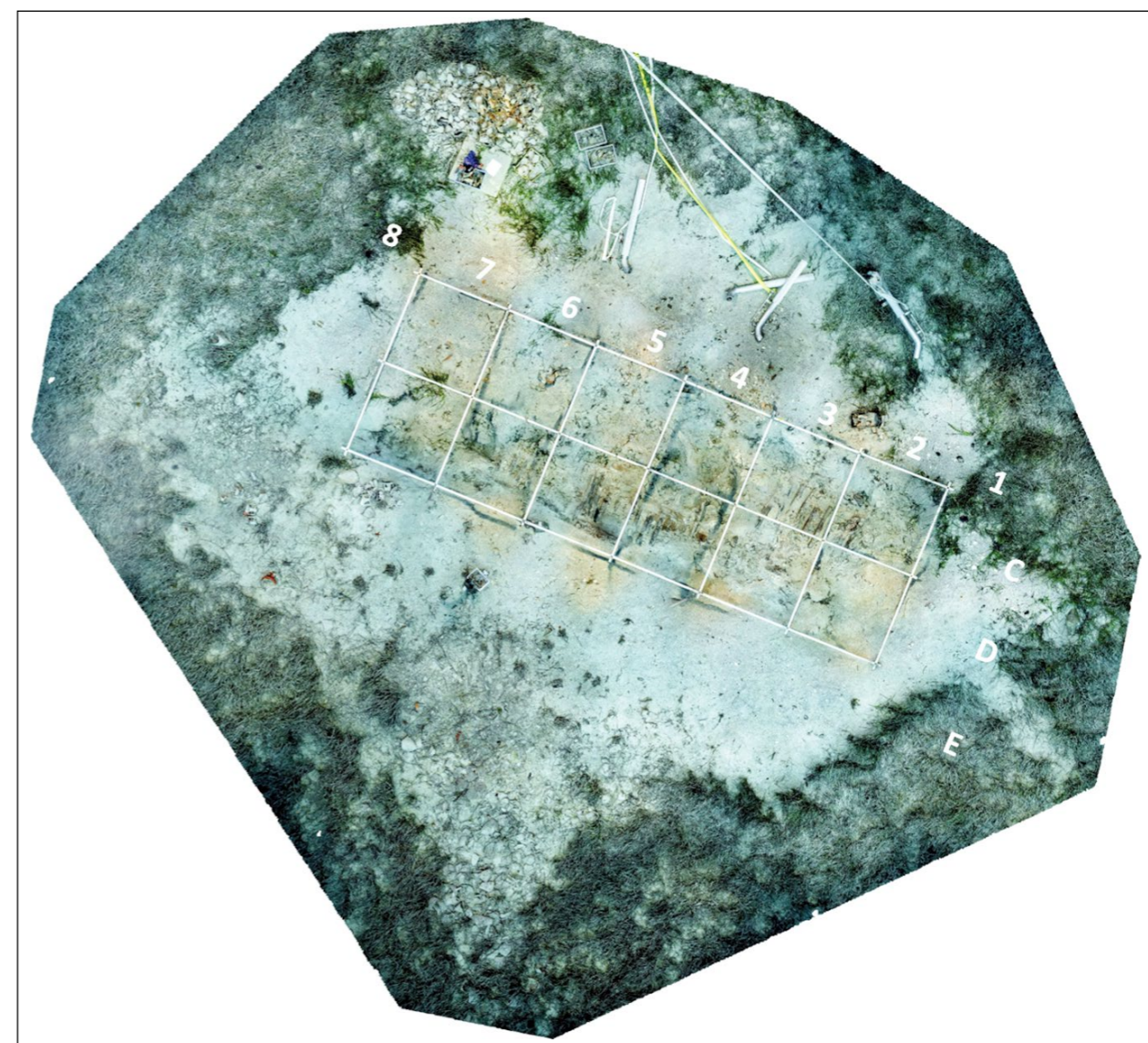


Alfred Hagen s amforom pronađenom istočno od mrežišta (foto: I. Radić Rossi)
Alfred Hagen with the amphora found east of the grid (photo: I. Radić Rossi)

ra types, among which the most numerous were flat-bottomed Adriatic amphorae, known in the literature as the Forlimpopoli type, produced during the 1st and 2nd centuries AD. Unusual luxury finds, such as complete glassware, a bronze wine jug (oinochoe) decorated with the head of a satyr and a long-handled platter (patera) decorated with a lion protome, suggested the presence of wealthy and high-status individuals, and the discovery of a sestertius of the emperor Trajan indicating a *terminus post quem* for the wreck in early 2nd century AD.

In 1999, a fully preserved Hellenistic bronze statue of a Greek athlete was taken out of the sea near the southern cape of the island of Vele Orjule, less than 2 nautical miles northeast of Ilovička vrata (Karniše et al. 2008). Since no wreck of an ancient ship was found near the statue, Marijan Orlić assumed its connection with the shipwreck off the island of Ilovik based on certain facts (Karniše et alii. 2008: 28; Radić Rossi, Buxton 2022). His assumption served as one of the incentives for starting a systematic investigation of the site previously subjected to rescue excavations.

The first systematic research campaign was conducted between October 2 and 30, 2022, in cooperation between the University of Zadar and the University of Rhode Island. Experts and students from Croatia, the United States of America, New Zealand, Egypt and Japan participated in it, and the research team was joined by a group of students from Germany, Spain, Greece and Romania, who chose an elective course *Introduction to underwater archaeology* as part of the EU-Conexus study program. The financial resources needed for the realization of the research were donated by the American businessman Alfred Hagen, who himself participated in research activities at the site for two weeks.



Ortogonalni plan nalazišta iz virtualnog 3D modela, s položajem pomoćnog metalnog mrežišta (model: K. Yamafune)
Orthogonal plan of the site from the virtual 3D model, with the position of the auxiliary metal grid (model: K. Yamafune)

na kojoj leže arheološki nalazi prekrivena je pijeskom, a okolni prostor prekriven je poljima posidonije (lat. *Posidonia oceanica*). Prije istraživanja na lokaciju su postavljena četiri betonska bloka, iskoristena za privez istraživačkog broda, dok je manjim betonskim blokom označen točan položaj glavne koncentracije nalaza. Prva skupina ronilaca započela je s prikupljanjem i podizanjem dijagnostičkih ulomaka amfora te uklanjanjem nedijagnostičkih ulomaka sa središnje površine nalazišta. Taj se posao nastavio tijekom čitave istraživačke kampanje jer su ulomci amfora u velikim količinama pronađeni tijekom iskopa. Za sada je u inventar dijagnostičkih ulomaka uneseno 395 predmeta koji su pohranjeni u jutene vreće i vraćeni na nalazište, a na morskom je dnu ostavljena skupina ulomaka koje je potrebno dokumentirati tijekom sljedeće istraživačke kampanje.

The site is located at an average depth of 24 m, on an almost flat seabed. The surface on which the archaeological finds lie is covered with sand, and the surrounding area is covered with meadows of *Posidonia oceanica* seagrass. Before the research, four concrete blocks were placed on the location, used for the mooring of the research ship, while a smaller concrete block marked the exact position of the main concentration of finds. The first group of divers started collecting and raising diagnostic amphora fragments and removing non-diagnostic fragments from the central surface of the site. This work continued throughout the entire research campaign, as amphora fragments were found in large quantities during the excavation. For now, 395 objects have been entered into the inventory of diagnostic fragments, which have been stored in jute bags and returned to the site, and some fragments have been





Istraživačka ekipa tijekom prvog dijela istraživanja (foto: D. Kalogjera)
 Research team during the first part of the research (photo: D. Kalogjera)

Prvog radnog dana postavljeno je i pomoćno metalno mrežište koje je tijekom idućih dana zadržalo svoj konačan oblik. Osnovno mrežište sastojalo se od 2 x 6 kvadrata dimenzija 2 x 2 m, a tijekom rada dodane su metalne šipke s istočne, zapadne i južne strane, pomoću kojih je oblikovano još 12 kvadrata. Postojeći kvadrati označeni su slovima C, D i E i brojevima od 1 do 8. U kvadratima C2, C3 i D3–D6 otkriveni su elementi brodske konstrukcije (Sl. 3) koja je bila tek djelomično otkrivena tijekom zaštitne istraživačke kampanje. Drveni ostatci prilično su loše očuvani zbog stjenovite podloge i male količine sedimenta. Očuvana brodska rebra označena su oznakama F01–F44, očuvane platice oznakama P01–P54, a na kobilicu su postavljene oznake K1–K3. Skupina neidentificiranih elemenata označena je oznakama UM-1–UM-12. Svi elementi uzorkovani su radi određivanja vrste drvene građe iskorištene za izgradnju broda.

Riječ je vjerojatno o desnoj krmenoj strani broda, jer je u kvadratima C7 i C8 otkrivena velika korodirana greda koja bi mogla pripadati željeznom antičkom sidru. Osim toga, u zapadnom dijelu nalazišta otkriveno je još četrnaest čitavih ili gotovo čitavih amfora, dok je jedna uočena s istočne

left on the seabed, which need to be documented during the next research campaign.

On the first working day, an auxiliary metal grid was installed, which took its final shape during the following days. The basic grid consisted of 2 x 6 squares with dimensions of 2 x 2 m, and during the work, metal bars were added from the east, west and south sides, with which another 12 squares were formed. The existing squares were marked with letters C, D and E and numbers from 1 to 8. In the squares C2, C3 and D3–D6, elements of the ship's hull structure were found, which were only partially recovered during the rescue excavation campaign. The wooden remains are rather poorly preserved due to the rocky base and small amount of sediment. Preserved ship frames are marked with F01–F44, preserved planks with P01–P54, and the keel is marked with K1–K3. A group of unidentified elements is labeled UM-1–UM-12. All elements were sampled in order to determine the type of wood used to build the ship.

It is probably the right aft side of the ship, because a large corroded beam was discovered in squares C7 and C8, which could belong to an ancient iron anchor. In addition, fourteen complete or almost complete amphorae were discovered in the western part of the site, while one was observed on the eastern

strane mrežišta. Sve amfore izvađene su iz mora i pohranjene na desalinizaciju. Na ramenu jedne od njih uočena je pravilan okrugao otvor promjera oko 15 cm, koji je mogao služiti za vađenje sadržaja, ali i za uriniranje u posudu (Loughton, Alberghi 2015: 54). Od metalnih nalaza, u kvadratu E3 otkriven je prilično oštećen novac za koji se nakon preliminarnog čišćenja utvrdilo da potječe iz vremena cara Trajana ili Hadriana.

Ovogodišnje istraživanje popratila je i japanska nacionalna televizija koja je u trajanju od dva tjedna boravila na Iloviku. Iako je sustavnim istraživanjem zahvaćen veći dio nalazišta, postoje opravdane pretpostavke da se u sedimentu nalazi još čitavih amfora, a možda i manjih predmeta. Stoga se, u skladu s mogućnostima, planira nastavak sustavnog rada na nalazištu.

Istočna jadranska obala obiluje rimskim brodoloma, često s velikim i dobro očuvanim teretima. S obzirom na to, teško oštećene i opljačkane olupine nisu prioritetne za sustavan rad, ali u slučaju brodoloma kod otoka Ilovika intrigantna pitanja o njegovoj vezi s kipom Apoksiomena opravdavaju sustavno istraživanje. Osim toga, projekt je zanimljiva studija slučaja o tome što se još može naučiti pažljivim i sustavnim iskopavanjem inače neobećavajućeg nalazišta.

side of the grid. All amphorae were taken out of the sea and stored for desalination. On the shoulder of one of them, a regular round opening with a diameter of about 15 cm was observed, which could have been used for extracting the contents, but also for urinating into the vessel (Loughton, Alberghi 2015: 54). Of the metal finds, a rather damaged coin was discovered in square E3, which after preliminary cleaning was dated to the time of the emperor Trajan or Hadrian.

This year's research was covered by Japanese national television, which spent two weeks in Ilovik. Although systematic research covered a large part of the site, there are justified assumptions that there are still complete amphorae in the sediment, and perhaps some smaller objects. Therefore, in accordance with the possibilities, it is planned to continue systematic work at the site.

The Eastern Adriatic coast has many hundreds of Roman shipwrecks, many with large well-preserved cargos. Accordingly, heavily damaged and looted wrecks would not normally be prioritized for complete excavation. In the case of the Ilovik shipwreck, intriguing questions about its relationship to the Apoxyomenos statue justify the ongoing investigation. In addition, the project is an interesting case study of what can still be learned from careful and systematic excavation of an otherwise unpromising site.

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ARHEOLOŠKO ISTRAŽIVANJE NA LOKALITETU JEZERA – CRIKVINA NA SJEVERNOM VELEBITU

Archaeological excavations at
the site of Jezera – Crikvina in
northern Velebit

Tijekom rujna 2022. godine nastavljena su arheološka istraživanja na lokalitetu Crikvina na predjelu Jezera (sjeverni Velebit). Istraživanje je nastavak probnih arheoloških istraživanja započetih 2019. godine unutar suhozidnog objekta koji je u usmenoj predaji poznat kao pastirska crkva posvećena sv. Anti.

Lokalitet se nalazi na 1470 m n. v., a smješten je na glacijalnom platou Jezera, nekadašnjem visokogorskom pašnjaku Primoraca i Krasnara. Prema usmenoj predaji, na Jezerima su nekoć živjeli „Grci“, a suhozidna struktura Crikvina povezuje se s ostacima njihove crkve (Glavičić 1968: 282; Pleterski 2009: 30). Objekt veličine 10,4 x 7,5 m, izgrađen je u tehnici suhozida od pločastog vapnenca. Objekt se sastoji od glavnog prostora i proširenja na jugozapadnoj strani desno od ulaza. Unutar objekta živa stijena iskorištena je za oltar.

Osnovni cilj arheoloških istraživanja bio je definirati starost i stratigrafiju objekta. Iskopavanje je provedeno na sjeverozapadnom dijelu objekta na površini od 14 m², a sonda je obuhvatila središnji dio objekta, bočnu prostoriju te ulazni prostor.

I u ovoj istraživačkoj kampanji potvrđeno je postojanje popločanja objekta (SJ3A) koje je ustanovljeno i u ranijim istraživanjima. Popločanje se rasprostire po središnjem dijelu objekta, a potpuno

Archaeological excavations continued at the Crikvina site in the Jezera region (northern Velebit) in September 2022. This is a continuation of archaeological trial excavations started in 2019 inside the dry stone wall building, which is known in oral tradition as the shepherd's church dedicated to St Anthony.

The site is located at 1470 masl, on the Jezera glacial plateau, former high-mountain pasture of the residents of Primorje and Krasno. According to oral tradition, "Greeks" once lived in Jezera, and the dry stone wall structure of Crikvina is associated with the remains of their church (Glavičić 1968: 282; Pleterski 2009: 30). The building, measuring 10.4 x 7.5 m, was built of platy limestone using the dry stone wall technique. The building

consists of the main area and an extension on the southwestern side to the right of the entrance. Inside the building, bedrock was used for the altar.

The main goal of the archaeological excavation was to define the age and stratigraphy of the structure. The excavation was carried out in the northwestern part of the building on an area of 14 m², and the trench covered the central part of the building, the side room and the entrance area.

This research campaign attested the existence of the paving of the building (SU3A), which was


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Pogled na sjeverni Velebit (foto: V. Glavaš)
View of the northern Velebit (photo: V. Glavaš)



..... Lokalizet Crikvina na Jezerima (foto: V. Glavaš)
 The site of Crikvina in Jezerima (photo: V. Glavaš)



..... Ostatci popločanja SJ3A (foto: V. Glavaš)
 Remains of the paving SU3A (photo: V. Glavaš)

izostaje na ulaznom dijelu. Na mnogim mjestima umjesto ploča iskorištena je živa stijena.

U središnjem dijelu objekta pronađen je grob odrasle osobe. Osoba je sahranjena na leđima s rukama položenima na prsa. Kostur je izrazito loše sačuvan. Arhitekturu groba čini živa stijena te kamen u funkciji grobne škrinje. Pokojnik je na prstima imao srebrno prstenje te krunicu zamotanu oko ruku. S obzirom na nalaze, grob preliminarno možemo datirati u novi vijek.

Iako točna datacija groba još nije poznata, njegovo postojanje potvrdilo je da je riječ o pastirskoj crkvi. Ostali nalazi nisu datibilni te za sada ne pružaju mogućnost preciznije datacije objekta osim u novi vijek.

also found in the earlier excavations. The paving spreads over the central part of the building, and is completely absent at the entrance. In many places, bedrock was used instead of slabs.

A grave of an adult was found in the central part of the building. The person was buried on his back with hands on his chest. The skeleton is extremely poorly preserved. The grave construction consists of bedrock and stone functioning as a burial cist. The deceased had silver rings on his fingers and a rosary wrapped around his hands. Considering the finds, we can offer preliminary dating of the grave to the Modern Period.

Although the exact dating of the grave is yet unknown, its existence confirmed that it was a shepherd's church. The other finds are not datable and for now do not provide the possibility of a more precise dating of the building than to the Modern Period.

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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

IN SITU - 1/1 (2022)

Mjesto potonuća antičkog broda kod rta Letavice nedaleko od Šimuna na otoku Pagu pronašao je tijekom turističkog ro-njenja 2018. godine Vedran Dorušić, vlasnik Roni-lačkog centra Foka, smještenog u Kampu Šimuni. Riječ je o oko 400 vinskih amfora tipa Lamboglia 2 iz 1. st. pr. Kr., koje leže na padini morskog dna, ocrtavajući oblik potonulog broda. Skupina očuvanog brodskog tereta proteže se u smjeru sjeveroistok-ju-gozapad, a sudeći prema dosadaš-njim rezultatima istraživanja, pri po-tonuću pramac broda bio je okrenut u smjeru sjeveroistoka.

Pretpostavka je da se brod zau-stavio na desnom boku, s kobilicom na plicem dijelu nalazišta. Sveukupna dužina vidljivog dijela brodskog tereta iznosi oko 21 m, što upućuje na trgovački brod duljine oko 25 m, koji se uklapa u sliku istočnojadranskog pomorstva u doba kasne Rimske Republike. Oko 38 m sjeveroistočno od

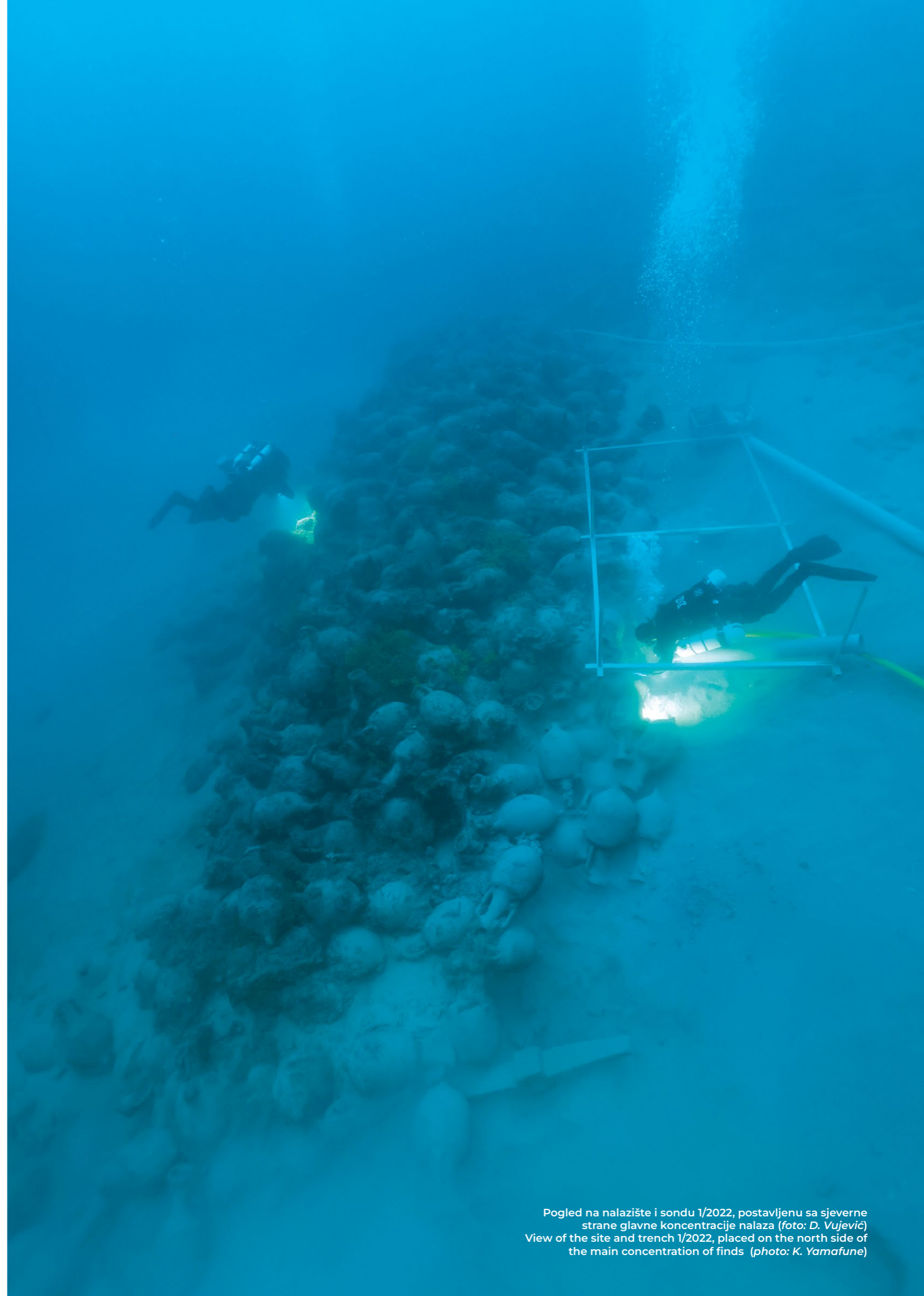
The site of sinking of the ancient ship near Cape Letavica, not far from Šimuni on the is-land of Pag, was found during a tourist diving trip in 2018 by Vedran Dorušić, owner of the Foka Diving Center, located in Camping Village Šimuni. The site comprises about 400 wine amphorae of the Lamboglia 2 type dating to the 1st century BC which lie on the slope of the seabed, outlining the shape of a sunken ship. The group of preserved ship's cargo extends in a northeast-southwest di-rection, and judging by the research results so far, the bow of the ship was facing northeast when it sank.

The assumption is that the ship came to rest on the starboard side, with the keel on the shallower part of the site. The overall length of the visible part of the ship's cargo is about 21 m, suggest-ing a merchant ship of about 25 m in length, which fits into the image of the eastern Adriatic seafaring during the late Roman Republic. About 38 m north-

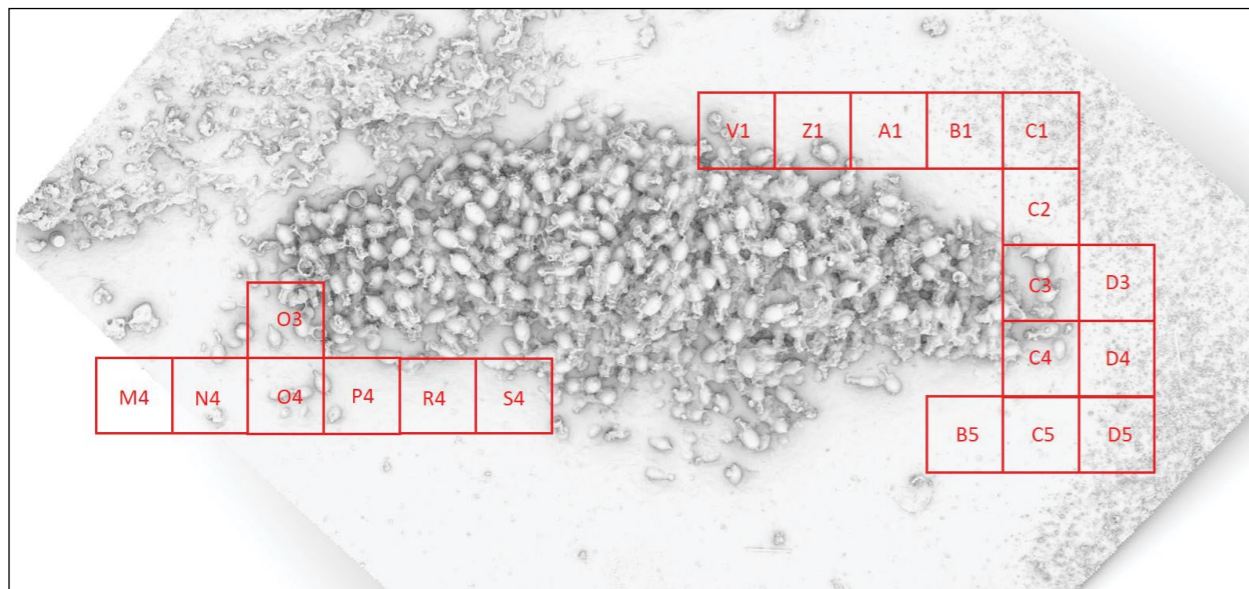


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Pogled na nalazište i sondu 1/2022, postavljenu sa sjeverne strane glavne koncentracije nalaza (foto: D. Vujević)
View of the site and trench 1/2022, placed on the north side of the main concentration of finds (photo: K. Yamafune)



Plan nalazišta iz 2018. godine, s označenim položajem istraženih kvadrata (podloga: K. Yamafune)
Plan of the site from 2018, with marked positions of the investigated squares (base: K. Yamafune)

ostataka potonulog broda uočena je i olovna prečka antičkog olovno-drvenog sidra, duljine 160 cm, koja na jednom kraku nosi natpis STRATON (A i T u ligaturi), a na drugom OFIDI · T · S. Da prečka doista pripada nalazištu, dokazano je istraživačkom kampanjom 2020. godine, kada su na njegovu sjeveroistočnom kraju otkrivene još dvije olovne prečke sidara od kojih jedna nosi natpise identične natpisima na prvoj otkrivenoj prečki, a druga natpis A · OFIDI i četiri astragala u dobitnom položaju *lactus Veneris* (svaki astragal na jednoj od četiriju različitih strana).¹

S obzirom na atraktivnost ronilačke lokacije, odlučeno je da se nalazi ostave na morskom dnu i uključe u lokalnu ronilačku ponudu. Nakon stručnih konzultacija, nad nalazište nije postavljena nikakva fizička zaštita kako se ne bi narušio njegov izgled, već je dogovoreno da se dugoročno ispita mogućnost postavljanja nadzornog sustava pomoću kojeg bi se pratile sve ronilačke aktivnosti na tom prostoru.

U vremenu od 6. do 16. studenoga 2022. provedena je četvrta istraživačka kampanja za koju su sredstva osigurali Kamp Šimuni d. o. o., Foka d. o. o. i Centar za podvodna istraživanja Navalys iz Košljuna, Sveučilište u Zadru, Tehnomedika d. o. o. i Dragorlux d. o. o. iz Zagreba i Tokyo Broadcasting System

¹ S obzirom na ime zabilježeno na olovnoj prečki sidra, projekt istraživanja, zaštite i očuvanja antičkog brodoloma kod rta Letavice nazvan je STRATON, a početkom 2020. godine pokrenuta je Facebook stranica s ciljem aktivne promidžbe i objave rezultata istraživačkih i promidžbenih aktivnosti (<https://www.facebook.com/groups/715474635723516>). Promidžba projekta rezultirala je prikupljanjem sredstava potrebnih za financiranje daljnjih istraživanja.

east of the remains of the sunken ship, a lead stock of a Roman lead-wooden anchor, 160 cm long, was also noticed, bearing the inscription STRATON (A and T in ligature) on one arm, and OFIDI · T · S on the other. That the stock really belongs to the site was proven by the research campaign in 2020, when two more lead anchor stocks were discovered at its northeastern end. One of these stocks bears inscriptions identical to the inscriptions on the first discovered stock, and the other the inscription A · OFIDI and four astragals in a winning position *lactus Veneris* (each astragalus on one of the four different sides).¹

Considering the attractiveness of the diving location, it was decided to leave the finds on the seabed and include it in the local diving offer. After expert consultations, no physical protection was placed over the site in order not to spoil its appearance, but it was agreed that the possibility of installing a surveillance system to monitor all diving activities in that area would be considered in the long term.

Between November 6 and 16, 2022, the fourth research campaign was carried out, for which funds were provided by Kamp Šimuni Ltd., Foka Ltd. and the Center for Underwater Research Navalys from Košljun, University of Zadar, Tehnomedika Ltd. and Dragorlux Ltd. from Zagreb and Tokyo Broadcasting System Television from Japan. The funds were

¹ Considering the name recorded on the lead stock of the anchor, the project of research, protection and preservation of the Roman shipwreck near Cape Letavica was named STRATON, and in early 2020, a Facebook page was launched with the aim of active promotion and publication of the results of investigation and promotion activities (<https://www.facebook.com/groups/715474635723516>). Promotion of the project resulted in the collection of funds needed to finance further research.

Television iz Japana. Sredstva su bila dostatna za istraživanje u trajanju od deset radnih dana, u kojem su uz stručnjake i ronioce Sveučilišta u Zadru, Instituta za pomorsku baštinu ARS NAUTICA i RC Foka, sudjelovali i predstavnici Arheološkog muzeja u Zadru, Hrvatskog restauratorskog zavoda u Zagrebu i Međunarodnog centra za podvodnu arheologiju u Zadru.

Istraživanje se odvijalo u trima različitim sektorima. Prije svega, pristupilo se ponovnom čišćenju sjeveroistočnog kraja nalazišta, kako bi se u potpunosti očistile i dokumentirale dvije prije otkrivene olovne prečke antičkih sidara. Tijekom uklanjanja sedimenta, na samom kraju nalazišta pronađen je korodirani metalni predmet koji oblikom podsjeća na vrh valosijeka, što je potrebno provjeriti tijekom laboratorijske obrade nalaza. Jedna sonda, sastavljena od dvaju kvadrata (Z1 i A1), postavljena je nad gornji rub sjeveroistočnog dijela nalazišta, kako bi se provjerilo postoje li pod sedimentom očuvani dijelovi drvene brodske konstrukcije. Druga sonda, sastavljena od triju kvadrata (P4–S4), postavljena je pod donji rub jugozapadnog dijela nalazišta, na kojem se pretpostavljalo postojanje brodske kuhinje. Pred kraj istraživanja dodana su još četiri kvadrata u smjeru jugozapada (M4–O4 i O3).

sufficient for ten working days of excavations, participated by experts and divers from the University of Zadar, the Institute for Maritime Heritage ARS NAUTICA and RC Foka, representatives of the Archaeological Museum in Zadar, the Croatian Conservation Institute in Zagreb and the International Center for Underwater Archaeology in Zadar.

The excavation took place in three different sectors. First of all, the north-eastern end of the site was recleaned, in order to completely clean and document the two previously discovered lead stocks of Roman anchors. During the removal of the sediment, a corroded metal object was found at the very end of the site, the shape of which resembles the top of a cutwater, which needs to be checked during the laboratory processing of the finds. One trench, composed of two squares (Z1 and A1), was placed over the upper edge of the northeastern part of the site, in order to check whether there are preserved parts of the wooden ship structure under the sediment. The second trench, composed of three squares (P4–S4), was placed under the lower edge of the southwestern part of the site, where the ship's galley was assumed to be. Four more squares were added in the southwest direction (M4–O4 and O3) towards the end of the excavation.



Dvije olovne prečke antičkih sidara s istočne strane nalazišta (foto: D. Gorički)
Two lead stocks of Roman anchors from the eastern side of the site (photo: D. Gorički)





Plan nalazišta nakon istraživanja (model: K. Yamafune)
Site plan after research (model: K. Yamafune)



... Otkriće kasnohelenističke uljanice (foto: K. Yamafune)
 ... Discovery of a late Hellenistic oil lamp (photo: K. Yamafune)



... Priprema za vađenje potpuno očuvanog bikoničnog lonca s dvije ručke (foto: M. Brzac)
 ... Preparation for extraction of a fully preserved biconical pot with two handles (photo: M. Brzac)

U objema sondama potvrđeni su pretpostavljeni nalazi. U prvoj sondi otkrivena su četiri ulomka platica i jedan ulomak rebra broda. Prisutnost jezičaca potvrdila je kako je riječ o konstrukciji izrađenoj tehnikom spajanja platica sistemom utora i jezičaca, a drveni čavli ukazali su na način spajanja rebara i oplata. Svi drveni elementi uzorkovani su s ciljem utvrđivanja vrste drvene građe iskorištene za izgradnju broda. U drugoj sondi u potpunosti je dokazan smještaj brodske kuhinje jer je iskop rezultirao otkrićem jedne potpuno očuvane uljanice, triju dubokih posuda s dvije ručke, velikog keramičkog poklopca, velike plitice s dvije ručke, tanjura s crnim premazom, kuglastog vrča s cjevastim izljevom, kojem nedostaje vrat te još osam djelomično očuvanih keramičkih posuda. Osim toga, pronađeno je i 11 diskoidnih čepova amfora. U kvadratu S4 pronađene su tri amfore manjih dimenzija, koje pripadaju istom tipu kao i ostatak broskog tereta, a u kvadratu O3 loše očuvano metalno vjetro na situlu.

Krajem istraživačke kampanje 2018. godine, s jugozapadnog kraja nalazišta izvađena je jedna čitava amfora, na čijem se vratu tijekom kasnijeg čišćenja i konzervatorske obrade pojavio pečat ANTA EV, kojem analogiju pronalazimo u Pisi u Italiji (Callender 1965). Krajem istraživačke kampanje 2022. godine sa sjeveroistočnog kraja nalazišta izvađena je još jedna čitava amfora koja je predana na konzervaciju u Međunarodni centar za podvodnu arheologiju u Zadru. Tijek istraživanja pratila je TV ekipa Tokyo Broadcasting System Television iz Japana.

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MODRAVE – POTRAGA ZA TRAGOVIMA PROŠLOSTI U LABIRINTU SUHOZIDA

Modrave –
looking for traces
of the past in a dry
stone wall maze



Između Zadra i Šibenika prostire se jedan neobičan segment jadranske obale. S jedne je strane Jadransko more, a s druge jezero – Vransko jezero, najveće u Hrvatskoj, između je niska kopnena prevlaka. Zračni pogled na taj prostor pokazuje dva različita dijela – na sjeverozapadu je mreža obrađenih i šumovitih parcela, različite veličine, šikare, naselja i putova, na jugoistoku je mozaik malih parcela prekrivenih vegetacijom. Malo ih je obrađenih, mnogo je šikare, poneki objekt i niz linija, rijetko putova, često suhozidina. Taj mozaik, to su Modrave. Nepostojanje naselja i ravna cesta današnjim su putnicima znak da s nogom na gasu mogu proletjeti, a da pritom i ne stignu promisliti što krije mediteranska šikara oko njih. No nije uvijek bilo tako. Mozaik suhozida i zaraslih maslinika napušten je od ljudi, a ipak je prepun tragova njihove aktivnosti iz različitih vremena.

An unusual segment of the Adriatic coast extends between Zadar and Šibenik. On one side is the Adriatic Sea, and on the other is Lake Vrana, the largest lake in Croatia, with a low isthmus in between. An aerial view of this area shows two different parts - in the northwest is a network of cultivated and wooded plots of different sizes, scrub, settlements and roads, in the southeast is a mosaic of small plots covered with vegetation. Few of them are cultivated, there is a lot of scrub, some buildings and a series of lines, rarely roads, often dry stone walls. The toponym Modrave refers exactly to that mosaic. The absence of settlements and straight road are a sign to today's travelers to speed up with the foot on the gas, without even having time to think about what the Mediterranean scrub around them is hiding. But it was not always like that. The mosaic of dry stone walls and overgrown olive



... Kvadratna gomila – jedan od limitacijskih tragova, a u pozadini stari i novi mulovi (foto: J. Šučur)
... Square mound - one of demarcation traces, in the background old and new piers (photo: J. Šučur)



... Ostatci samostana na Sustipancu (foto: J. Šučur)
... Monastery remains on Sustipanac (photo: J. Šučur)

U sklopu institucijskih znanstveno-istraživačkih projekata Sveučilišta u Zadru odvija se i jedan usmjeren upravo na promjene ovog prostora i dinamiku kojom su se odvijale. Projekt *Modrave – kulturni krajolik u povijesnoj perspektivi* pod vodstvom Kristijana Jurana s Odjela za povijest dvogodišnji je projekt u koji su uključeni i Ante Blaće s Odjela za geografiju, Ante Jurić iz Centra za jadransku onomastiku i etnolingvistiku, Marko Rimac s Odsjeka za povijest Filozofskog fakulteta Sveučilišta u Splitu, Mate Bobanović, doktorand na poslijediplomskom studiju *Jadran – poveznica među kontinentima*, Nikola Kurkut iz *Udruge Modrave Murter-Betina*, te autor ovog rada, s Odjela za arheologiju Sveučilišta u Zadru. Iz popisa suradnika vidljivo je kako projekt osim historioografskog aspekta uključuje geografske, onomastičke te arheološke ciljeve. Njihovu ispunjenju doprinijeli su i arheolozi Marko Meštrov i Mate Parica, te će upravo rezultati arheološkog rekonosciranja provedenog tijekom 2022. godine biti prezentirani u nastavku.

Daleko od institucijskih središta Šibenika i Zadra, Modrave su prostor koji još nije našao svoje mjesto u suvremenoj arheološkoj literaturi, dok se i u historioografskoj većinom navode rijetki spomeni istoimenog sela u povijesnim izvorima, te pro-

groves has been abandoned by humans, yet it is full of traces of their activity from different times.

One of the institutional scientific research projects of the University of Zadar is focused on the changes in this area and the dynamics with which they took place. The project *Modrave - cultural landscape in a historical perspective* led by Kristijan Juran from the Department of History is a two-year project which includes the participation of the following collaborators: Ante Blaće from the Department of Geography, Ante Jurić from the Center for Adriatic Onomastics and Ethnolinguistics, Marko Rimac from the Department of History of the Faculty of Philosophy of the University in Split, Mate Bobanović, doctoral student at the postgraduate study *Adriatic - a link between continents*, Nikola Kurkut from the Modrave Murter-Betina Association, and the author of this paper, from the Department of Archeology of the University of Zadar. From the list of collaborators, it is evident that the project, in addition to the historiographical aspect, includes geographical, onomastic and archaeological objectives. Archaeologists Marko Meštrov and Mate Parica also contributed to their fulfillment, and the results of the archaeological survey carried out in 2022 will be presented below.

Far from the institutional centers of Šibenik and





Uvala (Mala) Zečica s pregradnim zidom (foto: J. Šučur)
 (Mala) Zečica cove with a dividing wall (photo: J. Šučur)

ces širenja murterskih posjeda na kopno (Stošić 1941: 220–228; Anzulović 2017: 161–162; Juran 2017: 62–67).

S obzirom na karakter terena – gustu mrežu suhozida, kamenih gomila, neobrađenost većine parcela kao i financijska sredstva, arheološki se dio aktivnosti odvijao na ograničenom prostoru, ciljano, s jasno definiranim zadacima. Rekonosciranje je provedeno u dvije faze – u proljeće i jesen 2022. godine. U proljeće smo se fokusirali na kopneni segment gdje smo pokušali pronaći materijalne ostatke starijeg razgraničenja između Pakoštana s jedne strane te Betine i Murtera s druge strane. Naime, širenje murterskih posjeda, nužno s obzirom na ograničenost otočnih resursa, na kopnenom dijelu nije prošlo bez otpora susjednih zajednica. Razgraničenje iz 1751. godine očuvalo se do danas kao granica Zadarske i Šibensko-kninske županije, a vidljivo je i u spomenutoj razlici u načinu i intenzitetu korištenja prostora, no na ranonovovjekovnim kartama ostalo je zabilježeno i ono ranije. Tako je na karti iz fonda *Mape Grimani* Državnog arhiva u Zadru naveden niz orijentira – kamenih gomila i uklesanih križeva – koji su označavali granicu, a postavljeni su 1734. godine (HR-DAZD-6, 293). Na još jednoj karti uz

Zadar, Modrave is an area that has not yet found its place in contemporary archaeological literature, while the historiographical literature mostly contains rare mentions of the village of the same name in historical sources, and of the process of the expansion of the Murter estates onto the mainland (Stošić 1941: 220–228; Anzulović 2017: 161–162; Juran 2017: 62–67).

Considering the character of the terrain - a dense network of dry stone walls, stone mounds, the uncultivated nature of most plots as well as financial resources, the archaeological part of the activity took place in a limited area, targeted, with clearly defined tasks. The survey was carried out in two phases - in the spring and autumn of 2022. In the spring, we focused on the land segment where we tried to find material remains of the older demarcation between Pakoštane on the one hand and Betina and Murter on the other. Namely, the expansion of the Murter estates, which was necessary considering the limited resources of the island, on the mainland did not pass without resistance from the neighboring communities. The demarcation from 1751 has been preserved to this day as the border between Zadar and Šibenik-Knin counties, and it is also visible in the aforementioned difference in the manner and intensity of use of the area, but

kamene gomile granica dijeli i selo s toponimom *Modrave grande*. Kako među brojnim gomilama definirati one koje su dio razgraničenja, a nisu samo posljedica krčenja? Kako pronaći kamen živac s urezanim križem u potpuno zapuštenom krajoliku mediteranske šikare ili na preobraženoj obali? To je samo dio problema pa ne možemo jednoznačno odrediti tragove razgraničenja, no s obzirom na pružanje obale i smjer razgraničenja, najvjerojatnije smo u prostoru uspjeli prepoznati krajnje dvije kamene gomile, te na tom pravcu uočiti zanimljivo nizanje dodatnih kamenih gomila. Uočeni su i ostatci suhozidnih objekata na mjestu gdje smo očekivali ostatke sela, ali je u blizini pronađen samo jedan ulomak engobirane keramike, pa će potvrdu trebati potražiti arheološkim istraživanjima.

Druga, jesenja faza rekognosciranja usredotočila se na obalni dio. Osnovni cilj bio je pregled svih uvala od Lučice na sjeverozapadu do Prosike i otočica Sustipanca na jugoistoku. Pri tome smo posebno pazili na stara пристаништа – mulove jer su oni točka koja je Murterinima omogućavala komunikaciju s Modravama. Upravo na tim mjestima nađen je velik broj ulomaka keramičkih posuda što je razumljivo jer su to točke ukrcaja/iskrcaja

the earlier demarcation was also recorded on the early Modern Period maps. Thus, on the map from the Grimani Maps Collection of the State Archives in Zadar, one can see a series of landmarks - stone mounds and carved crosses - that marked the border and were erected in the year 1734 (HR-DAZD-6, 293). On another map, next to the stone mounds, a village with the toponym *Modrave grande* is divided by the border. Among the many mounds, how to define those that are part of the demarcation and are not just the result of land clearance? How to find a bedrock with an engraved cross in a completely neglected landscape of Mediterranean scrub or on a transformed coast? This is only part of the problem, so we cannot unambiguously determine the demarcation traces, but considering the shape of the coast and the direction of the demarcation, we were most likely able to recognize the last two stone mounds in the area, and to notice an interesting row of additional stone mounds in that direction. Remains of dry stone wall buildings were also observed in the place where we expected the remains of a village, but only one fragment of pottery with engobe was found nearby, so we will have to look for confirmation through archaeological research.



Hrid Splitskiac, brončanodobno nalazište na obali nasuprot Murteru (foto: J. Šučur)
 Splitskiac islet, Bronze Age site on the coast across Murter (photo: J. Šučur)





pri čemu su se nesreće vjerojatno često događale. Od ostalih zabilježenih ostataka vrijedi spomenuti zid koji pregrađuje uvalu (Mala) Zečica (Mala luka) i predstavlja ostatak solane, hrid Spličak (Spličac/Kalebić) u čijem se podmorju nalaze brojni fragmenti brončanodobnih keramičkih posuda i životinjskih kostiju te na krajnjem jugoistoku otočić Sustipanac. Od svih evidentiranih lokaliteta jedino je Sustipanac dosad zabilježen kao arheološki lokalitet. Samostan na otočiću kao i rimske ostatke zabilježio je još Alberto Fortis u 18. stoljeću. Crkvu i druge objekte na otočiću darovao je franjevcima trećoredcima glagoljašima Petar Draganić 1511. godine, a zbog opasnosti od Osmanlija i siromaštva samostan je cijelo vrijeme bio zapušten, te je početkom 19. stoljeća potpuno napušten i na kra-

The second, autumn survey phase focused on the coastal area. The main objective was to survey all coves from Lučica in the northwest to Prosika and the islet of Sustipanac in the southeast. At the same time, we paid special attention to the old piers because they are the point that allowed the residents of Murter to communicate with Modrave. It is in exactly these places that a large number of fragments of ceramic vessels were found. This is understandable because these are the loading/unloading points where accidents probably happened often. Among other recorded remains, it is worth mentioning the wall that divides (Mala) Zečica (Mala luka) cove and represents the remains of the salt pan, the Spličak (Spličac/Kalebić) cliff whose seabed hides numerous fragments of Bronze Age ceramic vessels and



• Kamene gomile u nizu i mogući položaj ostataka sela Modrave grande (HR-DAZD-6 Mletački katastar. Mape Grimani, Druga izmjera zadarskog i drniškog područja, sv. 1, br. 17 - Pakoštane)
• Stone mounds in a row and possible location of the remains of the village of Modrave grande (HR-DAZD-6 Venetian cadastres, Maps Grimani, vol. 1, no. 17)

ju je za francuske vlasti otočić prodan. Uz ova dva horizonta, zabilježen je i ranokršćanski, pa je prva crkva najvjerojatnije nastala još u kasnoj antici (Stošić 1941: 148–150; Milošević 1992: 53–54; Juran, Sorić 2010: 111). Ostatci su još i danas vidljivi na najvišoj točki otočića, a pojedini su zidovi očuvani i do 2 m visine. Uz ostatke glazirane i grube keramike iz vremena djelovanja samostana na južnim padinama, na zapadnoj i sjevernoj obali su brojni ostatci keramike i drugih tragova iz rimskog vremena što upućuje na duži kontinuitet obitavanja na lokalitetu i čini ga jednom od najzanimljivijih točaka koje smo obišli u našim lutanjima i upoznavanjima modravskog krajolika.

animal bones, and the islet of Sustipanac as the most southeasterly point. Of all the recorded sites, only Sustipanac has been recognized as an archaeological site so far. The monastery on the islet and the Roman remains were recorded by Alberto Fortis in the 18th century. The church and other buildings on the islet were donated by Petar Draganić to the Glagolitic Franciscans of the Third Order in 1511, and due to the danger from the Ottomans and poverty, the monastery was neglected all the time, and at the beginning of the 19th century it was completely abandoned. Eventually the islet was sold during French government. In addition to these two horizons, an early Christian one was also recorded, so the first church was most likely built in Late Antiquity (Stošić 1941: 148–150; Milošević 1992: 53–54; Juran, Sorić 2010: 111). The remains are still visible today at the highest point of the island, and some walls have been preserved up to 2 m high. In addition to the remains of glazed and coarse pottery from the time when the monastery was active on the southern slopes, on the western and northern shores there are numerous pottery sherds and other traces from Roman times, which suggest a longer continuity of habitation at the site and make it one of the most interesting points we visited in our wanderings through the Modrave landscape.

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ISTRAŽIVANJE I VAĐENJE OSTATAKA DVAJU SREDNJOVJEKOVNIH BRODOVA U RABU

Research and extraction
of the remains of two medieval
ships in Rab

U jugoistočnom uglu građevinskog iskopa na k. č. 140/3, k. o. Rab – Mundanije, u gradu Rabu, tijekom arheološkog nadzora koji je u svibnju 2022. provela tvrtka Kaducej d. o. o., otkriveni su ostatci dvaju brodova, na međusobnoj udaljenosti od oko 4 m. Tijekom lipnja 2022. pod istim je vodstvom provedeno i probno arheološko istraživanje s ciljem provjere orijentacije, dimenzija i stanja očuvanosti nalaza. Tada je utvrđeno da su ostatci broda Rab 1 položeni u smjeru sjeveroistok-jugozapad, u dužini od oko 7 m i širini od oko 2,5 m, a sa sjeveroistočne se strane podvlače pod profil građevinskog iskopa. Ostatci broda Rab 2 zatečeni su u daleko lošijem stanju, a očuvali su se na površini od oko 3 m². Radiokarbonske analize izdvojenih uzoraka (uzorci su analizirani u laboratoriju Beta Analytic Testing Laboratory, pod oznakama Beta – 630201 i Beta – 630202), rezultirale su datiranjem ulomka rebra broda Rab 1 u 14. stoljeće (1300 – 1370 cal AD), a ulomka platice broda Rab 2 u


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Remains of two ships were discovered, at a distance of about 4 m from each other in the southeast corner of the construction trench at cadastral parcel 140/3, of the cadastral municipality Rab - Mundanije, in the city of Rab, during the archaeological inspection carried out in May 2022 by the company Kaducej Ltd. In June 2022, the same company conducted archaeological trial excavation with the aim of checking the orientation, dimensions and state of preservation of the finds. It was determined that the remains of ship Rab 1 were laid in a north-east-southwest direction, with a length of about 7 m and a width of about 2.5 m, and on the northeast side they were under the profile of the construction trench. The remains of ship Rab 2 were found in a much worse condition, and were preserved in an area of about 3 m². Radiocarbon analyses of the collected samples (the samples were analyzed in the Beta Analytic Testing Laboratory, under desig-



Pogled s jugoistoka na gradilište na k. č. 140/3, k. o. Rab – Mundanije (foto: I. Radić Rossi)
View from the southeast of the construction site at cadastral parcel 140/3, Rab – Mundanije (photo: I. Radić Rossi)



Izvadak iz austrougarskog katastarskog plana iz 1828. godine, s označenom lukom na sjeveroistočnom kraju (<https://maps.arcanum.com/en/map/cadastral>)
Segment of the Austro-Hungarian cadastral map from 1828, with the port marked at the north-eastern end (<https://maps.arcanum.com/en/map/cadastral>)





Ostatci broda Rab 2 (foto: A. Mitrović)
Remains of ship Rab 2 (photo: A. Mitrović)

15. stoljeće (1407 – 1456 cal AD), što je istraživače uputilo na zaključak da je prvi brod korišten tijekom 15. stoljeća, a drugi nešto kasnije. Po završetku probnog istraživanja ostatci brodova pokriveni su geotekstilom i zasuti sedimentom (Tresić Pavičić 2022).

Na tom mjestu tijekom druge polovice 20. stoljeća izgrađen je hotel Istra, koji je nedavno srušen kako bi se na njegovu mjestu izgradio hotel Mareta. Riječ je o prostoru nekadašnje rapske luke koja je još postojala tijekom prve polovice 19. stoljeća. Na karti Habsburške Monarhije, izrađenoj tijekom vojnog snimanja 1869. – 1887., vidi se već izgrađena obala, a prostor nekadašnje luke potpuno je zatrpan (<https://maps.arcanum.com/en/map/thirdsurvey25000/>).

Istraživanje i vađenje ostataka brodova provedeno je u vremenu od 1. do 21. prosinca 2022., u prilično nepovoljnim vremenskim uvjetima. No, iako su kišna razdoblja ometala rad na terenu, vlažni su uvjeti pogodovali stanju brodova, a istraživačka akcija s uspjehom je privedena kraju. Istraživanje je započelo uklanjanjem površinskog sloja zemlje, istovremeno na prostoru obaju brodova. Brod Rab 2 tijekom prvog je tjedna u cijelosti očišćen. Očuvani drveni elementi obilježeni su oznakama

nations Beta - 630201 and Beta - 630202), resulted in the dating of the frame fragment of ship Rab 1 to the 14th century (1300 - 1370 cal AD), and the fragment of the plank of ship Rab 2 to the 15th century (1407 – 1456 cal AD), which led the researchers to conclude that the first ship was used during the 15th century, and the second somewhat later. At the end of the trial excavation, the remains of the ships were covered with geotextile and backfilled with sediment (Tresić Pavičić 2022).

In the second half of the 20th century, Hotel Istra was built on that site, but it was recently demolished to make way for Hotel Mareta. It is the area of the former port of Rab, which still existed during the first half of the 19th century. On the map of the Habsburg Monarchy, made during a military survey in 1869 - 1887, one can see the coast already built, and the area of the former port completely buried (<https://maps.arcanum.com/en/map/thirdsurvey25000/>).

Research and extraction of the remains of the ships was carried out between December 1 and 21, 2022, in rather unfavorable weather conditions. However, even though rainy periods hindered work in the field, the wet conditions favored the condition of the ships, and the research campaign was



Čišćenje broda Rab 1 (foto: I. Radić Rossi)
Cleaning of ship Rab 1 (photo: I. Radić Rossi)

RAB.2_2022_T01 – RAB.2_2022_T035,¹ nakon čega je konstrukcija zaštićena geotekstilom u očekivanju dokumentiranja i vađenja. Ono što se na osnovi oskudnih ostataka moglo primijetiti činjenica je da je brod vjerojatno izgrađen bez središnje kobilice koja je zamijenjena kobilicom platicom, a nakon izrade brodske oplata s donje su strane pričvršćene dvije bočne grede koje su služile za stabilizaciju broda na plitkim pješčanim obalama otoka Raba.

Tijekom čišćenja konstrukcije broda Rab 1 u kremenom je dijelu pronađena jedna dobro očuvana drvena žlica, a dio manje žlice pronađen je i u skupini granja iza oštećene krme. Nešto dalje prema pramcu pronađen je i drveni kolotur promjera desetak centimetara. Osim toga, vrijedi istaknuti i pronalazak nekoliko skupina koštica maslina tik uz brodsku konstrukciju, koje najrječitije svjedoče o korištenju broda u svakodnevnom životu srednjovjekovnih stanovnika Raba. Konstrukcija je očuvana od krme do devetnaestog rebra prema provi, gdje je, nažalost, prekinuta betonskom ispunom koja podržava betonsku ogradnu gredu. S njezine

brought to an end successfully. The research began with the removal of the surface layer of earth, simultaneously in the area of both ships. During the first week, ship Rab 2 was completely cleaned. The preserved wooden elements are marked with the marks RAB.2_2022_T01 – RAB.2_2022_T035¹, after which the structure is protected with geotextile pending documentation and extraction. What could be noticed on the basis of the scarce remains is the fact that the ship was probably built without a central keel, which was replaced by a keel plank, and after the construction of the ship's planking, two side beams were attached to the bottom, which served to stabilize the ship on the shallow sandy shores of the island of Rab.

During the cleaning of the structure of ship Rab 1, one well-preserved wooden spoon was found in the stern part, and part of a smaller spoon was also found in a cluster of branches behind the damaged stern. A little further towards the bow, a wooden pulley with a diameter of ten centimeters was also found. Furthermore, it is worth highlighting the

¹ Oznaka T iskorištena je kao kratica za englesku riječ *timber* u značenju drvenog elementa brodske konstrukcije. Oznaka je odabrana s obzirom na stanje brodske konstrukcije i nemogućnost determiniranja svih njezinih dijelova.

¹ Oznaka T iskorištena je kao kratica za englesku riječ *timber* u značenju drvenog elementa brodske konstrukcije. Oznaka je odabrana s obzirom na stanje brodske konstrukcije i nemogućnost determiniranja svih njezinih dijelova. (PREVESTI NA ENGLJSKI!!!)





Istraživačka ekipa na terenu; gore, slijeva nadesno: Robert Kordić, Branimir Cvrtila, Davor Matešić, Paulo Škibola, Ana Mitrović i dolje, slijeva nadesno: Nikolina Ćuk, Irena Radić Rossi, Ivana Matković i Renata Zorkić (foto: V. Perić)
 Research team at the site; above, from left to right: Robert Kordić, Branimir Cvrtila, Davor Matešić, Paulo Škibola, Ana Mitrović and below, from left to right: Nikolina Ćuk, Irena Radić Rossi, Ivana Matković and Renata Zorkić (photo: V. Perić)

južne strane, oko sredine broda, nalazi se veliko oštećenje uzrokovano djelovanjem bagera. Čitava je konstrukcija izrađena pomoću rebrenica i rebrenih nastavaka koji su u stražnjem dijelu broda pričvršćeni uz dijelove rebrenica prema krmu, a u njegovu prednjem dijelu uz dijelove rebrenica prema provi. I u slučaju broda Rab 1 utvrđeno je kako je pri njegovoj izgradnji centralna kobilica zamijenjena kobiličnom daskom, a dvije bočne gredice poslužile su za stabilizaciju brodske konstrukcije.

Postojeće su rebrenice obilježene oznakama RAB.1_2022_FT 01 – RAB.1_2022_FT 18, a otisci nepostojećih rebrenica obilježeni su oznakama RAB.1_2022_FTI 00 i RAB.1_FTI 09. Očuvani rebreni nastavci obilježeni su oznakama RAB.1_2022_Fu i pripadajućim brojem. S lijeve strane broda obilježeno je sveukupno 19 platice ili dijelova platice (P), a s desne strane njih 15. Osim toga obilježena je i kobilična daska (KP), krmena statva (SP), bočne kobilice (BK), proveza (St), krmeno zrcalo (STERN) i neidentificirani elementi (UM).

Po završetku čišćenja i obilježavanja, brodovi su snimljeni fotogrametrijski i 3D laserskim skenerom, nakon čega se pristupilo vađenju pojedinih dijelova, ispiranju i dokumentiranju u mjerilu 1 : 1. Svi ele-

ment brodske konstrukcije uzorkovani su, a uzorci poslani na analizu kako bi se odredile vrste drvene građe iskorištene za izgradnju brodova. Istraživanje je privedeno kraju pohranom izvađenih dijelova na desalinizaciju u bazenu koji je osigurao Grad Rab.

discovery of several groups of olive pits right next to the ship's structure, which are most illustrative of the use of the ship in the daily life of the medieval inhabitants of Rab. The structure has been preserved from the stern to the nineteenth frame towards the bow, where, unfortunately, it was interrupted by a concrete fill that supports a concrete fence beam. Extensive damage caused by the action of the excavator was recorded around the middle of the ship on its southern side. The entire structure is made by using floor timbers and futtocks that are attached to the parts of the floor timbers towards the stern in the rear part of the ship, and to the parts of the floor timbers towards the bow in its front part. In the case of ship Rab 1 as well, it was established that during its construction, the central keel was replaced by a keel plank, and the two side beams were used to stabilize the ship's structure.

The existing floor timbers were marked with RAB.1_2022_FT 01 – RAB.1_2022_FT 18, and the imprints of the non-existing floor timbers were marked with RAB.1_2022_FTI 00 and RAB.1_FTI 09. The preserved futtocks were marked with RAB.1_2022_Fu and a corresponding number. A to-



a) Drvena žlica pronađena u blizini rebra RAB.1-2022-F 01; b) Drveni kolotur pronađen u blizini rebrenog nastavka RAB.1-2022-Fu 02 S (foto: I. Radić Rossi)
 a) Wooden spoon found near frame RAB.1-2022-F 01; b) Wooden pulley found near futtock RAB.1-2022-Fu 02 S (photo: I. Radić Rossi)

ment brodske konstrukcije uzorkovani su, a uzorci poslani na analizu kako bi se odredile vrste drvene građe iskorištene za izgradnju brodova. Istraživanje je privedeno kraju pohranom izvađenih dijelova na desalinizaciju u bazenu koji je osigurao Grad Rab.

Nalazi srednjovjekovnih brodova u Rabu pripadaju istoj brodograđevnoj tradiciji kao i nalazi dvaju srednjovjekovnih brodova iz Nina, koji su 1974. godine izvađeni iz mora, konzervirani i izloženi u Muzeju ninskih starina. S obzirom na to da se grafička dokumentacija koja je pratila vađenje ninskih brodova s vremenom zagubila, ostatci brodova iz Raba, a posebno ostatci broda Rab 1, odličan su izvor podataka za kvalitetnu rekonstrukciju njihova izvornog izgleda.

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<https://maps.arcanum.com/en/map/cadastral>

tal of 19 planks or parts of planks (P) were marked on the left side of the ship, and 15 on the right side. In addition, there were also the keel plank (KP), sternpost (SP), bilge keels (BK), stringer (St), stern transom (STERN) and unidentified elements (UM).

Upon completion of cleaning and marking, the ships were documented via photogrammetry and 3D laser scanning, after which individual parts were removed, washed and documented at a 1:1 scale. All elements of the ship structures were sampled, and the samples were sent for analysis to determine the types of wood used to build the ships. The research was brought to an end by storing the extracted parts for desalination in a pool provided by the City of Rab.

The finds of medieval ships in Rab belong to the same shipbuilding tradition as the finds of two medieval ships from Nin, which were taken out of the sea in 1974, preserved and exhibited in the Museum of Nin Antiquities. Considering that the graphic documentation that accompanied the extraction of the Nin ships was lost over time, the remains of the ships from Rab, and especially the remains of ship Rab 1, are an excellent source of data for a high-quality reconstruction of their original appearance.





STRATIGRAFIJA ARHIVA

Svako arheološko istraživanje nužno prati velika količina različite dokumentacije. Posebno to vrijedi u današnjem digitalnom dobu, kada tehnologija olakšava njezino stvaranje, obradu i čuvanje. Najveći dio te dokumentacije neće biti prezentiran široj javnosti, ni iz suvremenih, ali ni iz onih davnih vremena kada su sredstva bila oskudnija. Želja nam je na ovim stranicama izvući na svjetlo dana upravo takve momente, vesele trenutke ili ozbiljna svjedočanstva, koji bi inače ostali skriveni u stratigrafiji osobnih ili institucijskih arhiva.

Za prvi broj časopisa izabrali smo nekoliko fotografija na kojima su tadašnji studenti arheologije, a čuvaju se u fototeci Arheološkog muzeja u Zadru. Poznavajući povezanost muzeja i početaka Odjela za arheologiju, ne treba iznenaditi da smo na početku posegnuli upravo za tim arhivom, no u slučaju da i Vi posjedujete građu koju želite na ovaj način otrgnuti zaboravu, slobodno nam se javite. Rado ćemo se prisjetiti, za arheologe, ne tako davnih vremena i zajedno prekopati stratigrafiju Vašeg sjećanja!

STRATIGRAPHY OF ARCHIVES

Any archaeological research is necessarily accompanied by a large amount of different documentation. This is especially true in today's digital age, when technology facilitates its creation, processing and preservation. The largest part of this documentation will not be presented to the general public, neither from modern times, nor from those ancient times when resources were scarcer. On these pages, we wish to bring to light precisely such moments, happy times or serious testimonies, which would otherwise remain hidden in the stratigraphy of personal or institutional archives.

For the first issue of the magazine, we chose several photographs of archaeology students at the time, which are kept in the photo archive of the Archaeological Museum in Zadar. Knowing the connection between the museum and the beginnings of the Department of Archaeology, it should not be surprising that we reached out to this archive first, but if you also have some material that you want to save from oblivion in this way, please feel free to contact us. We will be happy to remember, for archaeologists, from not so ancient times, and to dig together through the stratigraphy of your memory!



..... Nin – Ždrijac, tovar i arheolozi, 1971. (foto: AMZD fototeka 6426 19416)
 Nin – Ždrijac, donkey with archaeologists 1971 (photo: AMZD photo library 6426 19416)



..... Studenti pri spajanju pithosa, 1950-ih (foto: J. Špralja, AMZD fototeka 249 722)
 Students conjoining sherds of pithos, 1950s (photo: J. Špralja, AMZD photo library 249 722)



..... Zadar – Sv. Dominik, voditelj istraživanja R. Jurić drži predavanje 1986. godine (foto: AMZD fototeka 14978 50180)
 Zadar – Sv. Dominik, on the site lecture by R. Jurić, field director, 1986 (photo: AMZD photo library 14978 50180)



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