



PODMORSKO ARHEOLOŠKO ISTRAŽIVANJE UVALE CASKE NA OTOKU PAGU

Underwater archaeological
research in the bay of Caska
on the island of Pag

Tijekom istraživačke kampanje 2023. u uvali Caski na otoku Pagu, u Zoni D Sektora 1 otkriven je niz okomito zabijenih drvenih pilona i horizontalnih greda, koji su podržavali konstrukciju velikog mola, izgrađenog za zaštitu sjevernog dijela uvale od južnog i jugoistočnog vjetra. Očišćena su sveukupno 274 drvena elementa, od kojih je detaljno dokumentirano 216. Piloni su se djelomično protezali duž broda *Caska 2*, namjerno potopljenog u svrhu izgradnje mola, a dijelom se nastavljali put sjevera i juga. Arheološka sonda sastojala se od 18 kvadrata dimenzija 2 x 2 m (Radić Rossi 2024). U neposrednoj blizini uočena je i veća količina tegula koje upućuju na mogućnost da se na tom mjestu nekada nalazila građevina pokrivena krovom.

Na osnovi geodetske snimke koju je napravio Robert Maršić iz Arheološkog muzeja u Zadru može se pretpostaviti kako je riječ o drvenoj konstrukciji koja je s unutrašnje strane pridržavala veliki mol, dok se građevina koja se vjerojatno nalazila na njegovu kraju tijekom vremena obrušila pod udarima južnih vjetrova.

Podmorsko istraživanje u uvali Caski nastavilo se u vremenu od 4. do 19. svibnja 2024. godine, u or-

During the 2023 research campaign in Caska Bay on the island of Pag (Fig. 1), a row of vertically driven wooden poles and horizontal beams was discovered in Zone D of Sector 1. These structural elements supported a large pier, constructed to protect the northern part of the bay from southern and south-eastern winds. A total of 274 wooden components were uncovered, of which 216 were documented in detail. The poles extended partially alongside the vessel

Caska 2, which had been scuttled to serve as part of the pier's foundation, and continued both northward and southward. The archaeological trench consisted of 18 squares, each measuring 2 x 2 meters (Radić Rossi 2024). A significant number of *tegulae* were also found nearby, suggesting the possible existence of a roofed structure at that location.

Based on a geodetic survey conducted by Robert Maršić from the Archaeological Museum in Zadar, it is assumed that this wooden structure supported the inner side of the pier, while a building likely stood at its end. Over time, this structure appears to have collapsed under repeated exposure to strong southern winds.



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Pogled na uvalu Casku s uzvisine Sv. Jurja (foto: Ch. Lehmann)
View of the bay of Caska from the hill of Sv. Juraj (St. George) (photo: Ch. Lehmann)

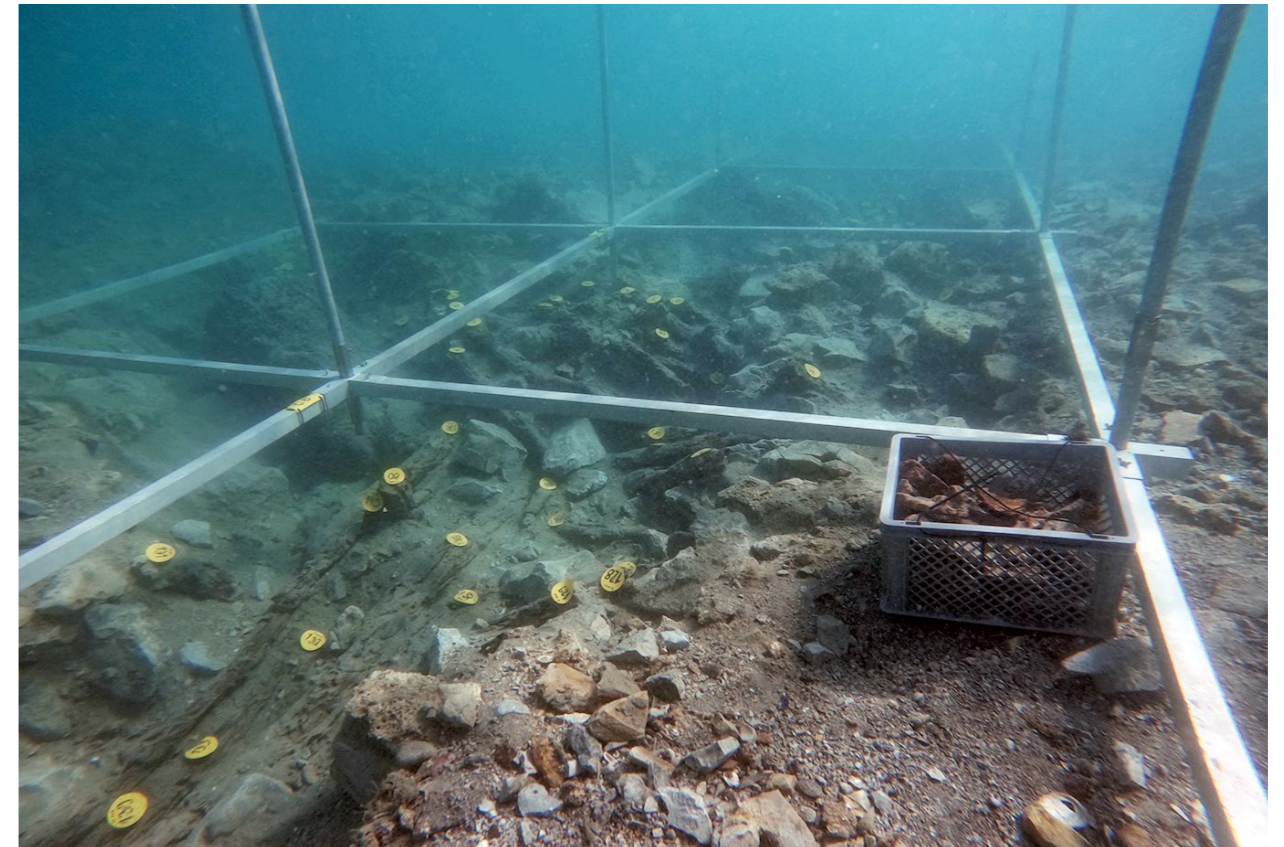




ganizaciji Sveučilišta u Zadru i Instituta za pomorsku baštinu ARS NAUTICA. Financijska sredstva osigurali su Ministarstvo kulture i medija RH i Grad Novalja, a u istraživanju su sudjelovali arheolozi Sveučilišta u Zadru i Arheološkog muzeja Zadar, studenti Sveučilišta u Zadru i profesionalni ronilci iz Rijeke, Splita i Makarske. Logističku podršku, kao i svake godine, pružio je Ronilački centar Foka iz Šimuna, zadužen i za organizaciju ronilačkih tečajeva za studente koji u okviru projekta *The European University for Smart Urban Coastal Sustainability – EU-CONEXUS* slušaju kolegij *Introduction to Underwater Archaeology*.

Dvije međunarodne skupine studenata boravile su u Caski u trajanju od sedam dana po skupini te aktivno sudjelovale u istraživačkim aktivnostima. Riječ je o praktičnom dijelu nastave koji se odvija na podmorskome arheološkom nalazištu, a s obzirom na predložene termine, ove se godine realizirao u Caski. Studenti su pristigli s većine sveučilišta uključenih u EU-CONEXUS alijansu, koja se nalaze u Njemačkoj, Francuskoj, Španjolskoj, Litvi, Rumunjskoj i Grčkoj. Tijekom sedmodnevnog boravka na terenu imali su priliku položiti početni ronilački tečaj, a tijekom preostala tri radna dana sudjelovati u arheološkom istraživanju plitkog podmorja uvale.

Underwater research in Caska Bay continued from May 4 to 19, 2024. The campaign was organized by the University of Zadar and the Institute for Maritime Heritage ARS NAUTICA, with financial support from the Ministry of Culture and Media of the Republic of Croatia and the City of Novalja. Participants included archaeologists from the University of Zadar and the Archaeological Museum in Zadar, students from the University of Zadar, and professional divers from Rijeka, Split, and Makarska. As in previous years, logistical support was provided by the Foka Diving Center from Šimuni, which also organized diving courses for students enrolled in the *Introduction to Underwater Archaeology* course, part of *The European University for Smart Urban Coastal Sustainability – EU-CONEXUS* project. Two international groups of students stayed in Caska for seven days each and took an active part in research activities. This is a practical part of the course that takes place at an underwater archaeological site, and given the proposed dates, this year it was implemented in Caska. The students arrived from most of the universities involved in the EU-CONEXUS alliance, located in Germany, France, Spain, Lithuania, Romania and Greece. During the seven-day stay at



Pogled na Sondu 1 (foto: I. Radić Rossi)
View of Probe 1 (photo: I. Radić Rossi)

Istraživanje je započelo na mjestu gdje je postavljeno godinu dana prije. Na morsko su dno postavljena još tri kvadrata u smjeru obale, C4, C3 i C2, a uskoro su uz njih dodani i kvadrati D2, D3, E2 i E3 u smjeru zapada (Sonda 1). Iako je u iskopu pronađeno još nekoliko horizontalno i vertikalno postavljenih drvenih elemenata, drvena je konstrukcija izgubila svoj artikulirani izgled pa je podmorski iskop na tom mjestu zaustavljen.

Arheološka sonda prebačena je nekoliko metara prema zapadu (Sonda 2), na rubni prostor obrušenog kamenja i nakupine tegula. Nad nju je postavljeno pomoćno metalno mrežište dimenzija 4 x 4 m, sastavljeno od šest kvadrata obilježenih oznakama O4, P4-P6, R5 i R6. Tijekom iskopa dokumentirana je stratigrafija slojeva morskog dna. Površinski sloj sastojao se od većeg kamenja, dimenzija oko 20-30 cm. Nakon tankog sloja mulja nastavljao se sloj bogat oblutcima i ulomcima školjaka, debljine 30-40 cm, u kojemu je pronađen arheološki materijal iz vremena kasne antike. Riječ je uglavnom o rijetkim ulomcima narebrenih amfora, tegula i grubljega keramičkog posuđa. Kulturni sloj koji bi mogao pripadati ranijim stoljećima Rimskog Carstva možda je prekriven obrušenim tegulama i velikim kamenjem.

the site, they had the opportunity to pass the initial diving course, and during the remaining three working days they participated in archaeological research of the shallow underwater area of the bay.

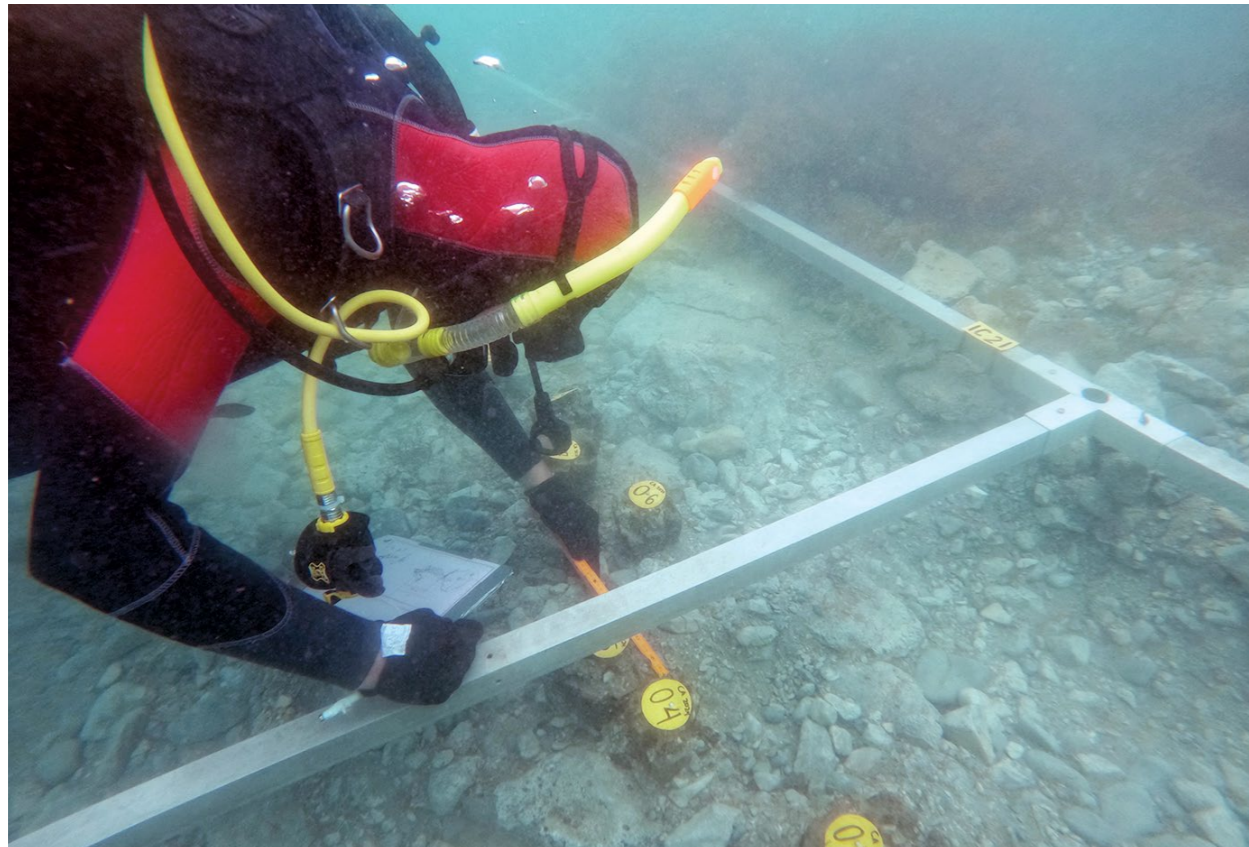
The research campaign resumed at the point where excavations had ended the previous year. Three new squares, C4, C3, and C2, were added on the seabed in the direction of the coast. Shortly afterward, four additional squares D2, D3, E2, and E3 were opened to the west (Probe 1). Although several new vertically and horizontally positioned wooden elements were uncovered, the structural integrity of the wooden construction had deteriorated significantly, prompting the decision to halt excavation at that location.

The archaeological probe was then shifted a few meters to the west (Probe 2), to the edge of the collapsed rocks and a mound of tegulae. An auxiliary metal grid measuring 4 x 4 m was placed above it, consisting of six squares labeled O4, P4-P6, R5 and R6. During excavation, the stratigraphy of the seabed was carefully documented. The surface layer consisted of larger stones, measuring about 20-30 cm. After a thin layer of mud, a layer rich in pebbles and shell fragments, 30-40 cm thick, continued, in



Grupa studenata EU-Conexus programa na ronilačkom tečaju (foto: D. Romanović)
A group of students from the EU-Conexus program on a diving course (photo: D. Romanović)





Dokumentiranje pilona u uvali Maloj Pošti (foto: I. Radić Rossi)
Documenting the poles in Mala Pošta cove (photo: I. Radić Rossi)

Usporedno s iskopom u Sondi 1 i Sondi 2, provedeno je i rekognosciranje podmorja od okomite stijene zvane Gavranišće, na jugoistočnom izlazu iz uvale, prema uvalama Pod bužu i Mala Pošta. Već tijekom istraživanja 2007. godine¹ zabilježeno je postojanje uređene hodne površine u blizini stijene, koja se danas nalazi na dubini od oko 0,5 – 1 m. Osim toga, u njezinu je nastavku primijećen nasip operativne obale, koji se pruža u smjeru podzemnog kanala/tunela u uvali Pod bužu.

Nakon malog rta zvanog Mrke stene, na jugoistočnom kraju uvale Mala Pošta, primijećeno je nekoliko debljih drvenih pilona, što je dovelo do odluke da se Sonda 3 postavi na tom mjestu. Kvadrati Sonde 3 postavljeni su u niz koji je pratio obalu, a tijekom rada početna su tri proširena za još jedanaest. Krajem istraživanja mrežište je bilo sastavljeno od sveukupno četrnaest kvadrata, označenih slovima C1 – C14 te tri dodatna kvadrata D12 – D14. Za sada je u njemu dokumentiran pravocrtni niz od 119 pilona, od kojih je većina promjera 10 – 16 cm, dok se na sjevernom kraju iskopa nalaze piloni debljine do 28 cm. Linija pilona zaokreće od oba-

which archaeological material from the period of Late Antiquity was found. These are mainly scarce fragments of ribbed amphorae, tegulae and coarse ceramic vessels. The cultural layer, possibly dating to the earlier centuries of the Roman Empire, may be covered with collapsed tegulae and large stones.

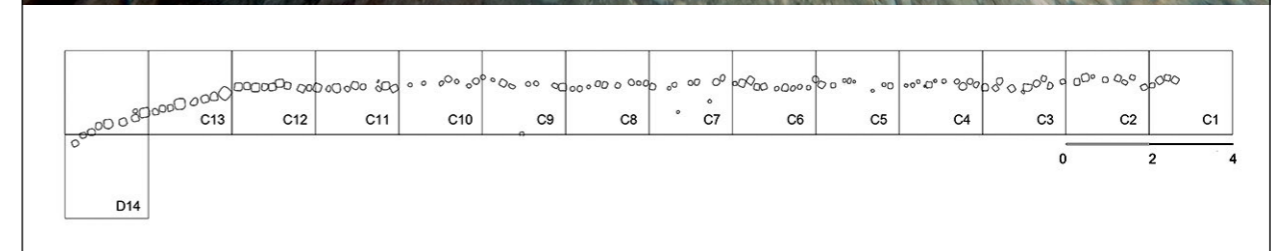
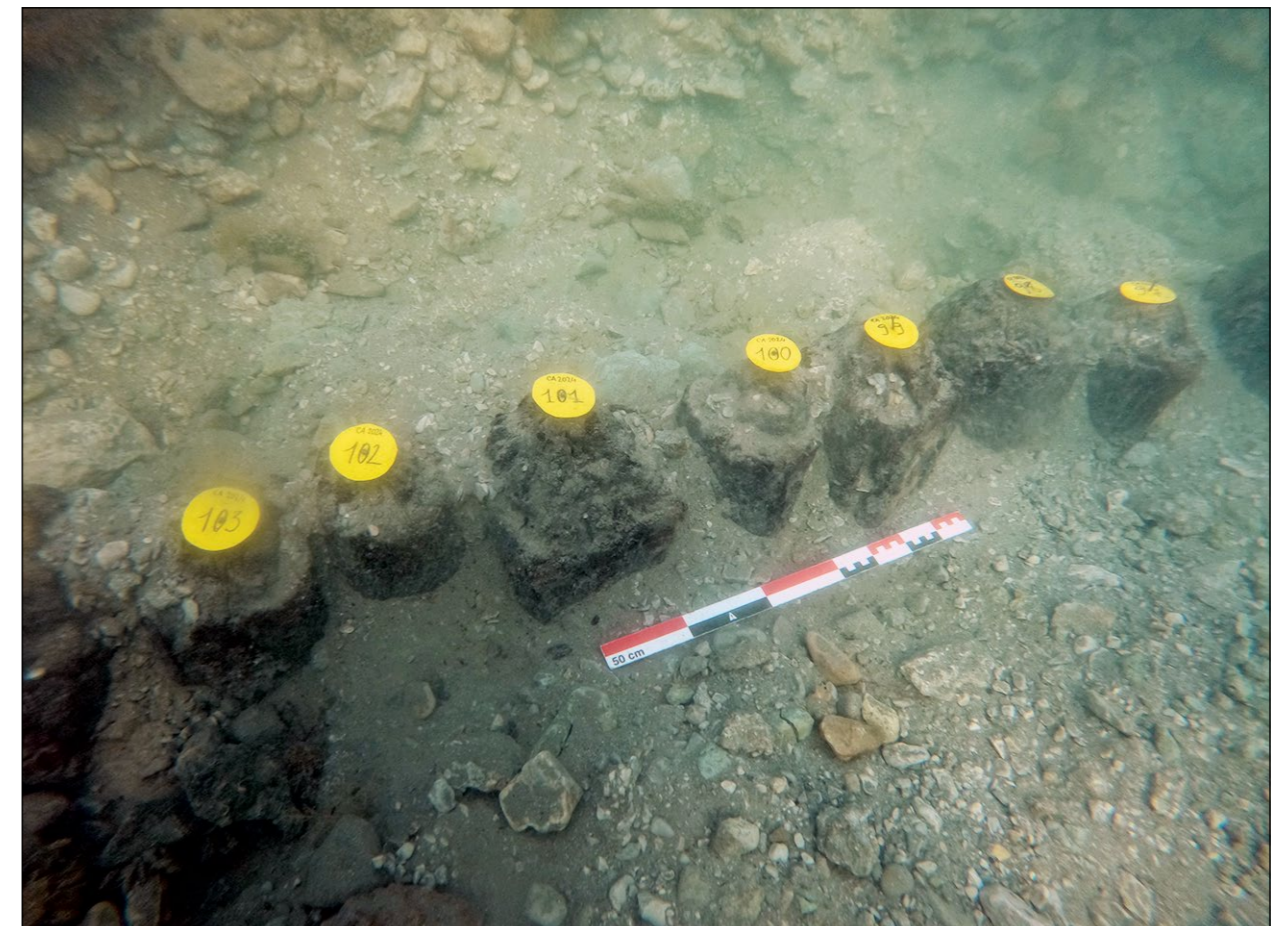
In parallel with the excavation in Probe 1 and Probe 2, a survey was conducted around a vertical rock formation known as Gavranišće, located at the southeastern entrance to the bay, near the coves of Pod Bužu and Mala Pošta. A previous survey in 2007¹ had already noted the existence of a preserved walking surface near this rock, currently submerged at a depth of 0.5–1 m. In addition, in its continuation, an embankment of the operational waterfront was observed, extending in the direction of the underground channel/tunnel in the Pod bužu cove.

After a small cape called Mrke stene, at the southeastern end of Mala Pošta cove, several thicker wooden poles were observed, which led to the decision to place Probe 3 there. The initial three

le. U dužini od 24 metra ona se proteže otprilike sredinom mrežišta; u zadnjim dvama kvadratima prema sjeveru (C13 i C14) postupno se približava njegovu zapadnom rubu, a zadnji piloni nalaze se u kvadratu D14. U zoni zahvaćenoj pilonima nisu pronađeni nikakvi pokretni arheološki nalazi. Na tom mjestu, na udaljenosti od oko 2 – 5 m, na obali i u plitkom podmorju nalaze se ostatci velikoga potpornog zida koji je flišnu terasu štutio od erozije uzrokovane djelovanjem mora i oborinskih voda. Pretpostavlja se, stoga, da je novootkrivena struktura služila kao oslonac za hodnu površinu izrađenu od drveta, koja je pratila potporni zid i omogućavala priobalnu komunikaciju. Tu je pretpostavku, međutim, potrebno potvrditi daljnjim istraživanjem kojim će se nastaviti pratiti linija protezanja pilona. Osim toga, u neposrednoj blizini nalaze se i

squares of Probe 3 were laid out along the shoreline and were gradually expanded to a total of fourteen squares, labeled C1–C14, with three additional squares labeled D12–D14. To date, a linear row of 119 wooden poles has been documented. Most poles have diameters between 10–16 cm, while those at the northern end reach up to 28 cm in diameter. The alignment of the poles arcs slightly away from the shoreline. Over a length of 24 meters, the row runs approximately through the middle of the grid. In the last two squares (C13 and C14), it curves toward the western edge, with the final poles located in D14.

No small archaeological finds were found in the area where the poles are located. However, approximately 2–5 meters away, both on the shore and in the adjacent shallow seabed, lie



Niz pilona u uvali Maloj Pošti (foto: I. Radić Rossi; crtež: N. Lete, N. Čuk)
A row of poles in Mala Pošta cove (photo: I. Radić Rossi; drawing: N. Lete, N. Čuk)

¹ Podmorski pregled 2007. godine proveli su Martina Čelhar i Mladen Pešić.

¹ The 2007 underwater survey was conducted by Martina Čelhar and Mladen Pešić.



ostatci šivanog broda *Caska 1*, koji je bio namjerno potopljen kako bi se njime učvrstilo manje drveno pristanište ili površina neke druge namjene. Stoga je nastavkom istraživanja potrebno provjeriti može li se utvrditi o kakvoj je strukturi riječ.

Po završetku istraživanja Sonda 3 prekrivena je geotekstilom i zasuta sedimentom i kamenjem

the remains of a large retaining wall. This structure appears to have protected the flysch terrace from erosion caused by sea and rainwater. It is therefore hypothesized that the newly discovered wooden structure supported a wooden walkway running parallel to the retaining wall, providing coastal access. This theory, however, requires fur-

kako bi se spriječilo propadanje drvene građe. Svi su nalazi prethodno nacrtani i fotografski dokumentirani, a nastavljeno je i geodetsko snimanje istraženog prostora.

U dokumentarnom filmu koji je TV Beograd snimila 1979. godine u okviru serijala *Potonuli gradovi – Cisa*, prikazano je podmorsko istraživanje uvale

ther confirmation through continued excavation along the pole alignment. At the end of the survey, Probe 3 was covered with geotextile and filled with sediment and stones to prevent the deterioration of the timber. All findings were previously documented in drawings and photographs, and geodetic recording of the investigated area con-



niz drvenih pilona
row of wooden poles

brod *Caska 5*
ship *Caska 5*



Pronalazak broda Caska 5 (foto: I. Radić Rossi)
Finding the boat Caska 5 (photo: I. Radić Rossi)

tinued.

A documentary film by TV Beograd (1979) as part of the *Sunken cities – Cisa* series, presents an underwater exploration of the Caska bay in search of the remains of the sunken city of Kisa, which, according to local tradition, sank in that very location (Ilakovac 1991). During the expedition, researchers led by Marijan Orlić discovered a sunken Roman boat. In the project documentation of the *CissAntiqua* project, this boat was called *Caska 0*, because it was found before the boats *Caska 1 – Caska 4* (Radić Rossi, Boetto 2020). However, the exact location of *Caska 0* had not been rediscovered until recently.

Caske u potrazi za ostacima potonulog grada Kise, koji je, prema postojećoj legendi, potonuo upravo na tom mjestu (Ilakovac 1991). Istraživači pod vodstvom Marijana Orlića otkrili su tada potonuli rimski brod. U projektnoj dokumentaciji projekta *CissAntiqua* taj se brod nazivao *Caska 0*, jer je pronađen prije brodova *Caska 1 – Caska 4* (Radić Rossi, Boetto 2020), ali se mjestu na kojem se nalazio do sada nije uspjelo ući u trag.

Zahvaljujući sretnom spletu okolnosti, lociran je položaj broda nedaleko od geološke strukture u blizini rta Mrke stene, koja nalikuje na potopljeni kanal. Struktura je bila zabilježena tijekom spomenutoga podmorskog pregleda provedenog 2007. godine, a ucrtana je i na nacrtu prikazanom u dokumentarnom filmu. Probno istraživanje na tom mjestu uskoro je pokazalo da ostatci broda doista postoje, a u Sondi 4, promjera oko 1 m, raspoznati su kobilica, platice i dva brodska rebra. Brod kojemu je ime promijenjeno u *Caska 5* leži tridesetak metara južno od istražene linije pilona, u pravcu njezina protezanja, pa je daljnjim istraživanjima potrebno provjeriti njihov međusobni odnos.

Zanimljivi nalazi u Sondi 3 i Sondi 4 upućuju na nužnost daljnjeg istraživanja podmorja uvale. Riječ je o složenim, još nedovoljno istraženim drvenim konstrukcijama iz antičkog doba, za čiju su izgradnju bili iskorišteni piloni i namjerno potopljeni brodovi. Iako se još ne može sa sigurnošću reći je li novopronađeni brod doista onaj preliminarno istražen 1979. godine, ta se pretpostavka za sada čini vrlo vjerojatnom. Povezivanje do sada istraženih dijelova nalazišta u jednu cjelinu s budućim nalazima omogućit će djelomičnu rekonstrukciju izgleda uvale u antičko doba, kad se u njoj nalazila

Thanks to a fortunate combination of circumstances, the boat was located near a geological feature close to Cape Mrke stene, which resembles a submerged channel. The structure was recorded during the aforementioned underwater survey conducted in 2007, and was also drawn on the plan shown in the documentary. A test survey at the location confirmed the presence of ancient ship remains. In Probe 4, which measured approximately 1 meter in diameter, archaeologists identified the keel, planking, and two frames of the vessel. The boat, now renamed *Caska 5*, lies approximately 30 meters south of the previously explored row of wooden poles, aligned in the direction of their extension. Further investigation is necessary to determine whether a structural connection exists between the two.

The interesting finds in Probe 3 and Probe 4 indicate the necessity of further exploration of the underwater area of the bay. These are complex, still insufficiently explored wooden structures from ancient times, built using both upright poles and scuttled boats. While it is not yet possible to confirm with absolute certainty that the newly discovered boat is the same one preliminarily explored in 1979, the available evidence makes this hypothesis highly plausible.

Ongoing and future discoveries may help integrate the various components of the site into a coherent whole, enabling at least a partial reconstruction of what Caska Bay may have looked like in antiquity. The area once housed a large Roman



Položaj broda Caska 5 (foto: I. Radić Rossi)
Position of the boat Caska 5 (photo: I. Radić Rossi)

velika rimska vila koja se možda tijekom vremena podijelila u više manjih posjeda (Suić 1976: 223). Posljednjih godina postupno se razotkriva organizacija pomorskog prostora Caske u vrijeme kad se u uvali intenzivno živjelo i koristilo njezine prirodne potencijale.

villa, which may have been subdivided into several smaller estates over time (Suić 1976: 223). In recent years, research has begun to reveal the organization of maritime space in Caska during a period of intensive settlement, when the natural potential of the bay was actively utilized.

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