

PLOVIDBA KROZ VRIJEME SEAFARING THROUGH THE AGES



Condura Croatica

Simbol tisućljetnog hrvatskog pomorstva
Symbol of millenial Croatian seafaring



Krajem šezdesetih godina prošloga stoljeća, na položaju zvanom Usta na ulazu u unutrašnju ninsku lagunu, na dubini od samo dva metra otkriveni su dobro očuvani ostatci dvaju srednjovjekovnih brodova. Na nalazište je upozorio Vjekoslav Kolanović iz Privlake, koji je na pješčanom morskom dnu opazio kamenje i tragove drvene građe.

Usprkos skromnim sredstvima, veliki entuzijizam arheologa Zdenka Brusića, konzervatora Božidara (Darko) Vilhara i njihovih vrijednih suradnika ubrzo je doveo do realizacije jedinog cjelovitog hrvatskog projekta u domeni arheologije broda, koji je započeo podmorskim istraživanjem, a kulminirao izradom dvaju plovila izrađenih po uzoru na arheološke nalaze.

Godine 1974. oba su broda u dijelovima izvađena iz mora, nakon čega je započeo dugogodišnji proces konzervatorske obrade nalaza.

Towards the end of the 1960s, on the spot called Usta, at the entrance to the inner Nin lagoon, at a depth of just two metres the well preserved remains of two mediaeval boats were discovered. Vjekoslav Kolanović from Privlaka, who first spotted rocks and wooden pieces at the sandy sea bottom, pointed out the existence of the finds.

Despite limited resources, the great enthusiasm of the archaeologist Zdenko Brusić, conservator Božidar (Darko) Vilhar and their diligent collaborators soon resulted in the realization of the only comprehensive Croatian project in nautical archaeology, which began with the underwater research, and culminated in the construction of two replica vessels inspired by the archaeological finds.

In 1974 the two boats were raised in pieces from the sea, and consequently the long-term conservation of finds started.



Podmorsko istraživanje 1974.
Underwater research 1974



Nin - položaj nalazišta / Nin - position of finds (foto: V. Jakupović)

Postupak desalinizacije i konzerviranja brodova u Arheološkom muzeju u Zadru potrajao je oko tri godine, a za njegovu uspješnu realizaciju zaslužni su Božidar (Darko) Vilhar, Stošija Oguić i Radomir (Miro) Jurić.

Zagrijani tekući polietilen-glikol (PEG 4000) zamijenio je vodu u drvenoj građi te postupnim hlađenjem prešao u kruto stanje. Na taj je način spriječena deformacija drvenih elemenata broskog trupa, koji su tijekom naredne desetogodišnje faze ponovo sklopljeni u originalne cjeline.

Brodovi su danas izloženi u Muzeju ninskih starina. Ostaci manjega broda (Nin 1) predstavljeni su u obliku zatečenome na morskom dnu, dok su ostatci većega (Nin 2) uklopljeni u cjelovito rekonstruirani brod.

The desalinization and conservation process in the Archaeological Museum of Zadar lasted about three years. Božidar (Darko) Vilhar, Stošija Oguić and Radomir (Miro) Jurić are credited for its successful realization.

Warm liquid polyethylene glycol (PEG 4000) replaced the water in the wooden material, and through gradual cooling became solid. This operation prevented the deformation of wooden elements of the hull. They were put together again during the following phase, which lasted ten years.

Today, the boats are displayed in the Museum of Nin Antiquities. The remains of the smaller boat (*Nin 1*) are represented in the shape encountered on the seabed, while the remains of the bigger one (*Nin 2*) are inserted into a full scale reconstruction.



Muzej ninskih starina - Nin 2 (lijevo), Nin 1 (desno) / Museum of Nin Antiquities - Nin 2 (left) and Nin 1 (right), (foto: R. Mosković)



Krštena Hrvatska podiže konjaništva do šezdeset tisuća, a pješaštva do sto tisuća, sagenâ (grč. σαγήνα, lat. sagena) do osamdeset i kondurâ (grč. κονδούρα, lat. condura) do sto. I sagene imaju po četrdeset ljudi, kondure po dvadeset ljudi, a manje kondure po 10 ljudi.

... Zbog toga niti sagene (grč. σαγήνα, lat. sagena) niti kondure (grč. κονδούρα, lat. condura) tih Hrvata nikada ni protiv koga ne odlaze u rat, osim ako možda tko ne pođe na njih. Samo oni od Hrvata koji se hoće baviti trgovinom odlaze tim plovilima, obilazeći od kastruma do kastruma Paganiju, zaljev Dalmacije i do Venecije.

Konstantin VII. Porfirogenet (905. – 959.), O upravljanju carstvom, XXXI, 71-74 i 52-57; prijevod: M. Lončar



Baptized Croatia musters as many as 60 thousand horse and 100 thousand foot, and galleys (Gr. σαγήνα, Lat. sagena) up to 80 and cutters (Gr. κονδούρα, Lat. condura) up to 100. The galleys carry 40 men each, the cutters 20 each, and the smaller cutters 10 each.

Zlatni novac
bizantskog cara
Konstantina VII.
Porfirogeneta /
Golden coin of the
Byzantine emperor
Constantine VII
Porphyrogenitus

... For this reason neither the galleys (Gr. σαγήνα, Lat. sagena) nor the cutters (Gr. κονδούρα, Lat. condura) of these Croats ever go against anyone to make war, unless of course he has come upon them. But in these vessels go those of the Croats who wish to engage in commerce, travelling round from city to city, in Paganian and the gulf of Dalmatia and as far as Venice.

Constantine VII Porphyrogenitus (905 – 959), De administrando imperio, XXXI, 71-74 and 52-57; translation: R. J. H. Jenkins

U 10. stoljeću, u poznatom djelu *O upravljanju carstvom* bizantski je car Konstantin VII. Porfirogenet ukratko opisao hrvatsku flotu sastavljenu od većih *sagena* i manjih *kondura*. Inspiriran carevom terminologijom i pripadnošću ninskih brodova srednjovjekovnom dobu, Zdenko Brusić nazvao ih je *kondure*, pretpostavljajući kako bi se oni mogli identificirati s najmanjim brodovima tadašnje hrvatske flote.

Brodovi iz Nina bili su dugi oko 7 – 9 m i široki oko 1,5 – 2 m. Pokretani su poglavito veslima, a pronalaskom temeljnice jarbola dokazano je i korištenje jedra. U prvoj idejnoj rekonstrukciji broda Zdenko Brusić sugerirao je primjenu latinskog jedra, ali je nakon istraživanja promijenio mišljenje i latinsko jedro zamijenio križnim.

Osebjunost brodske konstrukcije svakako je nedostatak kobilice, na mjestu koje se nalazi deblja kobilična daska. Osim toga, s vanjske strane donjeg dijela broskog trupa pričvršćene su dvije uzdužne gredice, međusobno razmaknute tridesetak centimetara. Njihov položaj i izgled ukazuju na funkciju zaštite broskog dna i održavanja broda u uspravnom položaju prilikom velike oseke ili izvlačenja na pješčane plaže.

Analizom radioaktivnog ugljika (^{14}C) i dendrokronologijom utvrđena je starost drvene građe od koje su brodovi bili izrađeni. Prvom su metodom najmlađi uzorci datirani u 11. stoljeće, dok je druga pokazala kako je za izradu ili popravak brodova bilo iskorišteno i drvo iz 13. stoljeća. Iako za sada nismo u mogućnosti preciznije odrediti starost nalaza, sigurno je da oni pripadaju razdoblju razvijenog srednjeg vijeka.

Analize su također pokazale kako je kao osnovni materijal bio iskorišten hrast kitnjak (*Quercus petraea*), a u

In the 10th century, in the well-known text *De administrando imperio*, the Byzantine emperor Constantine VII Porphyrogenitus briefly described the Croatian fleet, composed of bigger *sagena*, and smaller *condurae*. Inspired by the emperor's terminology and the origin of the boats from the mediaeval period, Zdenko Brusić named the Nin replica ships *condurae*, supposing their identification with the smallest boats of the Croatian fleet.

The boats of Nin were about 7 – 9m long, and about 1.5 – 2m wide. They were powered mostly by oars, and the presence of sail was attested by the discovery of a mast step. In the first ideal reconstruction Zdenko Brusić suggested the use of Lateen sail. After the excavation he changed his idea, and replaced the Lateen with the square sail.

The peculiarity of the hull structure is the lack of the keel, which is replaced by a thicker keel plank. Besides that, from the outer side of the bottom part of the hull two longitudinal thin beams were attached, spaced about thirty centimetres. Their position and aspect point to the function of protecting the bottom of the boat, and keeping it in the upright position during extremely low tides or the beaching of the vessel.

The radiocarbon (^{14}C) and dendrochronological analysis indicated the age of the wooden material, used for the construction of the boats. The first method dated the youngest finds to the 11th century, while the second one demonstrated that the wood from the 13th century was used for the construction or reparation process. Although we are not able to date precisely the finds, it is certain that they belong to the period of the High Middle Ages.

The analysis also demonstrated that the sessile oak (*Quercus petraea*), and in a far less extent the Turkey oak

(*Quercus cerris*) were the main materials used for the construction of the boats. Single elements realized in silver fir (*Abies alba*), elm (*Ulmus campestris*) and oriental plane (*Platanus orientalis*) upućuju na moguće naknadne intervencije na broskom trupu. Nekoliko detalja potvrdilo je kako je hrastovina dopremljena iz hladnijih planinskih krajeva, vjerojatno zbog veće čvrstoće i kvalitete.

S obzirom na okolnosti nalaza, pretpostavka je da su brodovi bili ispunjeni lomljenim kamenom i namjerno potopljeni kako bi se u nekom kritičnom trenutku neprijatelju zapriječio ili otežao pristup u unutrašnju ninsku lagunu.

Dolazak pape Ivana Pavla II. u Hrvatsku 1998. godine poslužio je kao inspiracija za izradu prvoga manjeg broda po uzoru na arheološke nalaze. Na inicijativu Tomislava Vodopijice i Zdenka Brusića, prema nacrtu koji je ovjerio Ivo Marinčić, izradio ga je betinski brodograditelj Čedomir (Ćiro) Burtina. Uspješno porinut u more, brod je pozdravio Papu na splitskome Žnjanu, a danas je usidren kraj Donjeg mosta u Ninu. Ubrzo nakon prvog, meštar Ćiro izradio je i drugi, veći brod koji je Papu dočekaao 2003. godine u Zadru. Opremljen križnim jedrom koje je izradio i donirao Mojmir Martin, danas se koristi za edukativne i promidžbene aktivnosti te aktivno sudjeluje u regatama i festivalima tradicijskih plovila u zemlji i inozemstvu. Brod je u vlasništvu Arheološkog muzeja i Sveučilišta u Zadru.

Proučavanje srednjovjekovnih brodova u Ninu danas se nastavlja u okviru projekta AdriaS (Arheologija jadranske plovidbe i brodogradnje / Archaeology of Adriatic Shipbuilding and Seafaring), koji financijski podržava Hrvatska zaklada za znanost.

(*Quercus cerris*) were the main materials used for the construction of the boats. Single elements realized in silver fir (*Abies alba*), elm (*Ulmus campestris*) and oriental plane (*Platanus orientalis*) indicate the possible secondary interventions on the hulls. Several details confirmed that the oak material was acquired from the colder mountain areas, probably due to its elevated strength and quality.

In regard to the circumstances of the finds, it is presumed that the boats were filled by rocks, and scuttled for the purpose of stopping the enemy in approaching the inner Nin lagoon in some critical moment.

The arrival of Pope John Paul II in Croatia in 1998 stimulated the construction of the first smaller boat inspired by the archaeological finds. Following the initiative of Tomislav Vodopija and Zdenko Brusić, according to the plan verified by Ivo Marinčić, it was constructed by the shipwright from Betina, Čedomir (Ćiro) Burtina. The boat was successfully launched, and welcomed the Pope at Žnjan in Split. Today, it is moored next to the Lower Bridge of Nin. Soon after the first one, master Ćiro constructed another, bigger boat, which in 2003 welcomed the Pope in Zadar. Rigged with the square sail, produced and donated by Mojmir Martin, the boat is currently used for educational and promotional activities. It actively participates in the regattas and festivals of the traditional sailing vessels in Croatia and abroad, owned by the Archaeological Museum and the University of Zadar.

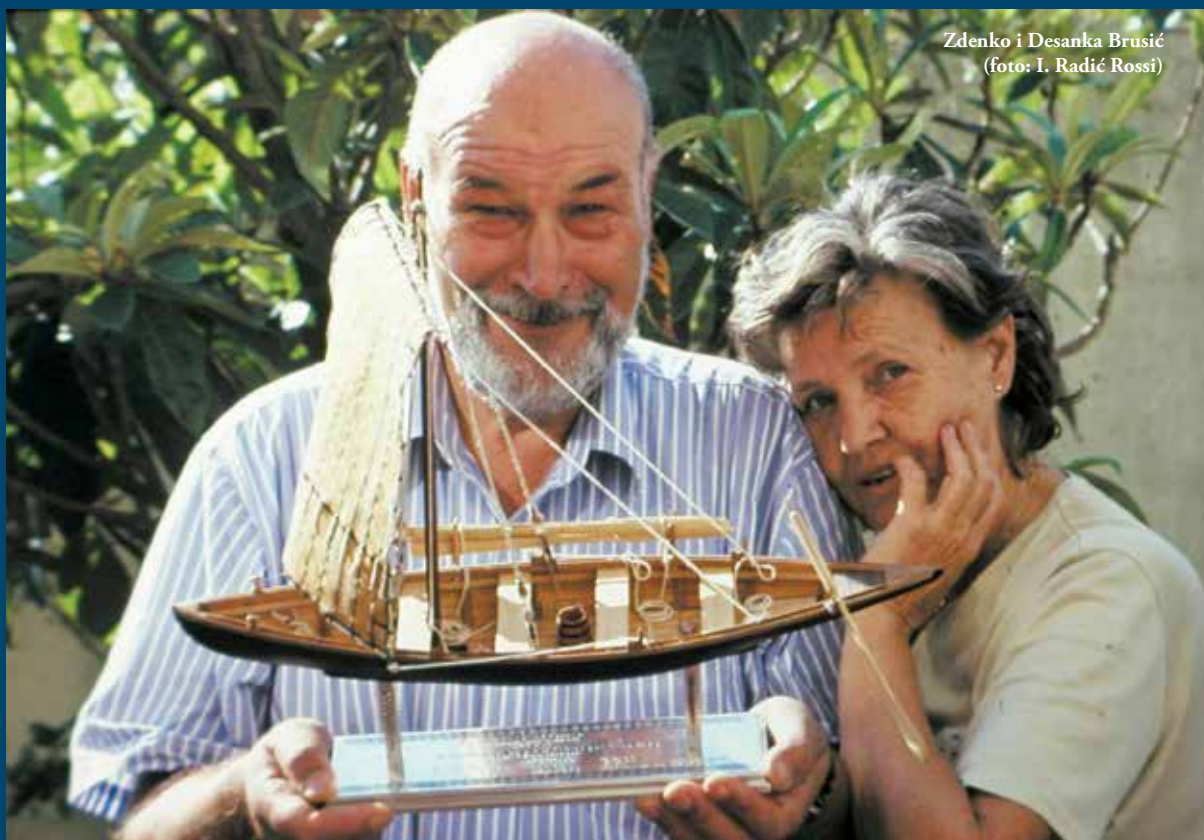
The study of the mediaeval boats of Nin today continues in the framework of the AdriaS Project (Archaeology of Adriatic Shipbuilding and Seafaring / Arheologija jadranske plovidbe i brodogradnje), financially supported by the Croatian Science Foundation.





Arheolog **Zdenko Brusić** (1938. – 2014.) karijeru je započeo 1966. godine kao kustos Arheo-loške zbirke u Ninu, a tri godine kasnije zaposlio se u Muzeju grada Šibenika. Godine 1982. prešao je u Arheološki muzej u Zadru, a 1998. na Odjel za arheologiju Sveučilišta u Zadru. Začetnik podvodne arheologije u Hrvatskoj, marljivi istraživač podmorske baštine, zaljubljenik u more i vješt moreplovac, najzaslužniji je za istraživanje i promidžbu srednjovjekovnih brodova iz Nina.

Archaeologist **Zdenko Brusić** (1938 – 2014) began his career in 1966, in the position of the curator of the Archaeological collection in Nin. Three years later he was employed by the Municipal Museum of Šibenik. In 1982 he moved to the Archaeological Museum of Zadar, and in 1998 to the Department of archaeology of the University of Zadar. The pioneer of underwater archaeology in Croatia, a diligent researcher of underwater heritage, a lover of the sea, and a skillful seafarer, he deserves most of the credit for the exploration and promotion of the mediaeval boats of Nin.



Zdenko i Desanka Brusić
(foto: I. Radić Rossi)

Brodograditelj **Čedomir (Ćiro) Burtina** (1938. – 2014.) započeo je učiti svoj zanat 1951. godine u nekadašnjem Filipijevom brodogradilištu u Betini. Nazvan bardom betinske i hrvatske tradicijske brodogradnje, niz je godina s velikom predanošću i vještinom na tradicionalan način gradio i popravljao drvene brodove. Oboružan nadarenošću, znanjem i iskustvom u svome je škveru u Betini izgradio i porinuo u more dva broda po uzoru na ninske arheološke nalaze.

Shipwright **Čedomir (Ćiro) Burtina** (1938 – 2014) started to learn his craft in 1951 in the former Filipi's shipyard in Betina. Declared 'the bard' of the Betina's and Croatian traditional shipbuilding, for many years he constructed and repaired ships in the traditional way, with great devotion. Armed with talent, knowledge and experience, in his shipyard in Betina he constructed and launched the two boats inspired by the archaeological finds from Nin.



Božidar (Darko) Vilhar
(foto: Z. Brusić)

Konzervator **Božidar (Darko) Vilhar** (1921. – 1999.), od mladosti sklon kiparstvu, zaštiti kulturne baštine i brodogradnji, proboravio je dvadesetak godina u Švicarskoj i Argentini. Godine 1961. vratio se u Hrvatsku i naredne godine postao voditelj Radionice za konzervaciju Arheološkog muzeja u Zadru. Zahvaljujući njegovom velikom umijeću, ustrajnosti, strpljenju i trudu ninski su brodovi, nakon dva desetljeća obrade, prezentirani javnosti u Muzeju ninskih starina.

Conservator **Božidar (Darko) Vilhar** (1921 – 1999) was devoted to sculpture, protection of cultural heritage and shipbuilding from his youth, spending about twenty years in Switzerland and Argentina. In 1961 he returned to Croatia, and the next year became the head of the Conservation laboratory of the Archaeological Museum of Zadar. Due to his great skill, perseverance, patience and effort, after two decades of conservation process, the Nin boats were presented to the public in the Museum of Nin Antiquities.



Čedomir (Ćiro) Burtina
(foto: I. Radić Rossi)



Replika kondure u radu / Making of the replica (foto: I. Pervan)



Replika kondure u radu / Making of the replica (foto: Z. Brusić)

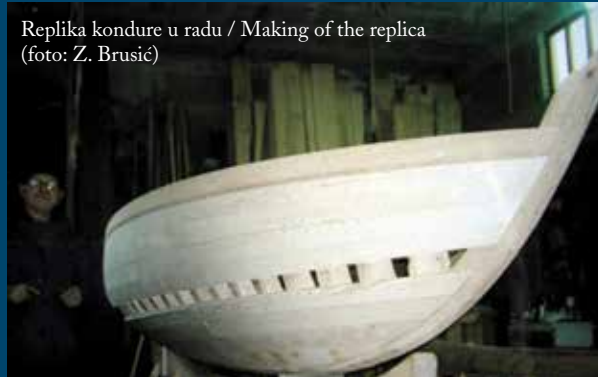
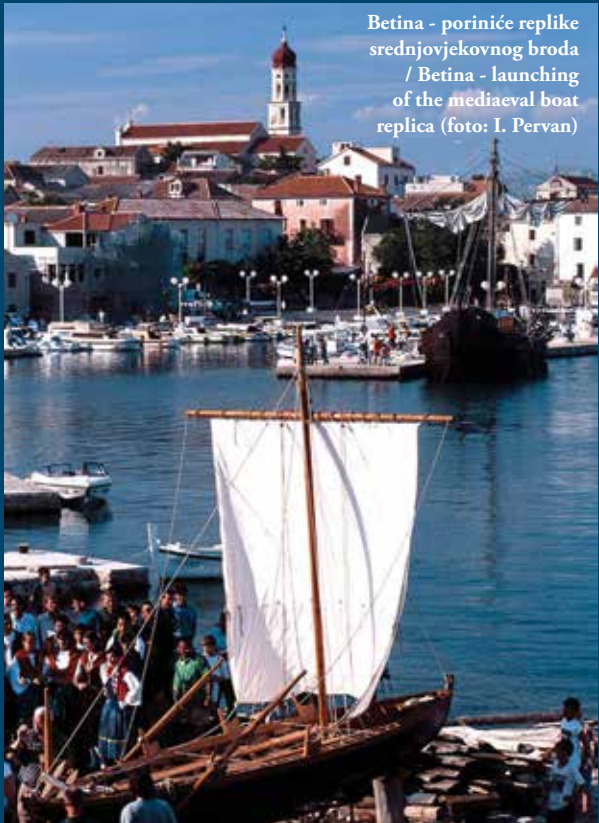


Foto: S. Govorčin



Foto: S. Surać

Betina - poriniće replike srednjovjekovnog broda / Betina - launching of the mediaeval boat replica (foto: I. Pervan)



Festival „Dani u vali”, Stari Grad (Hvar), 2016. (foto: B. Vukičević)



Brest 2008. (foto: Lj. Gamulin)



Foto: S. Govorčin



Brest 2008. (foto: Lj. Gamulin)



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