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Stašo FORENBAHER & Timothy KAISER

## PALAGRUŽA I ŠIRENJE ZEMLJORADNJE NA JADRANU

## PALAGRUŽA AND THE SPREAD OF FARMING IN THE ADRIATIC

Izvorni znanstveni članak / Original scientific paper

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*Zahvaljujući svom strateškom položaju u samome središtu Jadrana mali otočić Palagruža odigrao je važnu ulogu u jednoj od ključnih prijelaznih epizoda europske pretpovijesti – širenju zemljoradnje i stočarstva. Najraniji tragovi prisutnosti ljudi na tom otoku potječu iz razdoblja ranoga neolitika. Ovaj rad donosi pregled palagruških ranoneolitičkih nalazišta i nalaza, kao i interpretaciju tih nalaza u kontekstu sveobuhvatnih promjena koje su Jadran zahvatile u prvoj polovici šestoga tisućljeća prije Krista. Spomenuti nalazi upućuju na postojanje pomorskih znanja i tehnologija koje su omogućivale brzo prebacivanje dobara, ideja i ljudi preko širokih prostranstava otvorenoga mora. Zahvaljujući tim znanjima nov način preživljavanja, temeljen na proizvodnji hrane, relativno se brzo proširio i stabilizirao na čitavu jadranskom prostoru.*

*Ključne riječi: Jadran, impresso, otok, migracija, navigacija, neolitik, Palagruža.*

*Due to its strategic position at the very centre of the Adriatic Sea, the islet of Palagruža played a vital role during one of the crucial transitional episodes of European prehistory – the spread of farming. The earliest evidence of human presence on this islet dates to the Early Neolithic. This article presents an overview of Palagruža's Early Neolithic sites and finds, as well as an interpretation of those finds in the context of comprehensive changes that affected the Adriatic region during the first half of the sixth millennium BC. These finds indicate the existence of seafaring skills and technology that allowed circulation of goods, ideas, and people in rapid fashion over long stretches of open water. Thanks to these skills, a new way of life based on food production spread and stabilised relatively quickly throughout the Adriatic region.*

*Key words: Adriatic, Impressed Ware, island, migration, navigation, Neolithic, Palagruža*

### UVOD

Pojedini otoci odigrali su u određenim razdobljima prošlosti osobito važnu ulogu. Njihov povijesni

### INTRODUCTION

Some islands played particularly important roles during specific periods of human history. Their historic significance, sometimes out of all proportion

značaj, katkad posve nesrazmjeran njihovoj veličini, ovisio je o brojnim i raznolikim čimbenicima. U ovome radu istražujemo ulogu jednog od najmanjih jadranskih otoka u jednoj od ključnih prijelaznih epizoda europske pretpovijesti – širenju zemljoradnje i stočarstva.

Palagruža se po mnogočemu razlikuje od većine jadranskih otoka. Za razliku od skoro svih drugih, koji su nastali za vrijeme holocenske transgresije, kad je more poplavilo doline i odvojilo od kopna dotadašnje priobalne planinske lance Dinarida, Palagruža je oduvijek bila otok. Budući da je more oko nje na najplićem mjestu duboko 130 m, a drugdje i znatno dublje, Palagruža je bila otok čak i za vrijeme zadnjega glacijalnog maksimuma. Tada je razina mora bila oko 120 m niža nego danas, pa su samo još Sušac i Jabuka bili odvojeni od kopna (Van Andel 1989; 1990; Forenbaher 2002: sl. 1). Zbog toga nema previše smisla govoriti o najranijem naseljavanju jadranskih "otoka". Svi oni bili su dio kopna u više navrata tijekom pleistocena, pa su po svoj prilici prvi put naseljeni istodobno s preostalim dijelovima južne Europe. Sudeći prema raspoloživoj arheološkoj građi (primjerice Gaffney *et al.* 1997; Stančić *et al.* 1999), barem neki od otoka bili su nastanjeni u vrijeme njihova postupnog odvajanja od kopna koje se odvijalo otprilike između 15000. i 5000. godine pr. Kr. (Forenbaher 2002: sl. 2).

Izgleda da je prisutnost ljudi na Palagruži nešto novijega datuma. Arheološka istraživanja otoka – intenzivni pregled površine, probno sondiranje i sustavno iskopavanje – zasad nisu naišla ni na kakvu građu iz razdoblja kasnoga pleistocena ili ranoga holocena. Nalazišta iz tih razdoblja mogla su postojati na nižim dijelovima nekad znatno većeg otoka koji su potopljeni holocenskom transgresijom. Danas nad morem strše samo stijene koje su tada morale biti njegov najneproduktivniji i najmanje privlačan dio. Najraniji dosad prikupljeni nalazi pripadaju razdoblju ranoga neolitika. Riječ je o ulomcima *impresso*-lončarije, koji možda doista svjedoče o prvom zaposjedanju Palagruže.

Smještena u samome središtu Jadrana Palagruža je najosamljeniji jadranski otok (sl. 1). Od najbližih susjeda – otoka Sušca prema sjeveru-sjeveroistoku i otočića Pianose prema jugozapadu – dijeli je oko 45 km morske pučine, dok Monte Gargano i talijansko kopno leže 57 km prema jugu. Njezin uzak stjenovit greben, dug 1390 m i širok 270 m, sazdan je od uslojenih vapnenaca i vapnenačkih breča (sl. 2). Oštricu grebena ublažava dvije manje zaravni, Salamandrija pri sredini i Jonkova njiva na istočnome kraju. Blizu zapadnoga kraja, okrunjena svjetionikom, nalazi se najviša točka otoka (103 m n. m.). Strma sjeverna padina nagnuta je prema moru pod kutom od

to their size, depended on a variety of different factors. This paper investigates the role of one of the smallest Adriatic islands in one of the crucial transitional episodes of European prehistory – the spread of farming.

Palagruža is not an ordinary Adriatic island. While virtually every other Adriatic island was formed when the Holocene marine transgression separated the westernmost ranges of the Dinaric Mountains from the mainland by drowning the valleys between them, Palagruža has always been an island. Today, seas are 130 m deep at their shallowest and much deeper for the most part elsewhere surround Palagruža. Thus Palagruža must have been an island even during the Last Glacial Maximum, when the sea was at its lowest, c. 120 m below its current level. Only Sušac and Jabuka share with Palagruža the distinction of not having been connected to the mainland at that time (Van Andel 1989; 1990; Forenbaher 2002: fig. 1). It is therefore somewhat meaningless to talk about the first occupation of the Adriatic "islands." Since all of them used to be part of the mainland on several occasions during the Pleistocene, presumably they were inhabited as early as the rest of Southern Europe. Judging from their archaeological records (*e.g.*, Gaffney *et al.* 1997; Stančić *et al.* 1999), at least some of them continued to be occupied as they gradually became detached from the mainland between c. 15000 and 5000 BC (Forenbaher 2002: fig. 2).

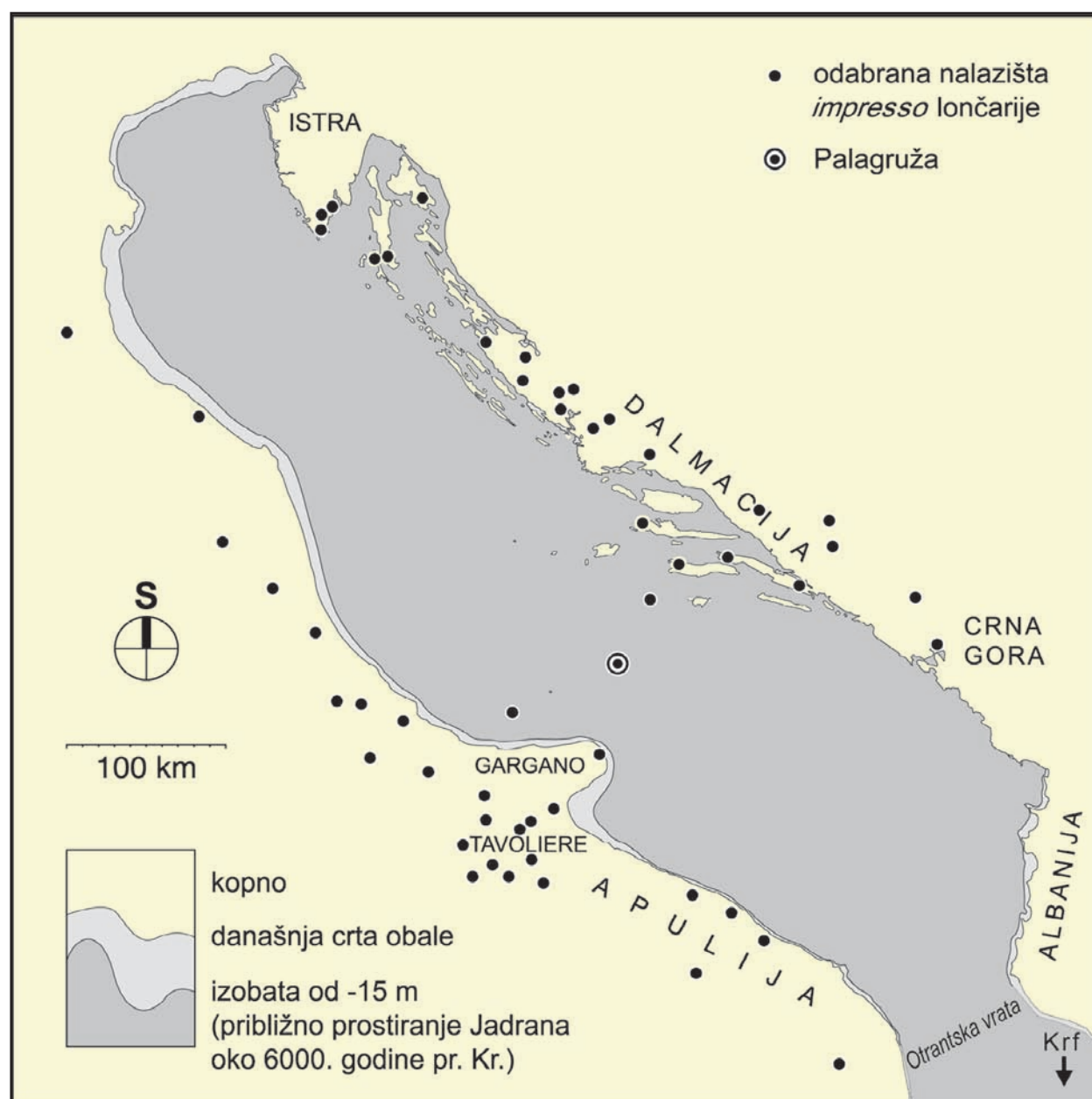
Human presence on Palagruža seems to be a relatively more recent phenomenon. Archaeological research on the island, which has included intensive surface survey, test- and area-excavations, has yet to encounter any evidence of human presence on Palagruža during the Late Upper Pleistocene or Early Holocene. It may be that archaeological sites of those periods once existed at some lower elevation(s) of what was then a much larger island, and were drowned by rising Holocene seas. The rocks that remain above water today would have been that island's least productive and least attractive part. The earliest archaeological finds recovered from Palagruža to date are Early Neolithic Impressed Ware potsherds, and they may well be evidence for the first occupation of the island.

Located virtually at the centre of Adriatic, Palagruža is that sea's most remote island (Fig. 1). The closest landfalls in any direction are about 45 km away: the small island of Sušac to the north-northeast, and the tiny islet of Pianosa to the southwest, while mainland Italy (Monte Gargano) lies 57 km to the south. Palagruža's narrow, rocky ridge, 1390 m long and 270 m wide, is made up of bedded limestone and limestone breccias (Fig. 2). There are two small

25–30°, dok se južna strana ruši u more vertikalnim stijenama mjestimice visokima do 100 m. Na većini mjesta takvi se strmi nagibi nastavljaju i pod morem. Pristajanje je moguće samo u dvjema plitkim uvalama sa žalima. Istočno od glavnog otoka, odijeljena uskim kanalom, nalazi se Mala Palagruža, vrletni otočić okružen stjenovitim hridinama (sl. 3).

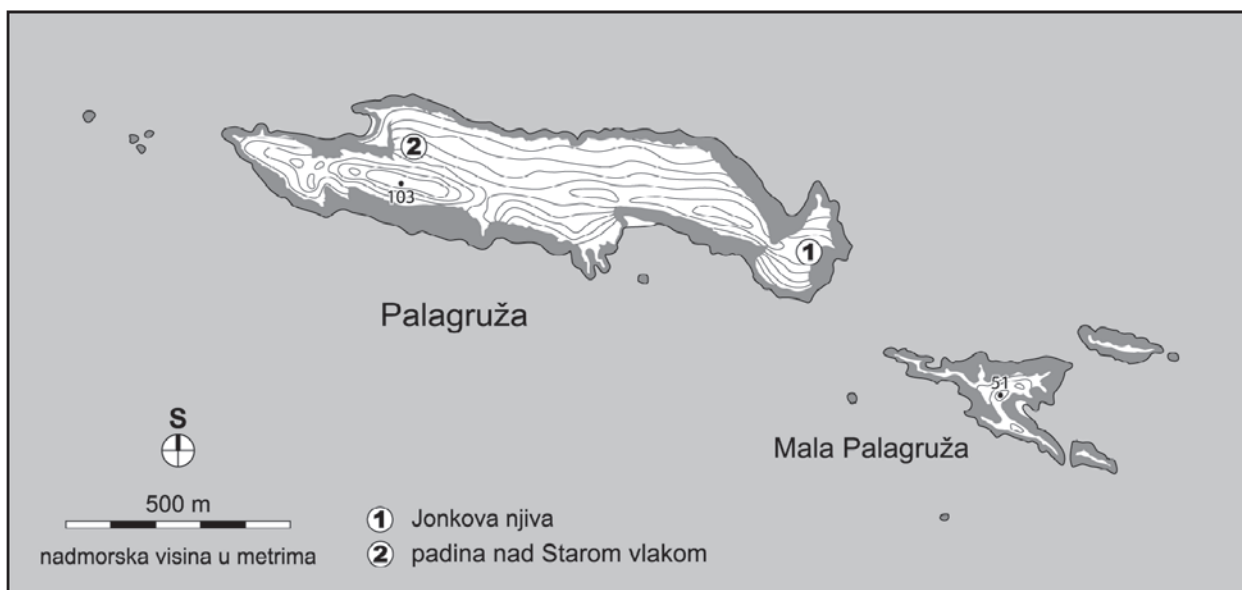
Palagruža se u stručnoj literaturi spominje već krajem 19. stoljeća. Godine 1873. posjetili su je Carlo Marchesetti i sir Richard Burton te ubrzo potom izvijestili o kremenim sječivima, ulomcima lončarije i latinskim natpisima u kamenu koje su ondje prošli (Marchesetti 1876: 287–289; Burton 1879: 179).

plateaus indenting this ridge: Salamandrija in the middle and Jonkova njiva at the eastern extremity. Crowning Palagruža's highest point (103 m a.s.l.), a lighthouse anchors the island's western end. The north slope is steep, descending at 25–30° from Palagruža's spine to the water, whereas the south coast is a forbidding line of cliffs rising up to 100 m above the sea. These precipitous gradients continue underwater. Two coves with pebble beaches provide the only landing places. To the east, across a narrow channel, lies Mala Palagruža, a craggy islet surrounded by a number of rocks and reefs (Fig. 3).



Slika 1. Karta Jadrana s Palagružom i drugim odabranim nalazištima impresso-lončarije (autor: Stasio Forenbaher).

Figure 1. Map of the Adriatic showing Palagruža and other selected Impressed Ware sites (by Stasio Forenbaher).



Slika 3. Karta Palagruže i susjednih otočića (autor: Stasio Forenbaher).

Figure 3. Map of Palagruža and adjacent islets (by Stasio Forenbaher).



Slika 2. Palagruža s vrha Mala Palagruže (pogled prema zapadu-sjeverozapadu); ranoneolitičko nalazište Jonkova njiva nalazi se na zaravni neposredno nad morem (autor Stasio Forenbaher).

Figure 2. View of Palagruža from the summit of Mala Palagruža (looking towards WNW); the Early Neolithic site of Jonkova njiva is on the plateau immediately overlooking the channel (by Stasio Forenbaher).

Kasnije generacije arheologa nisu međutim njihovim otkrićima pridavale posebnu pažnju (primjerice Petrić 1975), sve do jednodnevnoga posjeta 1992. godine koji je pokazao da je Marchesetti bio posve u pravu kad je primijetio da je prošlost otoka neobično bogata. Arheološka istraživanja koja su nakon toga započeta još uvijek traju (Kaiser & Kirigin 1994; Kirigin & Čaće 1998; Forenbaher & Kaiser 1997; Kaiser & Forenbaher 1999; Kirigin & Katunarić 2002). Do sada su provedeni sustavni pregled površine obaju otoka, pregled podmorja do dubine

Archaeologists have known about Palagruža since the late nineteenth century. Carlo Marchesetti and Sir Richard Burton visited the island together in 1873. They reported finding flint blades, potsherds, and Latin inscriptions in stone (Marchesetti 1876: 287–289; Burton 1879: 179). This lead, however, was never really followed up by other archaeologists (e.g., Petrić 1975), until a one-day visit in 1992 showed Marchesetti to have been entirely correct in observing that the island's past is unexpectedly rich. Since then, extensive archaeological investigation has been under way and is still in progress (Kaiser & Kirigin 1994; Kirigin & Čaće 1998; Kaiser & Forenbaher 1999; Kirigin & Katunarić 2002). Fieldwork there has included a systematic surface survey of the two small islands, underwater reconnaissance to a depth of 25 m, a number of test excavations, as well as a sub-surface survey by ground-penetrating radar and a major excavation of the island's central plateau, Salamandrija, where an area of about 150 sq m has been exposed so far. This work has brought to light prehistoric remains of the Early Neolithic, of the Late Copper Age/Early Bronze Age, as well as remains from the Classical Greek, Hellenistic, Early Roman, Late Roman, and Early Modern periods.

#### EARLY NEOLITHIC FINDS FROM PALAGRUŽA

Palagruža has so far yielded only a handful of finds that are unmistakably Early Neolithic. Four cardial impressed sherds were collected from the surface

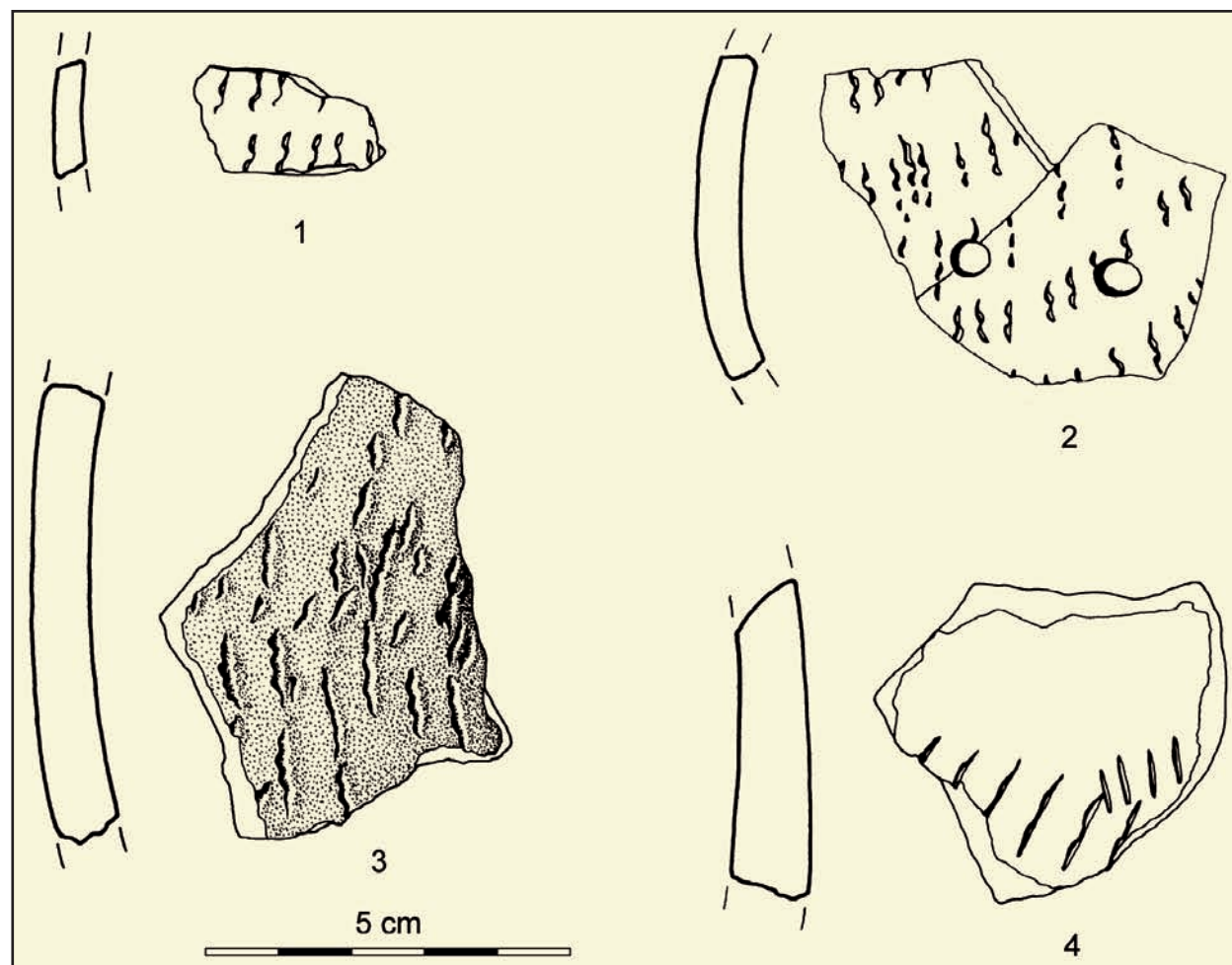


od 25 m, niz probnih sondiranja te podzemni pregled radarom i veće sustavno iskopavanje (oko 150 m<sup>2</sup>) na središnjoj zaravni zvanoj Salamandrija. Prikupljeni su ranoneolitički, kasnobakrenodobni/ranobrončanodobni, klasični grčki, helenistički, ranorimski, kasnoantički i postsrednjovjekovni nalazi.

### RANONEOLITIČKI NALAZI S PALAGRUŽE

Zasad postoji tek šačica nalaza s Palagruže koji nesumnjivo pripadaju ranomu neolitiku.

at Jonkova njiva, near the eastern end of the island (Fig. 4/1–3); we shall return to discuss these finds in some detail below. Another sherd, decorated by impressions of a thin, flat object (perhaps the end of a broken blade), was picked up from the surface of the north-facing slope above the cove of Stara vlaka, near the opposite end of the island (Fig. 4/4). It was found within a thin surface scatter of prehistoric potsherds and flaked stone artifacts, only a few of which can be attributed to a specific period – such as a bifacial arrow point, or several decorated potsherds that testify of Copper Age or later activities.



Slika 4. Ulomci impresso-lončarije s Palagruže: 1–3 Jonkova njiva, 4 sjeverna padina nad Starom vlakom (autor: Stašo Forenbaher).  
Figure 4. Impressed Ware potsherds from Palagruža: 1–3 Jonkova njiva, 4 north slope above Stara vlaka (by Stašo Forenbaher).

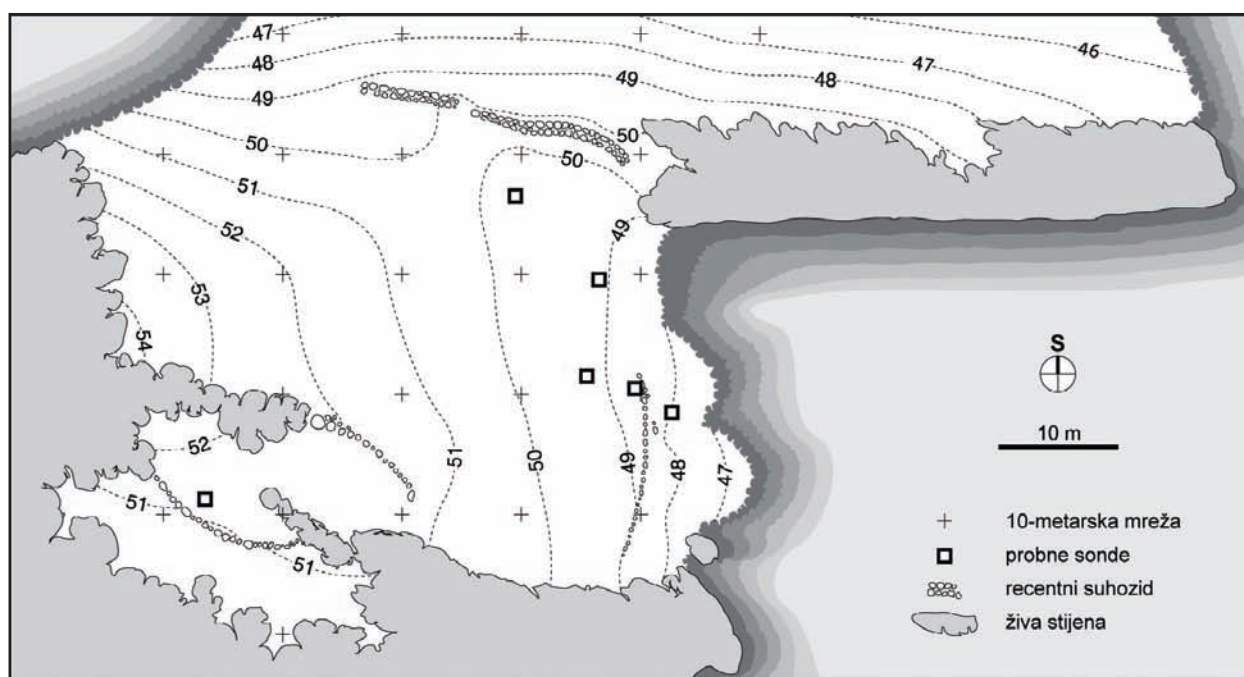
Četiri ulomka *Cardium-impresso*-lončarije prikupljena su s površine Jonkove njive na istočnome kraju otoka (sl. 4/1–3); o njima će još biti riječi u nastavku. Peti ulomak, ukrašen utiskivanjem nekoga tankog, plosnatog predmeta (možda krajem slomljena sječiva), prikupljen je s površine sjeverne padine nad uvalom Stara vlaka, na suprotnome kraju otoka (sl. 4/4).

Taking into account the unquestionable Early Neolithic finds from Jonkova njiva, however, the fifth impressed sherd probably also should be attributed to the Early Neolithic.

Jonkova njiva (“Jonko’s Field”) is the second largest parcel of level terrain on the island. This 0.12 ha plateau is located at its eastern tip and is connected to the rest of the island by a knife-edge saddle called

Naden je unutar prostora na kojem ima narijetko razasute pretpovijesne lončarije i izrađevina od cijepanoga kamena, no tek nekolicina od tih nalaza može se pripisati nekom određenijem razdoblju. Među njima su jedna bifacijalna kremena strelica i karakteristično ukrašeni ulomci lončarije koji svjedoče o bakrenodobnim i kasnijim aktivnostima. Unatoč tome, uzimajući u obzir nesumnjive rano-neolitičke nalaze s Jonkove njive, spomenuti peti ulomak ukrašen utiskivanjem vjerojatno ipak treba pripisati ranomu neolitiku.

Tanko ("Slim"). Cliffs sheer away from the plateau on three sides and drop straight into the sea, barring any landing (Fig. 5). The plateau dips slightly to the east, towards the cliffs, and is evidently in the process of being eroded away. It is partially encircled by portions of at least four low retaining walls, single and double courses of stone. Although their dates are unknown, they probably relate to the agricultural activities of the last few centuries.



Slika 5. Tlocrt ranoneolitičkoga nalazišta na Jonkovojoj njivi (autor: Stasio Forenbaher).

Figure 5. Plan of the Early Neolithic site of Jonkova njiva (by Stasio Forenbaher).

Jonkova njiva druga je po veličini zaravan na otoku, površine oko 0,12 ha. Nalazi se na njegovu istočnome kraju, a s ostatkom otoka veže je vrlo usko sedalce zvano Tanko. S triju strana okružena je stijenama koje se od njezina ruba ruše ravno u more i onemogućuju pristajanje (sl. 5).

Lagano je nagnuta prema istoku (prema stijenama) i očito izložena eroziji. Na njezinoj površini vidljivi su ostaci barem četiriju niskih potpornih suhozida, napravljenih od jednoga ili dvaju redova kamena. Njihova je starost nepoznata, no najvjerojatnije ih treba vezati uz ratarske aktivnosti posljednjih nekoliko stoljeća.

<sup>1</sup> Te smo nalaze prilikom intenzivna pregleda previdjeli možda zato što smo ga proveli krajem proljeća, kad razmjerno bogato raslinje umanjuje vidljivost; poslije je nalazište posjećivano krajem ljeta, kad je raslinje većinom sparušeno. Druga je mogućnost da su zbog erozije u međuvremenu prispjeli na površinu novi nalazi.

After mapping, an intensive surface collection by 10 m squares was conducted in 1993, yielding a low density of Neolithic potsherds and lithics (0.1/m<sup>2</sup>). Additional artifacts were collected from the same area during later informal visits to the site<sup>1</sup>. In order to determine whether there were any cultural materials or archaeological features below the surface, six randomly placed 1 x 1 meter test units were excavated. The results were disappointing, since we found only a few non-diagnostic potsherds and pieces of lithic waste. The excavated sediments consisted of 0.4–0.6 m of soil lying on bedrock. No

<sup>1</sup> These may have been missed during the systematic surface collection due to the fact that it was carried out in the late spring, when relatively lush vegetation reduces ground visibility; subsequent visits took place in the late summer, when most of the vegetation is dry. Alternatively, progressive erosion may have exposed more artifacts.

Nakon što smo 1993. godine kartirali nalazište i podijelili ga na kvadrate sa stranicama od 10 m, pristupili smo intenzivnu prikupljanju površinskih nalaza. Ustanovili smo nisku gustoću ( $0,1/m^2$ ) ulomaka neolitičke lončarije i kamenih izrađevina. Još nekoliko nalaza prikupili smo za naknadnih neformalnih posjeta.<sup>1</sup> Kako bismo provjerili postoje li ispod površine nalazi i tvorevine, iskopali smo šest nasumce postavljenih probnih sondi veličine 1 x 1 m. Rezultat je bio razočaravajući jer smo u njima pronašli tek pokoji nedijagnostički ulomak lončarije ili kremen odbojak. Iskopana taložina sastojala se od 40–60 cm debela sloja tla koje je ležalo na živcu. Nismo naišli ni na kakve tvorevine (osim potpornoga suhozida uz sondu 40/41, koji je bio vidljiv već na površini) ni na bilo kakav organski materijal pogodan za izravno datiranje. Nameće se zaključak da su malobrojni pokretni nalazi sve što je preostalo od ranoneolitičkoga korištenja ovoga prostora. Zbog toga naša rasprava najranijega zaposjedanja Palagruže polazi od šačice ulomaka lončarije.

Četiri ulomka *Cardium-impresso*-lončarije (od kojih se dva međusobno spajaju) potječu od dvije posude. Jedna od njih (sl. 4/1–2) bila je razmjerno fina i tankih stijenki te vjerojatno manja od druge (sl. 4/3), od koje imamo samo jedan ulomak. Ukrašen je u obama slučajevima izveden višestrukim utiskivanjem ruba školjke čančice i čini se da je zahvaćao velike dijelove površine, a u prvome primjeru otisci se nižu približno usporedno. Takva arhetipska stil-ska obilježja omogućuju nam da spomenute ulomke okvirno datiramo u prvu polovicu šestoga tisućljeća pr. Kr. (kalibrirano) (Forenbaher 1999; Forenbaher & Miracle 2005). Prema Mülleru (1994: 152–153) jednostavno ukrašavanje utiskivanjem ruba školjke naročito je karakteristično za ranu fazu istočnojadranske *impresso*-lončarije.

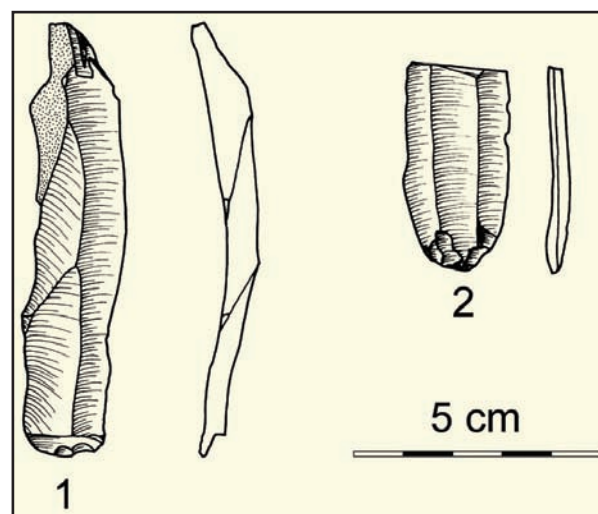
Izrađevine od cijepanoga kamena s Jonkove njive znatno su manje vremenski osjetljive. Dvadesetak izrađevina od cijepanoga kamena potječe iz nesigurnih konteksta (s površine ili iz neuslojenih naslaga), no budući da nema nikakvih dijagnostičkih nalaza koji bi upućivali na kasnija pretpovijesna razdoblja, pretpostavljamo da i one pripadaju ranom neolitiku. Široko sječivo i sječivo s grebenom (sl. 6), oba napravljena od rožnjaka, općenito odgovaraju sličnim primjercima iz drugih jadranskih neolitičkih nalazišta (usp. Bass 2004: sl. 4; Forenbaher 2006; Martinelli 1990).

Spomenuti predmeti vjerojatno su proizvedeni na samoj Palagruži. Na susjednoj Maloj Palagruži postoje obilati izvori rožnjaka u obliku nodula i oblutaka, a rupe u matičnoj vapnenačkoj stijeni naznačuju mjesta gdje je rožnjak bio izvađen. Eksploatacija rožnjaka započela je vjerojatno već za neolitika. Kamene izrađevine s Jonkove njive, za koje pretpo-

features were encountered, except for the retaining wall abutting trench 40/41 that was already visible on the surface. Directly datable organic materials were not recovered. It is reasonable to conclude that apart from these few artifacts no other traces of the Early Neolithic use of this locality remain. Our discussion of the first landfall on Palagruža begins, therefore, with a handful of sherds.

The four cardial impressed sherds (two of which conjoin) represent parts of two pottery vessels. The first vessel (Fig. 4/1–2) was relatively fine and thin-walled, and apparently smaller compared to the second (Fig. 4/3), of which we have only a single sherd. Both have been decorated by multiple impressions of the edge of a *cardium* shell that apparently extended across large areas of their surface and, in the first example, were roughly aligned in rows. Such archetypal stylistic attributes allow us to date these Impressed Ware sherds to the first half of the sixth millennium Cal. BC (Forenbaher 1999; Forenbaher & Miracle 2005). According to Müller (1994: 152–153), this particular kind of simple cardial decoration is entirely characteristic of an early phase of the eastern Adriatic Impressed Ware.

The chipped stone artifacts from Jonkova njiva are far less temporally sensitive. Two dozen pieces altogether were recovered from uncertain contexts (surface or non-stratified sub-surface deposits), and we presume that they belong to the Early Neolithic because of the total absence of any diagnostic finds that would point to a later prehistoric occupation. A broad blade and a crested blade (Fig. 6), both made of chert, are of the same general appearance as other examples from Adriatic Neolithic contexts



Slika 6. Odabrani artefakti od cijepanoga kamena s Jonkove njive (autor: Stasio Forenbaher).

Figure 6. Selected lithics from Jonkova njiva (by Stasio Forenbaher).

stavljamo da pripadaju ranomu neolitiku, svojom bojom i mikrostrukturom odgovaraju mikrokristalastim i kriptokristalastim radiolaritima s Male Palagruže, te vjerojatno odanle i potječu (osobno priopćenje, P. von Bitter).

Malobrojni nalazi prikupljeni s erodirane površine Jonkove njive izgledaju kao tragovi vrlo kratkotrajnoga boravka, naročito ako ih usporedimo sa znatno bogatijim nalazištima na Sušcu (Bass 1998; 2004) i Tremitima (Fumo 1980), otocima najbližima Palagruži. Valja istaknuti da je glavno žarište aktivnosti na Palagruži u svim kasnijim razdobljima bila Salamandrija, no ondje nismo pronašli ni jedan jedini ulomak ranoneolitičke lončarije unatoč vrlo pažljivoj površinskom pregledu i opsežnim iskopavanjima (Forenbaher & Kaiser 1997; Kaiser & Forenbaher 1999; Kirigin & Katunarić 2002). Izgled međutim može zavarati, pa stoga u obzir valja uzeti mogućnost da se tijekom proteklih osam tisuća godina topografija otoka znatno izmijenila.

Salamandrija je danas najveća zaravan na otoku, centralno smještena nad žalom koje pruža najbolje mogućnosti pristajanja. Druga po veličini zaravan, Jonkova njiva, sa svih je strana okružena liticama koje se ruše ravno u more i sprečavaju pristajanje, a pristup na nju moguć je jedino duž neugodno uska grebena. U prošlosti međutim stanje je moglo biti posve drugačije. Razina mora bila je za ranoga neolitika oko 15 m niža od današnje (Van Andel 1990), što znači da su stijene i žala pri morskoj razini mogli biti drukčije raspoređeni. Povrh toga očito je da snaga morskih valova, koja je na ovom ispostavljenom otoku vrlo velika, razmjerno brzo razara njegove bokove.



*Slika 7. Ranoneolitičko nalazište Jonkova njiva (pogled prema jugu-jugozapadu); Gargano se nazire ispod oblaka pri sredini slike; većina nalaza prikupljena je uz rub litice (autor: Stasio Forenbaher).*

*Figure 7. View of the Early Neolithic site of Jonkova njiva (looking towards SSW); Monte Gargano is just visible below the clouds in center; most of the finds were recovered near the cliff edge (by Stasio Forenbaher).*

(compare with Bass 2004: fig. 4; Forenbaher 2006; Martinelli 1990).

These chipped stone pieces are unlikely to have been imports. Abundant sources of nodular and pebble chert exist on the neighbouring islet of Mala Palagruža. There, in many places, gaping holes mark the spots where chert was quarried. This exploitation may well have begun in the Neolithic. The artifacts from Jonkova njiva, which we take to belong to the Early Neolithic, correspond in colour and micro-texture to microcrystalline and cryptocrystalline radiolarian cherts from Mala Palagruža, and likely were quarried there (P. von Bitter, personal communication).

The few potsherds and lithic artifacts collected from the eroded surface of Jonkova njiva may look like evidence of only a very ephemeral occupation, especially when compared to sites with much more abundant finds on the islands that lie closest to Palagruža – Sušac (Bass 1998; 2004) and Tremiti (Fumo 1980). It is remarkable that the main site on Palagruža, Salamandrija, at which activities were concentrated during all later periods, and which was surveyed in detail and extensively excavated (Kaiser & Forenbaher 1999; Kirigin & Katunarić 2002), has not yielded a single Early Neolithic potsherd. Appearances, however, may be deceptive. There is, for example, the likelihood that the topography of the island has changed considerably over the last eight thousand years.

Salamandrija is today the largest flat area on Palagruža, centrally positioned immediately above the beach that provides the best opportunity for landing. Jonkova njiva, the second largest plateau, is completely surrounded by cliffs that plunge straight into the sea, providing no place for landing, and is accessed along a forbiddingly narrow ridge. In the past, however, the situation may have been quite different. During the Early Neolithic, the sea level was approximately 15 m lower than today (Van Andel 1990), which means that the distribution of cliffs and beaches at the sea level may have been different. Furthermore, it is clear that the destructive force of the sea, which is extreme on this exposed island, erodes its flanks at a relatively rapid pace. We repeatedly observed small rock falls during our stay. Blocks of limestone that recently tumbled from the overhanging cliffs litter the main beach, while during a particularly violent storm in the summer of 2004, many tons of rocks crashed onto the beach of Stara vlaka, obliterating the trail that led into it. Oral tradition linked to a local place name, “Pod Forane” (meaning, literally, “underneath the people from Hvar”), tells the story of a disastrous cliff collapse that, a few centuries ago, buried a group of

Za naših boravaka više smo puta primijetili manja urušavanja kamenja. Na velikom žalu leže brojni kameni blokovi koji su se nedavno odvalili s nadvisnih stijena, a za osobito snažne oluje u ljetu 2004. godine deseci tona kamenja sručili su se na žalo u Staroj vlaki i zbrisali put koji je vodio do njega. Usmena predaja vezana uz lokalni toponim Pod Forane bilježi katastrofalno urušavanje stijena koje je prije nekoliko stoljeća pokopalo grupu hvarskih ribara ulogorenu na pogrešnome kraju velikoga žala.

Zbog toga je posve moguće da je za ranoga neolitika zaravan Jonkove njive bila znatno veća nego danas. Tada je to možda bio najveći ravan prostor na otoku, a pod njim su mogla biti žala koja su danas pod morem. Time bismo možda mogli objasniti neobičnu odsutnost ranoneolitičkih nalaza na Salamandriji, najvažnijem nalazištu kasnijih razdoblja na otoku. Kako je razina mora rasla, valovi su sve više potkopavali Jonkovu njivu, obarajući je malo-pomalo u more. Valja istaknuti da je većina nalaza prikupljena s erodirane površine uz sam rub zaravni, tek koji metar od provalije (sl. 7). Sve to upućuje na to da je možda riječ o posljednjim ostacima znatno većega ranoneolitičkog nalazišta koje je more odnijelo.

## PALAGRUŽA I ŠIRENJE ZEMLJORADNJE

Zbog čega su ljudi za ranoga neolitika došli na Palagružu? Teško je zamisliti da je taj bezvodni otočić ikada mogao biti trajno naseljen, iako škrte oborine omogućuju opstanak skromnu biljnom pokrovu i stanovitu broju manjih životinjskih vrsta. Obradiva je tla malo. Prije nekoliko stoljeća sjeverna je padina bila terasirana te se na površini od možda čak 7 ha uzgajalo žito (Kovačić 1997), no otok ni tada nije imao stalnih stanovnika. Povrh toga otok je tako malen i krševit da na njemu ni u pretpovijesti nije moglo rasti mnogo drveća ili grmlja. Ti neznatni izvori drva za vatru bili bi iscrpljeni za nekoliko godina.

Vjerojatnije je da ranoneolitička građa svjedoči o povremenim i privremenim boravcima putnika koje je Palagruža privlačila pojedinim svojim obilježjima. Glavno je bogatstvo otoka more koje ga okružuje – jedno od najbogatijih ribolovnih područja na Jadranu (Županović 1993) – no njegovo sustavno iskorištavanje moguće je tek uz razmjerno veliko ulaganje kapitala. Lov na velika jata srdela, po kojima je Palagruža donedavna bila poznata, izvan je dosega osamljena ribara jer zahtijeva prilično skupe mreže i brodove te višečlane posade. Sredozemna brodogradnja prije drugoga tisućljeća pr. Kr. slabo je poznata, no stjecanje brodograditeljskih znanja te utrošak radnoga vremena i sirovina za izradu razmjerno velika i nepropusna trupa od drvenih dasa-

fishermen from the island of Hvar that camped at the wrong end of the main beach.

It is therefore quite plausible that the plateau of Jonkova njiva was much larger during the Early Neolithic. At the time, it may have offered the largest flat area on the island, possibly close to beaches that now are drowned. That would help explain the otherwise curious absence of Early Neolithic finds at what became Palagruža's main site in later times. As the sea level rose, wave action would have undercut Jonkova njiva, until parts of it would have collapsed into the sea. It is perhaps significant that most of the finds were picked up from the eroded surface only a few meters away from the cliff edge (Fig. 7). All this suggests that we may in fact be dealing with the last remains of a much more substantial Early Neolithic site, destroyed by the sea.

## PALAGRUŽA AND THE SPREAD OF FARMING

What brought people to Palagruža during the Early Neolithic? It would be hard to imagine that this waterless islet ever could have supported permanent settlers, although modest amounts of rain support limited plant cover and a number of small animal species. Palagruža has little arable land. A few centuries ago, as much as 7 ha on the island's north slope may have been terraced for the cultivation of grain (Kovačić 1997) but still there were no permanent residents. What is more, the island is so small and craggy that even in prehistoric times it would not have provided much in the way of fuel resources. It would only have taken a few years before those scant resources were depleted.

More likely, the Early Neolithic evidence reflects occasional and temporary occupations on the part of voyagers who were drawn by one or more of Palagruža's attributes. The island's main resource is the sea around it, which is one of the richest fisheries in the Adriatic (Županović 1993), but its systematic exploitation is a capital-intensive activity. Harvesting large schools of sardines, for which Palagruža was famous until recently, is beyond the means of a solitary fisher, since it requires relatively expensive nets, boats and fairly large crews. Although the details of Mediterranean shipbuilding before the second millennium BC are sketchy, the carpentry skills, labour time, and raw materials necessary to fashion a moderately large watertight hull of wooden planks, eventually replete with masts and superstructures, represent a long-term investment. As such, deep-water fishing is unlikely to have been pursued in any serious fashion before

ka, opremljena nadgrađem i jarbolima, svakako su ulaganja na dug vremenski rok. Ribarenje na otvorenom moru vjerojatno se nije sustavno provodilo prije uspona hijerarhijskih društava na prijelazu iz bakrenog u brončano doba, kad su se zajedno s elitom pojavili interes i sposobnost za akumulaciju kapitala, što je preduvjet takvu ribarenju (Gilman 1981: 7; Kaiser & Forenbaher 1999: 322; Harding 2000: 181–185).

Razmjerno bogat i pristupačan izvor rožnjaka mogao je biti drugi povod odlasku na Palagružu, no najvjerojatniji razlog posjeta ipak je morao biti strateški značaj otoka, njegov ključni zemljopisni položaj u prekojadranskim komunikacijskim mrežama. Drevni pomorci nastojali su se držati blizine kopna gdje god su to mogli. Plovili su od rta do rta i od otoka do otoka oviseći o vjetru i strujama (Casson 1995). U takvu kontekstu plovidba prema Palagruži sama se po sebi nametala svakomu tko je želio preploviti Jadran (Petrić 1975; Kaiser & Kirigin 1994; Bass 1998: 171). Palagruža je središnji u nizu otoka koji se proteže od istočne do zapadne jadranske obale. Tremiti, Pianosa, Palagruža, Sušac i Vis od davnina su privlačili pomorce i ribare nudeći sidrišta, zaklone i odmorišta. Za bistra vremena sa svakog od njih vide se njihovi susjedi, a ponekad i kopno. Ploveći od jednoga do drugoga Jadran se mogao preploviti u sigurnim jednodnevnim etapama, a da se pritom kopno ne izgubi s vidika. Palagruža je ključ tog jedinstvenog prekojadranskog "mosta". Uz nju se mimoilaze dvije važne morske struje: sjevernija teče od istoka prema zapadu, južnija u obrnutome smjeru, olakšavajući plovidbu prema Palagruži.

Spomenuta obilježja bila su posebno važna za ranoga neolitika, kad se zemljoradnja širila Sredozemljem. Pojava najranijih udomaćenih biljaka i životinja na Jadranu može se najbolje objasniti kao posljedica pomorskoga širenja useljenika koji su u Jadran ušli kroz Otrantska vrata i nastavili se duž obala i od otoka do otoka kretati prema sjeverozapadu. U tim su okolnostima pomorska znanja vjerojatno bila od presudne važnosti. Ako su pomorski doseljenici ranoga neolitika znali upotrebljavati zamršene jadranske plovne putove, obris Palagruže na obzoru morao je biti čest i rado viđen prizor.

Danas više nema nikakve sumnje da su ovca, koza i pšenica – glavne udomaćene vrste ranoga neolitika sredozemne Europe – unesene u ovo područje iz zapadne Azije (Demoule 1993; Zohary & Hopf 1993; Rowley-Conwy 2003). Nije vjerojatno da su mogle doći bez ljudske pomoći, pa stoga na prelasku iz mezolitika u neolitik valja pretpostaviti nekakav oblik migracije ljudi. Tu pretpostavku podržava i sve obimnija građa proistekla iz molekularno-genetičkih istraživanja (Richards *et al.* 2002). Prijelaz

hierarchically organised societies emerged the Late Copper/Early Bronze Age – that is, before elites developed an interest in, and capacity for, the kind of capital accumulation necessary for such a venture (Gilman 1981: 7; Kaiser & Forenbaher 1999: 322; Harding 2000: 181–185).

A relatively rich and accessible source of chert may have provided another incentive to visit the island. The most likely reason to visit Palagruža, however, was the island's strategic geographic position, its key location within any trans-Adriatic communications network. Whenever possible, ancient sailors preferred not to stray too far from land, moving instead from headland to headland, island to island, as wind and currents permitted (Casson 1995). From this point of view, using Palagruža as a landfall made excellent navigational sense for anyone trying to cross the Adriatic (Petrić 1975; Kaiser & Kirigin 1994; Bass 1998: 171). Palagruža is the central island in a chain that spans the Adriatic. Tremiti, Pianosa, Palagruža, Sušac and Vis have long attracted sailors and fishermen, offering anchorage, shelter, and a place to rest. On a clear day you can see one island from the next; on some days even the mainland is visible. By using the islands as stopping places, sailors could traverse the Adriatic in safe stages of a day's length, without losing sight of land. Palagruža is the keystone of this unique trans-Adriatic "bridge". Two major currents converge on the island, the westerly one passing just south, and the easterly joust north of Palagruža, facilitating navigation towards the island.

This would have been of particular importance during the Early Neolithic, the period that witnessed the spread of farming in the Mediterranean. The introduction of the earliest domesticated animals and plants in the Adriatic can best be understood as a consequence of dispersal processes that involved sea-going immigrants who entered the Adriatic through the Strait of Otranto, and then moved northwest along its coasts and from island to island. Under such circumstances it is likely that navigational knowledge would have been at a premium. If the embarked pioneers of the Early Neolithic made effective use of the Adriatic's intricate sea-lanes then Palagruža would have often been a welcome sight on the horizon.

It is now beyond question that the main domesticates associated with the Early Neolithic in Mediterranean Europe (sheep, goats and wheat) were introduced into the region from western Asia (Demoule 1993; Zohary & Hopf 1993; Rowley-Conwy 2003). Since it seems unlikely that these species would have moved into the region without human involvement, we must consider at least some form of population transfer during the Mesolithic-Neo-

na zemljoradnju u Europi nastoji se objasniti nizom različitih modela, od onih koji se u prvome redu oslanjaju na migraciju ratarsko-stočarskoga stanovništva (primjerice Ammerman & Cavalli-Sforza 1984) do onih koji ističu ulogu mezolitičkih lovaca-sakupljača (primjerice Tringham 2000; Zvelebil 2002). Na razini jadranske regije većina modela predloženih tijekom zadnjega desetljeća temelji se na migraciji zemljoradnika, uzimajući pritom u obzir veću ili manju ulogu autohtonoga lovno-sakupljačkog stanovništva (Bass 2004; Forenbaher 1999; Müller 1994). Oskudnost podataka o kasnomezolitičkim lovcima-sakupljačima, osobito na istočnome Jadranu, jedan je od razloga isticanja migracijske ratarsko-stočarske komponente ovoga procesa. Izuzetak je model koji predlaže Budja (1999), koji odbacuje bilo kakvu mogućnost migracije te pretpostavlja da autohtono stanovništvo preuzima ograničen broj inovacija. Danas je međutim jasno da se problem prijelaza iz neolitika u mezolitik više ne može rješavati jednostavnim suprotstavljanjem migracije i akulturacije.

Neka druga tradicionalna poopćavanja imaju, čini se, duži vijek trajanja. Jedno od njih je pretpostavka da širenje stočarstva i ratarstva na istočnome Jadranu prati pojava lončarije. Među faunom koja potječe iz konteksta nalazišta na otvorenome s ranoneolitičkom lončarijom prevladavaju kosti domaćih životinja. U špiljama vlada znatno veća raznolikost: dok u jednim prevladavaju domaće životinje, u drugim se najranija lončarija pojavljuje uz miješanu (divlju i udomaćenu) faunu, ili uz faunu u kojoj prevladavaju divlje životinje. Bez obzira na mjesto i vrijeme pojave najranije lončarije unutar regije, uz nju uvijek nalazimo barem pokoju kost domaćih životinja (detajni pregled građe iznesen je u Forenbaher & Miracle 2005; 2006). Pojava prve lončarije (*impresso*, ili drugih stilova na sjevernome kraju Jadrana) može se dakle smatrati pokazateljem uvođenja stočarstva, a možda i ratarstva, iako je neposredna arheološka građa za uzgoj udomaćenoga bilja još uvijek vrlo skromna (Chapman & Müller 1990: 129–132).

Zemljopisni raspored ranoneolitičkih nalazišta s *impresso*-lončarijom (sl. 1) čvrsto upućuje na to da su se doseljenici, udomaćene vrste i druge inovacije uglavnom širili morem. Nadalje, najraniji radiokarbonski datumi za lončariju s obiju strana Jadrana postupno postaju sve mlađi od jugoistoka prema sjeverozapadu (Forenbaher 1999: 526–527; Skeates 2003: 169–172). Iz toga zaključujemo da su nove tehnologije i strategije opstanka u Jadran ušle kroz Otrantska vrata nešto malo prije 6000. godine pr. Kr. (kalibrirano) i stigle do njegova sjeverozapadnoga kraja kojih pet stoljeća poslije. Datumi također upućuju na to da je njihovo širenje teklo brže u južnome, a sporije u sjevernome dijelu Jadrana.

lithic transition. A growing body of genetic evidence supports this assumption (Richards *et al.* 2002). The transition to farming in Europe has been explained by a wide variety of models, ranging from those that rely primarily on migrating farmers (*e.g.* Ammerman & Cavalli-Sforza 1984) to those that highlight the contribution of Mesolithic foragers (*e.g.* Tringham 2000; Zvelebil 2002). At the regional (Adriatic) level, most of the explanations that have been put forward over the last decade take into account primarily the migrating farmers, while acknowledging a greater or lesser contribution by autochthonous foragers (Bass 2004; Forenbaher 1999; Müller 1994). One of the reasons for the explanatory emphasis on incoming agro-pastoralists is the scarcity of information about Late Mesolithic hunter-gatherers, especially in the eastern Adriatic. An exception is Budja's model that envisions an autochthonous population taking up a limited number of innovations, but rejects the possibility of any form of migration (1999). Nonetheless, today it is clear that the Mesolithic-Neolithic transition can no longer be considered in simple dichotomous terms such as acculturation *versus* colonisation.

Other generalisations are more enduring. One such, at least in the eastern Adriatic, is the assumption that the earliest pottery accompanies the spread of farming. Domestic animals do indeed dominate faunal assemblages associated with Early Neolithic pottery in open-air sites. The pattern is much more variable in caves. At some caves domestic animals dominate the assemblages, while at others the appearance of pottery is associated with mixed (wild and domestic) assemblages, or assemblages dominated by wild taxa. There are always, however, at least a few remains of domestic animals that appear along with the first pottery whenever and wherever the earliest ceramics show up in the region (for a comprehensive overview of the evidence see Forenbaher & Miracle 2005; 2006). Thus one can safely use the appearance of pottery (be it Impressed Ware, or other wares at the northern end of the Adriatic) as a proxy for the appearance of herding, and possibly also of cereal cultivation, although direct evidence for the latter is still slim (Chapman & Müller 1990: 129–132).

The geographic distribution of Early Neolithic Impressed Ware sites (Fig. 1) strongly suggests that sea was the main avenue by which immigrants, domesticates, and other innovations were dispersed. Furthermore, the earliest radiocarbon dates for pottery on both sides of the Adriatic grow progressively younger from southeast to northwest (Forenbaher 1999: 526–527; Skeates 2003: 169–172), suggesting that new technologies and subsistence strategies

Forenbaher i Miracle nedavno su predložili model širenja zemljoradnje duž istočnoga Jadrana u dvije faze (Forenbaher & Miracle 2005; 2006). Prema njihovom modelu širenje je u prvoj fazi bilo vrlo brzo, možda u vidu "skokovite kolonizacije" (Zvelebil & Lillie 2000: 62), a vezuje se uz špiljska nalazišta južne Dalmacije. U drugoj je fazi širenje ratara i stočara teklo sporije, a vezuje se uz špilje i nalazišta na otvorenome srednjeg i sjevernog dijela istočnojadranske regije. Autohtone skupine u planinske zaleđu u toj su (druge) fazi prihvatile pojedine inovacije vezane uz zemljoradnju, možda putem procesa poznatih pod imenom "pojedinačna pokretljivost u graničnome području" (*ibid.*).

Prema spomenutom modelu na nalazištu Sidari na otoku Krfu, južno od Otrantskih vrata, pojavljuje se oko 6500. pr. Kr. među lokalnim lovcima-sakupljačima lončarija i manji broj domaćih životinja, ali ne i cjeloviti "neolitički paket" inovacija (Sordinas 1969: 401, 406, n. 14). Otprilike tri stoljeća kasnije na istom se nalazištu pojavljuje nov način ukrašavanja lončarije poznat pod imenom *impresso*, zajedno s drugim novim tehnologijama i domaćim životinjama (Perlès 2001: 49–50). *Impresso*-lončarija i domaće životinje brzo se šire prema sjeveru duž obala južnoga Jadrana, vjerojatno procesom namjernog i usmjerenog naseljavanja. Pretpostavlja se da stočarsko-ratarske grupe pažljivo planiraju i organiziraju svoje pokrete te naseljuju nova područja, prelazeći razmjerno brzo velike udaljenosti i tek nakratko se zaustavljajući putem. To bi odgovaralo procesima koji su dokumentirani nešto ranije u egejskome prostoru. Tako je primjerice Kreta iz Male Azije naseljena prije negoli naseljeni otoci uz maloazijsku obalu (Broodbank 1999). Smatra se da se radilo o malim grupama pomorskih doseljenika, o muškarcima i ženama koji su bili spremni riskirati i "koji nisu posjedovali ili nisu željeli uzeti sa sobom cjelovito tehničko i kulturno nasljeđe zajednica iz kojih su potekli" (Perlès 2001: 62, autorov prijevod citata). Početna kretanja istraživačkih skupina u južnome Jadranu, odnosno prva faza uvođenja zemljoradnje, mogla su trajati stotinjak godina, ako ne i kraće. Zajedno s drugim otocima južne i srednje Dalmacije, Palagruža se nalazi unutar područja zahvaćenih spomenutim kretanjima.

Postoje naznake da autohtoni lovci-sakupljači u zaleđu južnoga Jadrana lončariju preuzimaju nedugo nakon toga. Usporedo s tim nastavlja se pomicanje *impresso*-lončarije prema sjeverozapadu. U toj drugoj fazi širenja ljudi su možda počeli zasnivati trajnija naselja, stalno se naseljavati i baviti se ratarstvom, objedinjujući sve elemente "neolitičkoga paketa" (Forenbaher & Miracle 2005; 2006). Širenje se znatno usporilo, pa je *impresso*-lončarija dose-

entered the region through the Strait of Otranto shortly before 6000 Cal. BC and reached the head of Adriatic some five hundred years later. They also suggest that this dispersal was rapid in the southern Adriatic and slower in its northern part.

Recently, Forenbaher and Miracle proposed a two-stage model of the spread of farming along the eastern Adriatic (Forenbaher & Miracle 2005; 2006). According to this model, the initial stage involved a very rapid dispersal, perhaps by "leapfrog colonization" (Zvelebil & Lillie 2000: 62), and is associated with the cave sites of southern Dalmatia. The second stage comprised a slower agro-pastoral expansion and is associated with both cave and open-air sites along the middle and northern part of the eastern Adriatic region. During this second stage also, in the mountainous hinterland, indigenous groups may have adopted farming via processes collectively termed "individual frontier mobility" (*ibid.*).

According to this model, pottery associated with some domestic animals, but not the complete Neolithic package, appears around 6500 Cal BC among local hunter-gatherers at Sidari on the Ionian island of Corfu, just south of the Strait of Otranto (Sordinas 1969: 401, 406, n. 14). Some 300 year later, a new way of making and decorating pottery known as Impressed Ware appears at Sidari, alongside other novel technologies and a full suite of domestic animals (Perlès 2001: 49–50). Impressed Ware and domestic animals spread rapidly north along the coastline of the southern Adriatic, probably through a process of directed, or intentional, colonisation. It is hypothesised that groups of food producers settled new regions after having carefully planned and organised their moves, traversing long distances rapidly with only short rest stops along the way. This is consistent with processes observed earlier in the Aegean. Thus, for example, Crete was colonised from Anatolia before the intervening islands were settled (Broodbank 1999). These seagoing pioneers, Perlès has argued, were small groups of risk-taking men and women, "who did not carry, possess or choose to retain the whole technical and cultural heritage of their original communities" (Perlès 2001: 62). In the first stage of the introduction of food production and pottery use, the initial movement of exploratory groups in the eastern Adriatic may have lasted 100 years or less. Palagruža, like the other islands of southern and central Dalmatia, is well within the ambit of these Early Neolithic maritime explorers.

Shortly thereafter, there is evidence for indigenous hunter-gatherers taking up ceramics in the hinterland of the southern Adriatic, as well as the continued movement northwest of Impressed Ware pot-



la jug Istre tek oko 5750. pr. Kr. (kalibrirano). Stotinjak godina poslije, kad se zemljoradnja konačno pojavljuje u sjevernoj Istri i u susjednim područjima Slovenije i Tršćanskog Krasa, uz nju je već vezana srednjeneolitička danilsko-vlaška lončarija (Forenbaher *et al.* 2004).

Kakav je odnos opisanoga razvoja događaja prema istodobnoj situaciji duž zapadne obale Jadrana? Najraniji pouzdani datumi za zapadnojadransku *impresso*-lončariju kreću se oko 6000. pr. Kr. (kalibrirano) i potječu iz nalazišta na otvorenome, s područja Tavolierea i iz njegova susjedstva (Skeates 2000: 163–166). Najkraća veza između Krfa i Tavolierea vodi preko Otrantskih vrata i dalje uz obalu Apulije, no datumi koji nam stoje na raspolaganju ne podržavaju pretpostavku da su naseljenici pristigli tim putem. Obrnuto od očekivanja s udaljavanjem od Tavolierea duž obale, kako prema sjeveru tako i prema jugu, datumi za najraniju lončariju postupno su sve mlađi (Skeates 2003: 169–171).

To navodi na zanimljivu mogućnost da je *impresso*-lončarija do zapadne jadranske obale dospjela okolnim putem, duž obala Albanije i Crne Gore, preko južnodalmatinskih otoka, dalje preko Sušca i Palagruže do Gargana te napokon do Tavolierea, njegova neposredna zaleđa. Postojeći radiokarbonski datumi ne protuslove ovoj hipotezi jer najraniji datumi za *impresso*-lončariju u južnoj Dalmaciji nisu ništa kasniji od datuma iz Tavolierea (Forenbaher 1999; Forenbaher & Miracle 2005). S druge strane ne mogu je ni izravno podržati, jer nedostaju datumi za *impresso*-lončariju duž ključnog odsjeka istočnoga Jadrana između sjeverne Grčke i južne Dalmacije. Drugim riječima, datumi kojima raspolažemo ne dopuštaju nam da zaključimo je li *impresso*-keramika stigla u Italiju iz Dalmacije ili je bilo obrnuto.

Postoji i mogućnost (koju smatramo manje vjerojatnom) da je jadranska *impresso*-lončarija nastala na srednjem Jadranu, na području koje obuhvaća Tavoliere i južnu Dalmaciju, odakle bi se bila proširila na sjeverozapad i na jugoistok duž obiju jadranskih obala. U tom bismo slučaju morali odbaciti rane datume za *impresso*-lončariju iz nalazišta Sidari, kao i predloženi model njezina širenja u dvije faze s otoka Krfa (Forenbaher & Miracle 2005; 2006). Kronometrijsko datiranje najranije lončarije s obalnih nalazišta Crne Gore i Albanije moglo bi se pokazati odlučujućim za provjeru spomenute hipoteze. Bez obzira na to koji će se od predloženih scenarija u konačnici pokazati najvjerojatnijim, jedna je stvar sigurna: maleni otočić Palagruža morao je u svima njima odigrati ključnu ulogu.

Nalazi s Palagruže svjedoče da su (neki) ljudi u rano-me neolitiku posjedovali pomorska znanja i tehnologije

tery. In this second phase of expansion people may have started making more permanent settlements, settling down and farming, bringing together all of the elements of the Neolithic package (Forenbaher & Miracle 2005; 2006). The rate of spread slowed considerably, however, and Impressed Ware only reached the southern tip of Istria by about 5750 Cal BC. By the time farming appears in northern Istria and neighbouring Slovenia and the Trieste Karst, perhaps 100 years later, it is associated with Middle Neolithic (Danilo/Vlaška) pottery (Forenbaher *et al.* 2004).

How does this relate to contemporary developments on the western coast of the Adriatic? The earliest reliable dates for western Adriatic Impressed Wares fall around the year 6000 Cal BC and come from open-air sites in and around the Tavoliere (Skeates 2000: 163–166). The most direct route from Corfu to the Tavoliere is across the Strait of Otranto and up the Apulian coast, but the currently available radiocarbon dates do not support this hypothesis. Contrary to what might be expected, the dates for the earliest pottery gradually become *younger* as one moves either up or down the coast away from the Tavoliere (Skeates 2003: 169–171).

This raises an interesting possibility. Impressed Ware pottery may have reached the western coast of the Adriatic via a circuitous route that led along the coasts of Albania and Montenegro, the southern Dalmatian islands, and then via Sušac and Palagruža to Monte Gargano and finally the Tavoliere, which may be considered its hinterland. The dating evidence at hand does not contradict this hypothesis, since the earliest dates for Impressed Wares in southern Dalmatia are just as early as those in the Tavoliere (Forenbaher 1999; Forenbaher & Miracle 2005). On the other hand, the dating evidence does not directly support the hypothesis either, since there are no dated Impressed Ware sites along the crucial stretch of the eastern Adriatic between northern Greece and southern Dalmatia. In other words, the currently available dates do not allow us to decide whether Impressed Ware reached Italy from Dalmatia, or *vice versa*.

Another possibility (which we consider less likely) is that the Adriatic Impressed Ware actually originated in the central Adriatic (the area which includes the Tavoliere and southern Dalmatia), and spread northwest and southeast along both sides of the Adriatic. In that case, the early date for Impressed Ware from Sidari would have to be rejected, as would the two-stage model of its spread from Corfu (Forenbaher & Miracle 2005; 2006). Chronometric dating of the earliest pottery in coastal Montenegro and Albania may prove crucial for testing this

koji su im omogućivali brzo prebacivanje dobara, ideja i drugih ljudi preko širokih prostranstava otvorenoga mora. Može se pretpostaviti da su te sposobnosti poslije postale još važnijima. Sve što znamo o najranijim zemljoradnicima upućuje na život u malim zajednicama. Takve su zajednice vjerojatno nastojale aktivno održavati međusobne veze kao neku vrst socijalnog osiguranja. Na istočnome Jadraniu, gdje vrletni krajolik znatno otežava komuniciranje kopnom, more je pružalo dobru mogućnost održavanja veza među zajednicama koje su nastojale preživjeti na nov način – od zemljoradnje. Dijelom zahvaljujući korištenju Palagruže i drugih sličnih otoka pomorski ratari-stočari jadranskoga neolitika u tome su nastojanju i uspjeli.

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hypothesis. Regardless of which of these scenarios eventually prevails, one thing is already certain: in either of them, the tiny islet of Palagruža must have played a pivotal role.

The finds from Palagruža demonstrate that during the Early Neolithic (some) people had sufficient seafaring skills and technology to enable them to move goods, ideas, and other people in a rapid fashion over long stretches of open water. One can easily imagine how important the ability subsequently became. Since everything we know about the first farmers suggests that they lived in small groups, it is likely that they would have actively sought to maintain ties with one another as a kind of social insurance policy. And since in the eastern Adriatic overland communication is very difficult, maritime links would have been a good way to preserve the connections between communities struggling to make food production a viable way of life. Thanks in part to their use of Palagruža and other similar islands, the seaborne agro-pastoralists of the Adriatic Neolithic were in the end successful.

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