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RIBARSKI ALAT I PRIBOR IZ SLOJEVA ANTIČKE LUKE U ZATONU KOD NINA

Antička luka u Zatonu otkrivena je sredinom šezdesetih godina 20. st., a sustavno se istražuje od 2002. godine. U tih 50 godina istraživanja su se vršila s većim ili manjim prekidima, i svaka kampanja dala je bogatstvo različitog materijala s područja od Hispanije sve do istočnog Sredozemlja. U radu se donosi pregled 78 predmeta koji se direktno ili indirektno mogu povezati s aktivnošću ribolova. Arheološkim ostatcima ribarskog alata i pribora u literaturi je pridavano malo pažnje s obzirom na to da je riječ o predmetima koji nisu previše „zanimljivi" jer se javljaju tijekom cijele povijesti u gotovo neizmijenjenom obliku i vrlo je često, ako nema arheološkog konteksta, teško doći do nekih konkretnijih zaključaka, naročito što se tiče datiranja samih predmeta. Od ribarskog alata i pribora iz antičke luke u Zatonu izdvojene su udice, osti, utezi za mreže i igle za krpanje i šivanje mreža.

Ključne riječi: Zaton, antička luka, ribolov, ribarski alat

FISHING TOOLS AND IMPLEMENTS FROM THE LAYERS OF THE ROMAN-PERIOD PORT IN ZATON NEAR NIN

The Roman-period port in Zaton was discovered in the mid-1960s, but systematic excavations have been going on there since 2002. During these 50 years, the excavations have been conducted at intervals. Every campaign yielded ample and varied material from the regions stretching from Hispania to Eastern Mediterranean. This paper presents 78 objects directly or indirectly associated with fishing. Literature has not paid much attention to the archaeological remains of fishing tools and implements; it does not consider them particularly "interesting" because they have not changed much throughout the history and – unless found in some archaeological context – they are very often difficult to date. Of the fishing tools and implements found in the Roman-period port in Zaton, we have singled out here hooks, fish spears, fishing net weights and netting needles.

Key words: Zaton, Roman-period port, fishing, fishing tools

U antičko doba u mjestu Zaton, na rtu Kremenjača nalazila se luka obližnjeg Nina (*Aenona*) koji je smješten oko 2,5 km jugozapadno (karta 1). Luka je nakon dojave lokalnih ribara otkrivena 60-ih godina 20. stoljeća,[1] a u posljednjih 50 godina istraživanja su se provodila u nekoliko kampanja: 1979.,[2] 1982. i 1983.,[3] 1986.[4] i zaključno s 1987. godinom.[5] Nakon duže pauze sustavna arheološka istraživanja nastavljena su 2002. godine s unutrašnje, istočne strane lukobrana gdje se nalazila operativna obala, i s manjim prekidima traju sve do danas, a zadnja kampanja provedena je 2013. godine.[6]

In the Antiquity, the port of the neighboring Roman town of Nin (*Aenona*) was located at Cape Kremenjača at the present-day town of Zaton. Nin was located approx. 2.5km to the west (Map 1). Local fishermen discovered the port in the 1960s and notified archaeologists.[1] In the past 50 years, the excavations were carried out in several campaigns: in 1979,[2] in 1982 and 1983,[3] in 1986[4] and, finally, in 1987.[5] In 2002, after a longer break, systematic archaeological excavations were resumed inside (and east of) the breakwater, where docks used to be. Being carried out on and off, the excavations have continued to the present day. The last campaign took place in 2013.[6]

Karta 1. Položaj Zatona i Nina
Map 1. Locations of Zaton and Nin
izvor / source: **Arkod; http://www.arkod.hr/ (17. 6. 2019.);**
obradila / edited by: **D. Romanović**

Razni oblici i velika količina keramičkog i staklenog posuđa, metalnih i koštanih predmeta svjedoče o bogatoj i raznovrsnoj trgovini s ostatkom rimskog svijeta na cijelom Mediteranu. Luka je nastala sredinom 1. st., intenzivno se

The variety of shapes and large quantities of pottery and glass dishes and metal and bone objects can be seen as evidence of varied and intensive trade with the rest of the Roman world throughout the Mediterranean. The port was built in mid-1st century AD and was in regular use till late 3rd century. It most likely ceased to operate in the early or mid-4th century.[7]

Of the very diverse archaeological material found during years of excavations in the port, this paper focuses on all the material that – directly or indirectly – can be associated with fishing. We examined the finds from the old holdings of the Department of Underwater Archaeology of Archaeological Museum Zadar and those from the new holdings, found during systematic archaeological underwater excavations between

1 Z. Brusić 1968, 203–210.
2 Z. Brusić 1980, 112–113.
3 S. Gluščević 1984, 17–18.
4 S. Gluščević 1986, 46–47.
5 S. Gluščević 1987, 43–44.
6 Istraživanja su uz potporu Ministarstva kulture RH provedena 2002., 2003., 2006., 2007., 2011., 2012. i 2013. godine, a svake godine značajnim su sredstvima istraživanja pomagali TN Zaton i TZ Zaton, kojima ovim putem još jednom zahvaljujem. Ove, 2019. godine u planu je nastavak istraživanja u antičkoj luci. Istraživanje će biti usmjereno prvenstveno na dokumentaciju trećeg šivanog broda koji je otkriven 2002. godine i koji je dijelom dokumentiran u prijašnjim kampanjama. Više o prijašnjim istraživanjima vidi S. Gluščević 2002, 76–86; 2004, 104–111; 2004a, 41–52. S obzirom na to da je ovaj rad napisan prije realizacije samog istraživanja, eventualni nalazi novog materijala koji bi se mogli povezati s ribolovom nisu uvršteni.

1 Z. Brusić 1968, 203–210.
2 Z. Brusić 1980, 112–113.
3 S. Gluščević 1984, 17–18.
4 S. Gluščević 1986, 46–47.
5 S. Gluščević 1987, 43–44.
6 Supported by the Ministry of Culture of the Republic of Croatia, the excavations were carried out in 2002, 2003, 2006, 2007, 2011, 2012 and 2013. Every year, substantial financial assistance to the excavations was provided by Zaton Holiday Resort and Zaton Tourist Board and we are indebted to them. Continuation of the research in the ancient port are planned for this year (2019). It will primarily be focused on documenting the third "sewn-plank" ship discovered in 2002 – one of the specific ships joined together with cords. This ship was partly documented during previous campaigns. For more on earlier research, see S. Gluščević 2002, 76–86; 2004, 104–111; 2004a, 41–52. As this paper was written before the actual research, possible finds of some new material that could be associated with fishing are not included here.
7 For more on the material that helps us date the beginnings of the port and its end, see D. Romanović 2017, 388.

koristila do kraja 3. st., a njezin kraj može se datirati najvjerojatnije u početak ili polovinu 4. stoljeća.[7]

U ovom je radu, nakon što je pregledan bogati arheološki materijal pronađen tijekom dugogodišnjih istraživanja u luci, izdvojen sav materijal koji se direktno ili indirektno može povezati s ribolovom. Pregledan je materijal starog fundusa Odjela podvodne arheologije Arheološkog muzeja Zadar te materijal novog fundusa, pronađen sustavnim arheološkim podvodnim istraživanjima u razdoblju od 2002. do 2013. godine.[8] Na temelju tih arheoloških ostataka mogu se izvesti određeni zaključci o načinima ribolova i ribarskom alatu i priboru kojim su se služili mornari i ostali korisnici antičke luke u Zatonu kod Nina. Sav izdvojeni ribarski alat i pribor kataloški je obrađen.

Arheološki ostatci ribarskog alata i pribora vrlo su čest nalaz na priobalnim antičkim nalazištima duž Jadranske obale, ali su vrlo slabo proučavani. Nedostaje interesa za tu vrstu arheološke građe koja se često u muzejima čuva u zbirkama metala (udice) i keramike (utezi) i ne postoje posebne zbirke ribarskog alata i pribora. Ribolov je, poput lova, aktivnost koja datira još od početka ljudske civilizacije. Bilo je samo pitanje vremena kada će se neki od instrumenata u alatu prapovijesnog lovca pretvoriti u učinkoviti ribarski alat.[9] Ribolov je bio važan dio života svake društvene zajednice, a na istočnoj obali Jadrana razvijao se još od prapovijesti, o čemu nam svjedoče arheološki nalazi već iz razdoblja mlađeg kamenog doba (6000 – 4000 god. pr. Kr.). Među najstarije nalaze na širem zadarskom području, koje možemo svrstati u ribarski pribor, spada koštana udica pronađena na arheološkom nalazištu Crno vrilo u Ninskom Dračevcu (sl. 1), koje se nalazi na 15 kilometara zračne udaljenosti od antičke luke u Zatonu. Navedena koštana udica datira se u vrijeme starijeg neolitika (6000 – 5600 god. pr. Kr.).[10]

Ribarstvo je bilo važno za preživljavanje, većinom stanovništva na priobalnom području, a riba je činila uglavnom nadopunu drugim većim izvorima prehrane kao što su žitarice, meso, povrće i sl. Odgovore na pitanja kakve su bile promjene u prehrani i koliko su zapravo ljudi u prapovijesti i antici jeli ribu, dala bi detaljna analiza stabilnih izotopa ljudskih ostataka populacije koja je živjela uz obalu.

2002 and 2013.[8] These archaeological remains can help us make certain conclusions about the fishing methods and fishing tools and implements used by sailors and other users of the ancient port of Zaton near Nin. All the fishing tools and implements analyzed here are also catalogued.

The archaeological remains of fishing tools and implements are very frequently found at the coastal sites with Roman-period finds along the Adriatic coast, but they have not been examined adequately. There is a lack of interest in this type of archaeological evidence; objects belonging to it are often kept as parts of metal collections (hooks) or pottery collections (ceramic weights). There are no separate collections of fishing tools and implements. Like hunting, fishing dates back to the beginnings of human civilization. It was only a matter of time when would some of the tools of prehistoric hunters be turned into efficient fishing tools.[9] Fishing was an important part of every community. In Eastern Adriatic, it had developed since prehistory, as is evidence by the archaeological finds dating back as early as to Late Stone Age (6000-4000 BC). The bone hook found at Crno vrilo site in Ninski Dračevac (Fig. 1), some 15km by air from the ancient port in Zaton, is one of the oldest finds in the greater Zadar area that can be included in fishing implements. This bone hook was dated to Early Neolithic (6000-5600 BC).[10]

Slika 1. Koštana udica s lokaliteta Crno vrilo, Arheološki muzej Zadar, inv. br. P16443
Figure 1. Bone hook from Crno vrilo site, Archaeological Museum Zadar, Inv. No. P16443
foto / photo by: **A. Gospić**

Fishing was important for survival, particularly for the population of the coastal regions. Fish was important for sustenance, mostly of the people living in coastal areas. Fish mostly complemented the staples like cereals, meat, vegetables etc. To find out about the changes in their nourishment

7 Više o materijalu koji datira nastanak luke i njezin kraj korištenja vidi D. Romanović 2017, 388.

8 Pod starim fundusom misli se na materijal pronađen podvodnim arheološkim istraživanjima 60-ih, 70-ih i 80-ih godina 20. stoljeća, a prilikom tih ranijih istraživanja nije se koristio stratigrafski pristup. Pod novim fundusom misli se na materijal pronađen od 2002. godine nadalje, a ta su istraživanja obilježena novim pristupom i svi radovi na sustavnom iskopavanju obavljali su se unutar kvadratne mreže koja je georeferencirana totalnom stanicom i prema svim metodološkim pravilima struke.

9 Više o prapovijesnom ribarskom alatu i priboru vidi A. Morales Muñiz 2010.

10 S obzirom na veličinu udice (vis. = 3,4 cm / š. luka = 1,7 cm), pretpostavlja se da se koristila za lov veće ribe. Glava je jednostavno obrađena, kao kvadratno proširenje s tankim utorom za lakše pričvršćivanje uzice. Više o udici vidi D. Vujević 2009, 97, T. VIII: 102.

8 By "old holdings" we refer to the material found during the underwater archaeological excavations between the 1960s and 1980s, when no stratigraphic approach was used. By "new holdings" we refer to the material found from 2002 on, when a new approach was used and when all systematic excavations were conducted within a quadrant grid that was georeferenced using a total station and applying all the methodological rules of the profession.

9 For more on prehistoric fishing tools and implements, see A. Morales Muñiz 2010.

10 Based on the hook's size (height = 3.4cm / gap = 1.7cm), it is believed it was used for catching larger fish. Its eye is plain – a square widening with a thin slot for easier attachment to the line. For more on the hook, see D. Vujević 2009, 97, pl. VIII: 102.

Ribolov je bio poželjna ribarska aktivnost, bilo za prehranjivanje bilo za zadovoljstvo.[11] Ribolovna aktivnost bila je sveprisutna na rimskom Mediteranu i prakticirala se na različitim razinama: od malog ribara koji nastoji uzdržavati svoju obitelj, do poljoprivrednika koji je svoju prehranu povremeno nadopunjavao ribolovom, i ribara organiziranih u udruge koje su radile u suradnji sa solanama ili ribnjacima.[12] Prema rimskoj pravnoj teoriji svatko je slobodan iskoristiti resurse mora koji *a priori* ne pripadaju nikome i onaj tko ih uhvati, i posjeduje ih, o čemu govori i poznati rimski pravnik Gaj[13] iz 2. st. u svom poznatom djelu *Institucije*.[14] O nesmetanim pravima na morske resurse i težini ribarskog života piše i Plaut[15] u svom poznatom djelu *Konop* gdje u prepirci s robom Trahalionom ribar Grip kaže: „Kad ribu uhvatim, tad mogu je na trg dopremiti i prodat jer ona moja je i ja je uhvatih. E pa to je jasna stvar. Sve more zajedničko je."[16]

Na raspolaganju imamo niz izvora koji nam govore o tome kako su Rimljani lovili ribu. Proučavanje svih dostupnih dokaza, pisanih i ikonografskih izvora, arheoloških zapisa, odnosno izvorne građe, zooarheoloških ostataka, etnoarheoloških dokaza i povijesne retrospektive, rezultirat će cjelovitom slikom o ribolovu i ribolovnim alatima u antici.[17]

Antička luka u Zatonu funkcionirala je puna tri stoljeća, a u luci su osim brojnog materijala otkrivena i tri šivana liburnska broda, tzv. serilije. Serilije su se vrlo vjerojatno koristile kao pomoćni brodovi u luci, za pomoć pri utovaru i istovaru tereta s trgovačkih brodova koji su pristizali u luku, ali s obzirom na količinu ribarskog alata i pribora (udice, utezi, igle za krpanje i šivanje mreža...) pronađenog u luci, može se pretpostaviti da su se možda koristile i za povremene ribolovne aktivnosti, i to najvjerojatnije za nadopunu prehrane mornara tijekom boravka u luci, ali i za razbibrigu.[18]

Što sve spada u ribarski alat i pribor? Ribarski alat i pribor oprema je kojom se ribar koristi dok lovi ribu pa se, prema tome, gotovo svako pomagalo koje se koristi za ribolov može nazvati ribarskim alatom.[19] Tako u ribarski alat i pribor možemo svrstati udice, uzice, štapove, utege, mreže, osti, igle za krpanje i šivanje mreža i sl. Ribarski

11 T. Bekker-Nielsen 2010, 191.
12 A. Marzano 2013, 15.
13 Gaj (lat. *Gaius*) je bio poznati rimski pravnik iz 2. st. i pisac prvog udžbenika rimskog prava. Autor je djela *Institucije* (lat. *Institutiones*) u 4 knjige, zahvaljujući kojem se danas najviše i najpotpunije uči kako je izgledalo rimsko pravo.
14 Gaj, *Institutiones*, knjiga 2.67; D. Romanović 2016, 5.
15 Tit Makcije Plaut (lat. *Titus Maccius Plautus*) bio je rimski komediograf s kraja 3. – početka 2. st. pr. Kr. i najveći pisac komedija u rimskoj književnosti. Djelo u kojem govori o ribolovu i težini ribarskog života jest *Konop* (lat. *Rudens*), a podijeljeno je u 5 činova.
16 Plaut, *Rudens*, IV, 971–975; B. Čargo *et al.* 2018, 38.
17 D. Bernal *et al.* 2010, 336.
18 D. Romanović 2016, 56–57.
19 D. Romanović 2016, 19.

and what was the real share of fish in the diet of the people in prehistory and Antiquity, a detailed analysis of the stable isotopes in the human remains of the population who lived along the coast should be carried out.

Fishing skills were desirable, be it for putting food on the table or for pleasure.[11] Widespread in the Roman Mediterranean, fishing was practiced on various levels: from individual fishermen who tried to feed their families to farmers who occasionally complemented their diet with fish to fishermen organized in cooperatives who worked together with salt works or fish-farms.[12] According to Roman law, everyone was free to exploit marine resources; as they *a priori* belonged to no one, fish was his who caught it. The celebrated 2nd-century AD Roman jurist Gaius[13] also writes about it in his well-known work *The Institutes*.[14] In his celebrated work *The Rope*, Plautus also writes about free use of marine resources and the hardships of a fisherman's life.[15] In it, during an argument with the servant Trachalio, fisherman Gripus says: "It's only after I catch them (the fish) – if I'm lucky – that they become mine. And then they're all mine. No one lays a claim to them or seeks a share. I sell them as my personal property in the public market. The sea, as we know, is the common property of all."[16]

There are a number of sources describing the Roman methods of catching fish. Consulting all the available evidence, written and iconographic sources, archaeological notes and original documents, zooarchaeological remains, ethnoarchaeological evidence and historical retrospective will help as get a deeper insight into fishing activities and tools in the Antiquity.[17]

The Roman port in Zaton was in operation for three full centuries. Aside from numerous material, three seriliae (sewn-plank ships) were also discovered in the harbor. In all likelihood, the seriliae were used as auxiliary boats within the port, for helping with loading and unloading of cargo from the merchant ships arriving to the port. However, given the quantities of fishing tools and implements (hooks, weights, netting needles…) found in the harbor, it is also possible that they were occasionally used for fishing, most likely to complement the sailors' diet while in the port, but also as pastime.[18]

What is considered part of fishing tools and implements? It is the equipment a fisherman uses while catching

11 T. Bekker-Nielsen 2010, 191.
12 A. Marzano 2013, 15.
13 Gaius was a celebrated Roman jurist from the 2nd century AD. He wrote the first Roman law textbook. He also wrote *The Institutes* (Lat. *Institutiones)*, a 4-book work that still gives us the best insight into the Roman law.
14 Gaius, *Institutiones*, Book 2.67; D. Romanović 2016, 5.
15 Titus Maccius Plautus was a Roman comedy writer who flourished in the late 3rd century – early 2nd century BC. He was the greatest comedy writer of the Roman literature. In his 5-act comedy *The Rope* (Lat. *Rudens*), he writes about fishing and hardships of a fisherman's life.
16 Plautus, *Rudens*, IV, 971–975; B. Čargo *et al.* 2018, 38.
17 D. Bernal *et al.* 2010, 336.
18 D. Romanović 2016, 56–57.

Slika 2. Ribarski alat i pribor iz antičke luke u Zatonu
Figure 2. Fishing tools and implements from Roman-period port in Zaton

foto / photo by: **D. Romanović**

alat i pribor pronađen u antičkoj luci u Zatonu možemo podijeliti u četiri kategorije: udice, osti, utezi za mreže i igle za krpanje i šivanje mreža (sl. 2). Možemo pretpostaviti da se tom ribarskom opremom posada na brodovima služila da bi nadopunila svoju prehranu ili za rekreaciju.

UDICE

Od ribarskog alata i pribora pronađenog tijekom arheoloških istraživanja antičke luke u Zatonu apsolutno dominiraju udice. Udice su najčešći arheološki nalaz koji je ujedno i najlakše identificirati i povezati s ribolovom zbog toga što je njihov oblik sličan današnjim modernim primjercima udica. Jedna od glavnih prednosti koju udice imaju pred drugim vrstama ribarskog pribora njihova je raznovrsnost u veličini, a imaju i veliki izbor dodatne opreme, kao što su

fish: almost every utensil used for fishing can thus be considered a fishing tool.[19] Fishing tools and implements thus include hooks, lines, fishing rods, weights, nets, fish spears, needles for patching and sewing the nets and the like. The fishing tools and implements found in the Roman port in Zaton can be divided into four categories: hooks, spears, net weights and netting needles (Fig. 2). We can assume that the ship crews used this equipment to complement their diet or as a type of recreation.

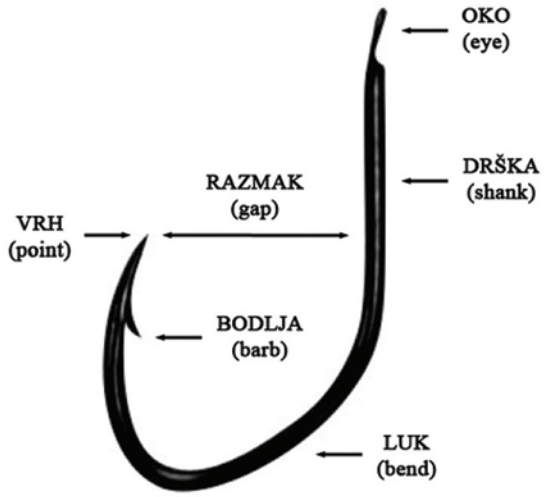
HOOKS

Hooks are by far the most prevailing among the fishing tools and implements found during the archaeological excavations at the Roman port in Zaton. Besides being the most frequent archaeological find, hooks are also easily identified and associated with fishing because their shape

19 D. Romanović 2016, 19.

uzice i utezi, što omogućava da se udice mogu koristiti na bilo kojoj dubini. U vrijeme antike ribolov je uglavnom bio „obalni", odnosno najvećim se dijelom odvijao u plitkim priobalnim vodama.[20] Kao sitni ribolovni alat udica je bila dostupna većini stanovništva, a njezinom se upotrebom, uz mali napor, mogao osigurati dio potrebne hrane.[21]

Sve udice imaju iste karakteristike, a to su zašiljeni kraj, pričvršćena uzica i princip rada gdje potencijalni ulov mora zagristi mamac. Udica bez dodatne opreme, naročito uzice, bila bi beskoristan pribor. Udica se sastoji od nekoliko dijelova: oko (glava), drška, luk, bodlja, vrh i razmak između vrha i drške (sl. 3). Sve udice iz slojeva antičke luke u Zatonu bile su izrađene od bronce.[22] Uvođenje novih metalnih tehnologija svrgnulo je, ili barem smanjilo, upotrebu drva i kosti kao sirovine za izradu udica.[23]



Slika 3. Dijelovi udice
Figure 3. Parts of hook
crtež / drawing by: **D. Romanović**

U antičkim pisanim izvorima postoji nekoliko pokušaja da se opiše način na koji se lovila riba, pa tako Elijan[24] u svom djelu *O prirodi životinja* opisuje četiri tehnike ribolova: mrežom, ostima, vršom i štapom s udicom i uzicom.[25] Isto tako je Opijan[26] u svom djelu *O ribolovu* pokušao opisati udicu, pa

20 A. Morales Muñiz 2010, 28.
21 B. Čargo *et al.* 2018, 39.
22 Neki antički pisci, kao što je Elijan, također spominju i upotrebu željeza za izradu udica. Vidi Elijan, *De Natura Animalium*, knjiga 12.43.
23 Više o sirovinama koje su se koristile za izradu udica vidi D. Romanović 2016, 23–25.
24 Klaudije Elijan (grč. *Κλαύδιος Αἰλιανός*, lat. *Claudius Aelianus*) bio je rimski književnik iz Palestrine u 3. st. Iako je bio rimski književnik, volio je pisati na grčkom jeziku. Njegovo je najpoznatije djelo *O prirodi životinja* (grč. *Περὶ Ζῴων Ἰδιότητος*, lat. *De Natura Animalium*), napisano u 17 knjiga.
25 Elijan, *De Natura Animalium*, knjiga 12.43.
26 Opijan (grč. *Ὀππιανός*, lat. *Oppianus*) je bio grčki književnik iz Korika u Ciliciji u 2. st., tijekom vladavine Marka Aurelija i Komoda. Skladao je niz didaktičkih pjesama u grčkom heksametru, a najpoznatija je ona *O ribolovu* (grč. *Ἁλιευτικά*, lat. *Halieutica*) s 3500 stihova podijeljenih u 5 knjiga.

is similar to the shape of the present-day fish hooks. One of their major advantages over other fishing implements is the fact that they vary in size. A wide variety of additional equipment – like lines and weights – enables their use at any depth. In Antiquity, fishing was mostly limited to coastal waters.[20] As a tiny fishing tool, hook was available to most of the population. With a little effort, using it could provide the necessary food.[21]

All the hooks have identical features: a sharp point, a line attached to it and the principle requiring a fish (a potential catch) to bite the bait. Without the additional equipment – the line in particular – the hook would be of no use. A hook consists of several parts: eye (head), shank, bend, barb and gap (the distance between the point and the shank) (Fig. 3). All the hooks found in the layers of the Roman port in Zaton are made of bronze.[22] When new metal technologies were introduced, the use of wood and bones as the raw materials for making hooks was abandoned, or at least reduced.[23]

Roman written sources include several attempts to describe the methods of fishing. For example, in his work *On the Nature of Animals*, Aelian[24] describes four fishing techniques: catching fish with a net, spear, creel and fishing rod with a line and hook.[25] In his work *On Fishing*, Oppian[26] describes a hook. He says that fishermen do not put a bait on it; instead, they let it hang bare, with no deception, with two barbs bent downwards, *diplêsin* (*διπλῇσιν*). Some three palms above the hook, a soft white fish would be tied.[27] Oppian also describes what a good and successful fisherman should be like: First of all, he must be swift and strong, not too fat and not too thin, wise and brave; he must not like to sleep a lot and he should be awake and with his eyes open at all times. To be successful in fishing, a fisherman should also stand cold and heat; he must love work and – above all – he must love the sea.[28]

As the shape of hooks has remained almost unchanged from their beginnings to the present day, their morphological features are of no use when it comes to dating them. Typologically, all the hooks found are of the same type. The round-sectioned shank of all of them – thicker

20 A. Morales Muñiz 2010, 28.
21 B. Čargo *et al.* 2018, 39.
22 Some ancient writers, like Aelian, also mention iron as a raw material for making hooks. See Aelian, *De Natura Animalium*, Book 12.43.
23 For more on the raw materials used for making hooks, see D. Romanović 2016, 23–25.
24 Aelian (Gr. *Κλαύδιος Αἰλιανός*, Lat. *Claudius Aelianus*) was a 3rd-century AD Roman writer from Palestrina who liked to write his works in Greek language. His best known work is *On the Nature of Animals* (Gr. *Περὶ Ζῴων Ἰδιότητος*, Lat. *De Natura Animalium*), consisting of 17 books.
25 Aelian, *De Natura Animalium*, Book 12.43.
26 Oppian (Gr. *Ὀππιανός*, Lat. *Oppianus*) was a Greek writer from Corycus in Cilicia. He lived in the 2nd century AD, during the reigns of Marcus Aurelius and Commodus. He composed a number of didactic poems in Greek hexameter – the best known among them being *On Fishing* (Gr. *Ἁλιευτικά*, Lat. *Halieutica*), with 3,500 lines divided into five books.
27 Oppian, *Ἁλιευτικά*, III, 529–541.
28 Oppian, *Ἁλιευτικά*, III, 29–49.

Slika 4. Udice iz antičke luke u Zatonu
Figure 4. Hooks from Roman-period port in Zaton
foto / photo by: **D. Romanović**

kaže kako ribari na nju ne stavljaju mamac, već da ona visi s uzice gola i bez obmane, s dvije bodlje povinute prema dolje *diplêsin* (*διπλῆσιν*), dok su otprilike tri dlana poviše nje vezali mekanu bijelu ribu.[27] Isto tako Opijan opisuje kakav dobar i uspješan ribar mora biti, pa kaže da prije svega mora biti brz i jak, ne predebeo i ne premršav, mudar i odvažan, ne smije previše voljeti san, već biti budan i otvorenih očiju. Također, ribar mora dobro podnositi zimu i vrućine, mora voljeti rad i mora prije svega voljeti more da bi bio uspješan u lovu.[28]

Sve do današnjih dana udice su ostale gotovo nepromijenjene od prve definicije oblika i ne mogu se izvući nikakvi kronološki zaključci na temelju njihovih morfoloških osobina. Tipološki gledano sve pronađene udice istog su tipa. Svima se tijelo (drška), koje je tanjeg ili debljeg kružnog presjeka, okomito pruža prema luku koji je zaobljen i koji završava

or thinner – extends vertically towards the bend ending with the barb. The eye is found on the top of the shank. Potentially the most useful is the metric criterion – classifying hooks by their size (with the focus on the gap).[29] Using this criterion, the hooks from the layers of the Roman port in Zaton can be classified into four categories: very small (< 1.3cm), small (1.3-2cm), medium (2-2.7cm) and large (> 2.7cm) hooks (Fig. 4).

The very small hooks (Cat. No. 1–11) are relatively rare and are mostly associated with recreational fishing in coastal waters due to the small size of their potential catch. The small and medium hooks (Cat. No. 12–42) account for most of the archaeological finds. In the Antiquity, hooks were mostly used for fishing from the coast, so this size was the most practical one. The large hooks

27 Opijan, Ἁλιευτικά, III, 529–541.
28 Opijan, Ἁλιευτικά, III, 29–49.
29 The gap between the shank and the bend was measured where it is the widest.

bodljom. Na vrhu tijela nalazi se oko (glava). Prema tome potencijalno je najkorisniji metrički kriterij, odnosno klasifikacija udica prema veličini, gdje je razmatrana širina luka.[29] Na taj način udice iz slojeva antičke luke mogu se klasificirati u četiri kategorije: vrlo male (< 1,3 cm), male (1,3 – 2 cm), srednje (2 – 2,7 cm) i velike (> 2,7 cm) (sl. 4).

Vrlo male udice (kat. br. 1–11) relativno su slabo zastupljene i uglavnom ih se povezuje s obalnim rekreativnim ribolovom zbog male veličine potencijalnog ulova. Male i srednje udice (kat. br. 12–42) najbrojnije su među arheološkim nalazima. Kako se udicom u vrijeme antike uglavnom lovilo s obale, ta je veličina i bila najpraktičnija. Velike udice (kat. br. 43–45) vrlo su rijetke, a koristile su se za hvatanje većih riba, uglavnom na otvorenom moru, iz brodova. Manjak takvih nalaza ukazuje nam da se ručno hvatanje velikih vrsta rijetko prakticiralo te da se ribolov mrežom mnogo više isplatio u lovu većih riba.[30] Naime, nije bio problem izraditi tako veliku udicu, nego se problem javljao s uzicom na koju se udica vezivala. Udice su mogle uhvatiti i držati velike ribe težine 10, 15 i više kilograma, ljudi su ih bili sposobni izvući, ali uzice nisu mogle izdržati pritisak zbog prevelike težine i dinamičkog naprezanja pri trzanju ribe koja se nastoji osloboditi s udice. Koje su se vrste riba u antici lovile s obzirom na veličinu i oblik udica, mogla bi biti tema posebne ihtiološke studije.

U slojevima antičke luke pronađena je sveukupno 51 udica različite veličine i oblika. Tipološki 45 udica možemo izdvojiti kao jednostavne ili obične udice, od čega 11 možemo svrstati u vrlo male, 18 u male, 13 u srednje i 3 u velike udice. Taj tip udice ujedno je i najčešći na našim nalazištima. Šest udica možemo izdvojiti kao „posebne", od čega dvije sigurno pripadaju tipu udice koja se naziva „skosavica" (kat. br. 50–51), 3 udice nemaju bodlju, nego zašiljeni vrh (kat. br. 47–49), a jedna bi se širinom luka mogla svrstati u vrlo male udice, ali ima neobično visoku dršku (kat. br. 46) (graf. 1). Od te 51 udice njih ukupno 42 (82 %) potječe iz starog fundusa, za koji nemamo stratigrafske podatke, a njih ukupno devet (18 %) potječe iz novog fundusa, za koje imamo relevantne stratigrafske podatke (kvadrant i sloj).[31] Od tih devet udica iz novog fundusa jedna pripada sloju 3, četiri sloju 6, dvije sloju 7, jedna sloju 8 i jedna sloju 9.[32]

(Cat. No. 43–45) are very rare. They were used for catching big fish, mostly on the high seas, from ships. The fact that such finds are rare indicates that manual fishing was rarely practices and that using fishing nets were mostly used for catching big fish.[30] Making a large hook was not a problem; the problem had to do with the line the hook was supposed to be attached to. Hooks could catch and hold big fish of up to 10, 15 or more kilograms and people were able to pull them out, but the lines could not endure such a weight and the dynamic strain created by a fish trying to jerk free from the hook. Tackling the issue of the fish species caught in the Antiquity – given the size and shape of hooks – would require a separate ichthyological study.

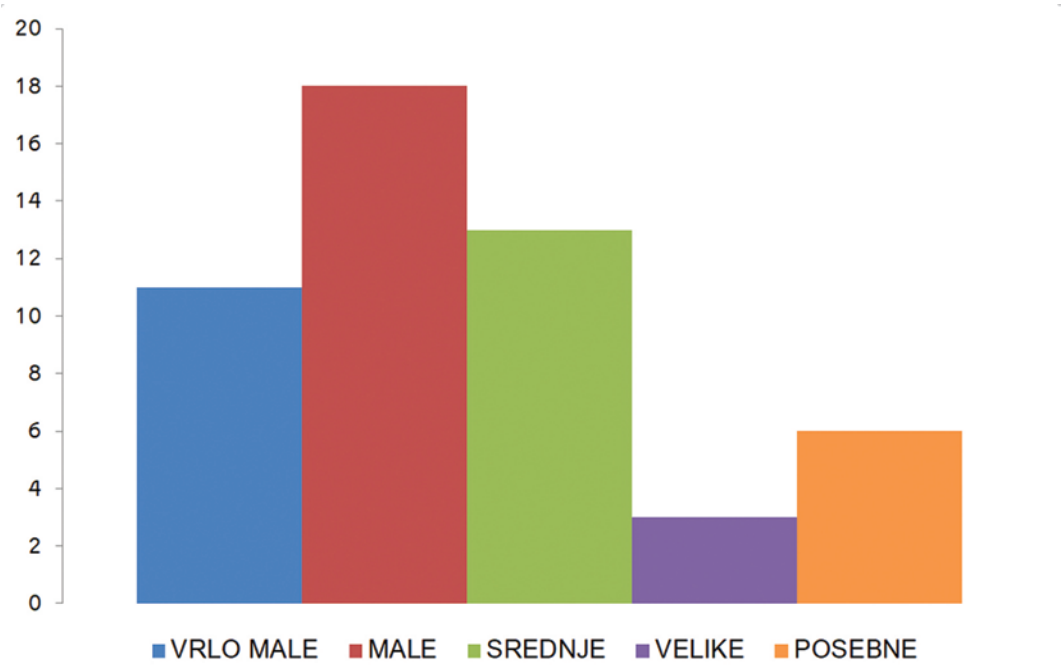
A total of 51 hooks of various sizes and shapes were found in the layers of the Roman port. Typologically, 45 of them can be classified as plain or common hooks. Of these, 11 are very small, 18 are small, 13 are of medium size and 3 are big. Generally, this type of hooks is the most frequent on Croatia's archaeological sites. Six hooks can be singled out as belonging to a "special" type: Two of them positively belong to the "multi-hook" type (Cat. No. 50–51), three have a sharpened point instead of a barb (Cat. No. 47–49) and one could normally be classified as a very small hook if it wasn't for its unusually high shank (Cat. No. 46) (Chart 1). Of the 51 hooks found, 42 (82%) belong to the Museum's old holdings and thus lack stratigraphic data; the remaining nine (18%) belong to the new holdings, so relevant stratigraphic data (the quadrants and layers in which they were found) are available for them.[31] Of these nine hooks from the new holdings, one belongs to Layer 3, four to Layer 6, two to Layer 7, one to Layer 8 and one to Layer 9.[32]

The hooks primarily vary by the way they are attached to the line. The oldest hooks are ribbed and have a few grooves on the shank, under the eye, for winding the line around them in order not to lose it (Fig. 5a). However, the

29 Širina luka (zakrivljenog dijela) izmjerena je na najširem dijelu vanjskog ruba.
30 D. Bernal Casasola 2010, 89–90.
31 Pri istraživanju se koristila klasična stratigrafska metoda kod koje su arbitrarni otkopni slojevi bili debeli 10 cm (0 – 10 cm = sloj 1, 11 – 20 cm = sloj 2, 21 – 30 cm = sloj 3 itd.). Razlikujemo dva procesa iskopavanja: stratigrafski, pri kojem se kreće uvijek unutar jedne, iste stratigrafske jedinice te se arheološki slojevi odstranjuju u skladu s mikroreljefom lokaliteta, i arbitrarni, pri kojem se odstranjuju arheološki slojevi unaprijed određene debljine 5 – 10 centimetara, a koji se upotrebljava kada ne opažamo stratigrafske jedinice ili kad je stratigrafsko iskopavanje nemoguće.
32 Dvije udice (inv. br. 6478H i 6596H) imaju oznaku da su pronađene u kv. C, u slojevima 7 i 13. Kvadrant C postavljen je naknadno 2006. godine i većim je dijelom bio postavljen na lukobran i povišen za 40 cm u odnosu na kvadrante A i B. Zbog toga se podatci o materijalu iz kvadranta C moraju koristiti uz „kalibriranu" stratigrafiju (oduzima se 40 cm, odnosno 4 sloja), pa se onda može kazati kako navedeni primjerak s oznakom „sloj 7" zapravo pripada sloju 3 (sloj 7 = sloj 3), a primjerak s oznakom „sloj 13" zapravo pripada sloju 9 (sloj 13 = sloj 9).

30 D. Bernal Casasola 2010, 89–90.
31 During the excavations, a classical stratigraphic method was applied, using 10cm-thick arbitrary excavated layers (0-10cm = Layer 1, 11-20cm = Layer 2, 21-30cm Layer = 3 etc.). There are two types of excavation processes: stratigraphic and arbitrary ones. In the stratigraphic excavation process, work always takes place within the one and same stratigraphic unit, where we remove archaeological strata in accordance with the microrelief of the particular site. When such stratigraphic units are not observed or when stratigraphic excavation is impossible, we use the arbitrary process in which the archaeological layers are removed in accordance with predetermined thicknesses of 5-10cm.
32 The designation of two hooks (inv. no. 6478H and 6596H) indicates they were found in Quadrant C in Layers 7 and 13. Quadrant C was set subsequently, in 2006. Most of it was located on the breakwater and was elevated by 40cm compared to Quadrants A and B. This is why, for the data on the material found in Quadrant C, "calibrated" stratigraphy must be used (40cm – in other words, 4 layers – are subtracted). As a result, we can say that a specimen designated with "Layer 7" actually belongs to Layer 3 (Layer 7 = Layer 3) and that a specimen designated with "Layer 13" actually belongs to Layer 9 (Layer 13 = Layer 9).

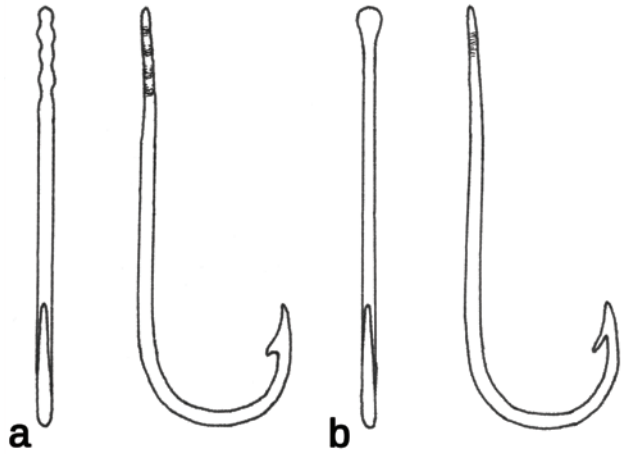
Grafikon 1. Broj udica po tipologiji
Chart 1. Hooks by typology
priredila / prepared by: **D. Romanović**



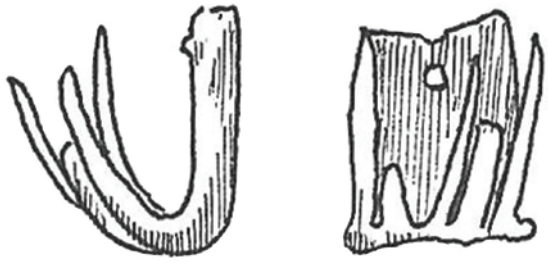
Najveće promjene na udicama vidljive su u načinu pričvršćivanja udice na uzicu. Najstarije su narebrene udice s nekoliko žljebova na drški ispod oka, oko kojih se pričvršćivala uzica da se izbjegne njezin gubitak (sl. 5a), međutim stanje očuvanosti vrlo često otežava identifikaciju žljebova. U slojevima antičke luke za sada nisu pronađene udice s narebrenjem pri vrhu tijela. Tijekom rimskog razdoblja kao standard se javljaju udice s više ili manje čekićanim krajem, gdje je oko izvedeno u trokutastom ili ovalnom obliku (sl. 5b). Vrlo vjerojatno sve udice iz antičke luke u Zatonu pripadaju tom drugom tipu gdje je oko izvedeno čekićanjem. Od ukupno 45 običnih udica, njih 33 imaju oko izvedeno čekićanjem, dok preostalih 12 udica ili ima oštećenu dršku ili ona nedostaje, pa nije moguće identificirati na koji je način oko bilo izvedeno.

condition of the hooks when they are found often makes it hard to identify the grooves. So far, no hooks with ribbed upper part of the shank have been found in the layers of the Roman port. Hooks with a more or less flattened end with a triangular or oval eye were a standard in the Roman period (Fig. 5b). In all likelihood, all the hooks from the Roman-period port in Zaton belong to this second type, characterized by an eye flattened with a hammer. Of a total of 45 common hooks, 33 of them have a flattened eye; in the remaining 12, the shank is either damaged or missing and it is not possible to establish how their eye was made.

The layers of the Roman port in Zaton have also yielded two specimens of "multi-hook" (Fig. 6) (Cat. No. 50–51). This type of hook is very rare. They are mostly found as isolated specimens. They are traditionally associated with fishing octopuses and squid.



Slika 5. Udica s narebrenom (a) i čekićanom glavom (b)
Figure 5. Hook with ribbed (a) and flattened (b) head
crtež / drawing by: **I. Čondić**



Slika 6. Višestruka udica, Arheološki muzej Zadar, inv. br. 283H
Figure 6. Multi-hook, Archaeological Museum Zadar, Inv. No. 283H
crtež / drawing by: **D. Radojčić**

Slika 7. Gusti grmovi običnog trsta (*Arundo donax*) u Ninskoj laguni
Figure 7. Dense cane stands (*Arundo donax*) in Nin Lagoon
foto / photo by: **D. Romanović**

U slojevima antičke luke u Zatonu nalazimo dva primjerka višestrukih udica ili tzv. „skosavice" (sl. 6) (kat. br. 50–51). Taj je tip udice vrlo rijedak i najčešće su zastupljene kao izolirani primjerci. Ta vrsta višestruke udice tradicionalno je povezana s lovom na hobotnice i lignje.

Udice uglavnom imaju bodlju ili trn koji je sprječavao da se riba otrgne i pobjegne, kao što nalazimo na najvećem dijelu običnih udica iz slojeva antičke luke. Od ukupno 45 običnih udica, njih 38 ima sačuvanu bodlju, 5 udica ima oštećenu bodlju, dok dvjema udicama bodlja nedostaje, ali se može pretpostaviti da je postojala. Udica s neobično visokom drškom pod inv. br. 6469H, koja je svrstana u posebne udice, ima oštećenu bodlju. Ponekad je vrh bio samo zašiljen, kao što nalazimo kod tri primjerka udica iz slojeva antičke luke, koji su također svrstani u posebne udice.

Osnovni oblik ribarskog alata u kojem se udica koristi kao glavni element jest štap za ribolov na koji je pričvršćena uzica opremljena utegom i udicom na kraju. Nažalost, nemamo arheoloških ostataka ribarskih štapova zbog biljnog materijala koji se koristio u njihovoj izradi, a koji je vrlo

Most of the hooks found in the Roman port have a barb or a thorn that prevent a fish from jerking free and getting away. Of a total of 45 common hooks, 38 of them have their barb preserved; the barb is damaged on five of them and is missing on two of them, although it can be assumed that it was there. The hook with an exceptionally high shank (Inv. No. 6469H), classified among special hooks, has a damaged barb. Sometimes, hooks would just have sharpened points, as is the case with three specimens from the port (also classified as special hooks).

Among the fishing implements, inseparable from the hook is the fishing rod, to which a line with a weight and a hook at its other end is attached. Unfortunately, as fishing rods were made of plant materials – very prone to decomposition – no archaeological remains of them have

podložan propadanju. Prema pisanim izvorima, Opijanu[33] i Elijanu,[34] štapovi su bili izrađeni od biljnog materijala kao što je trst (*Arundo donax*),[35] na koji je najčešće bila pričvršćena uzica od uvijene konjske dlake, od koje se preporučuje samo korištenje dlake bijele, crne, crvene ili sive boje kao najkvalitetnije. Cijelo područje Nina i njegove okolice jedinstveni je krajobraz niske muljevite i pjeskovite obale s močvarnim dijelovima na kojima je osebujna i jedinstvena flora i fauna. I danas na tim dijelovima rastu gusti grmovi običnog trsta (sl. 7).

OSTI

U materijalu fundusa Arheološkog muzeja Zadar nalaze se i jedne osti koje samo imaju oznaku da je riječ je o željeznim ostima iz Zatona (kat. br. 59). S obzirom na to da se prilikom ranijih istraživanja nije koristio stratigrafski pristup, nemamo relevantne podatke, pa možemo pretpostaviti da te osti najvjerojatnije pripadaju najranijim nalazima s kraja šezdesetih godina 20. stoljeća. Osti su izrađene od željeza, imaju nasadnu dršku s četiri zupca i u vrlo su lošem stanju.[36]

Osti su probodni ribarski alat koji se sastoji od metalne vilice koja na vrhu ima tri (ili više) velika bodljikava zuba (šiljka) i koja je zatim bila nataknuta na motku od drva (sl. 8). Prema izvorima motka je mogla biti izrađena od običnog bora (*Pinus sylvestris*).[37] Osti su najčešće bile izrađene od željeza, a koristile su se za lov ribe, ali i drugih morskih organizama, kao što su glavonošci ili rakovi, probadanjem ulova. Upotrebljavale su se s obale pješice, šetajući kroz plitku vodu, ili s broda.

been found. According to written sources – Oppian[33] and Aelian[34] – fishing rods were made of materials like cane (*Arundo donax*),[35] to which a line made of entwined horse hairs was usually attached. Only the white, black, red, or gray horse hairs were recommended for such use because they were considered to be the best. Nin's immediate surroundings are a unique landscape that includes low silty and sandy shoreline with occasional marshes. Peculiar and unique plant and animal life is found there. Stands of cane can still be found in that area (Fig. 7).

FISH SPEAR

The holdings of Archaeological Museum Zadar also include a fish spear. Its designation tells us only that that it is an iron fish spear from Zaton (Cat. No. 59). As no stratigraphic approach was used during the earlier excavations, we do not have any other relevant information. We can assume that the spear probably belongs to the earliest finds from the 1960s. It is made of iron, has four prongs and an extension for fitting on a shaft. It is in a very poor condition.[36]

Fish spear is a piercing tool consisting of a metal fork with three (or more) long prongs and an extension for fitting it onto a wooden shaft (Fig. 8). According to sources, the shaft could have been made of Scots pine (*Pinus sylvestris*).[37] The spear would usually be made of iron. It was used for piercing fish, but also for other marine organisms such as cephalopods or crustaceans. A person would use it while standing on the shoreline, in shallow water or aboard a ship.

This type of fishing tools is also mentioned in sources. Aelian describes its use while standing on a boat, shallow reef or shoreline. He says that the hunter using

Slika 8. Rekonstrukcija ostiju
Figure 8. Fish spear – reconstruction
crtež / drawing by: **I. Čondić**

33 Opijan, *Ἁλιευτικά*, III, 72–78.
34 Elijan, *De Natura Animalium*, knjiga 12.43.
35 Obični trst (*Arundo donax*) trajna je biljka iz porodice trava (*Poaceae*). Stabljike su uspravne ili uzdignute i robusne iako su šuplje. Gusto rastu i impozantnog su rasta, narastu obično oko 4 metra visine, a promjera su do 35 mm. Rasprostranjen je na području oko Sredozemlja i u zapadnoj Aziji, raste na vlažnim staništima, uz rijeke i kanale, često u velikim skupinama.
36 Osti su trenutno u postupku konzervacije i fotografija u katalogu prikazuje njihovo stanje prije konzervacije.
37 Elijan, *De Natura Animalium*, knjiga 12.43.

33 Oppian, *Ἁλιευτικά*, III, 72–78.
34 Aelian, *De Natura Animalium*, Book 12.43.
35 Cane (*Arundo donax*) is a perennial plant from the grass family (*Poaceae*). Its stems are vertical or raised and robust, although they are hollow. It grows in dense stands and can reach an impressive height – usually around 4 meters. It is up to 35mm thick. It is found throughout the Mediterranean and in Western Asia. It grows in wetlands, next to rivers and channels, often in large groups.
36 The fish spear is currently being conserved. On the photograph in the catalogue, its condition before conservation is shown.
37 Aelian, *De Natura Animalium,* Book 12.43.

Ova vrsta ribarskog alata spominje se i u pisanim izvorima. Elijan opisuje ribolovnu tehniku koja se provodila s broda, plitkog grebena ili obale i kaže da je za ribolov ostima bio potreban lovac vrlo velike jakosti, a njima je probadao ribe, hobotnice, lignje, pa čak i morske ježeve.[38]

UTEZI ZA MREŽE

Uobičajeno je vjerovanje da je ribolov mrežom najučinkovitiji način ribolova i jedini ribarski alat kojim su se mogle odjednom uloviti veće količine ribe.[39] Nažalost, u Jadranskom moru nemamo sačuvanih organskih ostataka ribarskih mreža, već možemo samo, na temelju dodatne opreme koja se koristila uz mreže (utezi od keramike i olova te ribarske igle za krpanje i šivanje mreža), zaključiti da su one postojale i da su se koristile u doba antike.

Raznolikost utega za mreže u antici je ogromna, a bili su izrađeni od metala (uglavnom olova), keramike ili kamena, s velikim rasponom oblika. U slojevima antičke luke nalazimo sva tri tipa utega, od čega keramičkih u nešto većem broju, dok su olovni i kameni utezi zastupljeni sa svega nekoliko primjeraka.

Utezi od keramike kategorija su utega koju je teško povezati s ribolovom jer su vrlo slični utezima koji su se koristili za razboj. Najbolji vodič da se razluči za što je služio keramički uteg u obliku pršljena jest kontekst samog nalaza, odnosno ako dolazi iz podvodnog konteksta, možemo zaključiti da je vjerojatno služio kao uteg za ribarsku mrežu.[40] U slojevima antičke luke pronađeno je ukupno 17 keramičkih utega, od čega njih 15 (88,2 %) potječe iz starog fundusa, za koji nemamo stratigrafske podatke, a dva (11,8 %) potječu iz novog fundusa, za koji imamo relevantne stratigrafske podatke (kvadrant i sloj). Od ta dva keramička utega iz novog fundusa jedan pripada sloju 7,[41] a jedan sloju 8.

Utege od keramike iz slojeva antičke luke u Zatonu možemo podijeliti na četiri tipa: kuglasti, bikonični, u obliku diska i dorađeni. Kuglasti su utezi kružnog ili pseudokružnog oblika, s manjom ili većom središnjom perforacijom, a zastupljeni su sa 13 primjeraka (sl. 9) (kat. br. 60–72). Većih su dimenzija (3,8 – 4,6 cm) i pokazuju slabu izradu jer završna obrada nije naročito fina, a perforacije nisu uvijek dobro centrirane. Veličina otvora od 1 do 1,5 cm u promjeru ukazuje na to da su se ti utezi vjerojatno koristili sa srednjim i većim mrežama. Bikonični utezi blago su spljošteni i manjih su dimenzija (2,9 – 4,1 cm), a zastupljeni su s dva primjerka (kat. br. 73–74). Veličina otvora od 0,7 do 0,8 cm u promjeru ukazuje na to da su se ti utezi vjerojatno koristili sa srednjim i manjim mrežama. Utezi u obliku diska lako su

38 Elijan, *De Natura Animalium*, knjiga 12.43.
39 T. Bekker-Nielsen 2005, 85–86.
40 D. Bernal Casasola 2010, 102.
41 Jedan keramički uteg (inv. br. 2388H) ima oznaku da je pronađen u kv. C, u sloju 7. Vidi bilj. 32.

a spear has to be very strong and that it is used for piercing fish, octopuses, squid and even sea-urchins.[38]

FISHING NET WEIGHTS

It is the conventional wisdom that fishing with a net is the most efficient way of fishing. It is the only fishing tool for catching fish in bulk.[39] Unfortunately, as no remains of organic fishing nets have been found in the Adriatic, we can only conclude that they existed and were used in the Antiquity on the basis of the appertaining equipment (ceramic and lead weights and net-patching and sewing needles).

The fishing net weights are exceptionally diverse. They were made of metal (mostly lead), ceramics or stone. Their shapes also varied a lot. Specimens belonging to all of these three types of weights were found in the layers of the Roman port: most of them are made of ceramics and only a few of them are made of lead and stone, respectively.

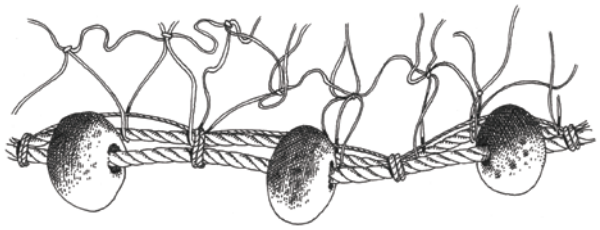
Ceramic weights are hard to associate with fishing because they resemble a lot to the weights used for looms. The best way to determine the role of a vertebra-shaped weight is to take into account the context of the find: if it was found on the seabed, it was probably used as a fishing net weight.[40] A total of 17 ceramic weights were found in the layers of the Roman port. Of these, 15 (88.2%) belong to the old holdings, for which no stratigraphic data are available, and two (11.8%) belong to the new holdings, for which relevant stratigraphic data (quadrants and layers) are available. Of these two ceramic weights from the new holdings, one comes from Layer 7[41] and one from Layer 8.

There are four types of ceramic weights from Zaton: spherical weights, biconical weights, disk-shaped weights and re-used weights. Spherical weights include circular and pseudo-circular shapes with larger or smaller perforation in their center. There are 13 of them (Fig. 9) (Cat. No. 60–72). They are large (3.8-4.6cm) and of poor workmanship (the final treatment was not refined). The perforation is not always well-centered. The diameters of the perforations (ranging from 1cm to 1.5cm) indicate that the weights were probably used for medium-size and larger nets. Biconical weights are slightly flattened and of a smaller size (2.9-4.1cm). There are two of them (Cat. No. 73–74). The diameters of the perforations (ranging from 0.7cm to 0.8cm) indicate that the weights were probably used for medium-size and smaller nets. Disk-shaped weights are easily recognizable due to their circular shape. There is only one of them (Cat. No. 75). This weight is of a large size (5.9cm) and is concave-convex in cross-section. Its inner

38 Aelian, *De Natura Animalium*, Book 12.43.
39 T. Bekker-Nielsen 2005, 85–86.
40 D. Bernal Casasola 2010, 102.
41 The designation on a ceramic weight (inv. no. 2388H) indicates that it was found in Quadrant C in Layer 7. See n. 32.

prepoznatljivi zbog svog kružnog oblika, a ta je kategorija zastupljena sa samo jednim primjerkom (kat. br. 75). Uteg je većih dimenzija (5,9 cm) i konkavno-konveksni u presjeku, s unutrašnjom profilacijom koja ponekad izostaje zbog trošenja materijala, pa rubovi budu zaobljeni. Veličina otvora od 1,6 cm u promjeru ukazuje na to da se taj uteg vjerojatno koristio s većom mrežom. Još jedna kategorija keramičkih utega koju možemo izdvojiti su tzv. dorađeni utezi, a također je zastupljena sa samo jednim primjerkom (kat. br. 76). Riječ je o utegu koji nije prvotno napravljen za tu svrhu, već je u sekundarnoj upotrebi prilagođen od ulomka keramike koji se, nakon što je adekvatno dorađen, mogao upotrijebiti kao uteg za ribarsku mrežu.

Taj tip keramičkih utega vjerojatno se koristio na većoj mreži na povlačenje pravokutnog oblika tipa *grîphos* (*γρῖφος*).[42] Riječ je o tipu mreže koja se spuštala u more okomito. Mreža se u donjem dijelu opterećivala utezima, dok se gornji dio na površini održavao plovcima (sl. 10).[43] Za upravljanje tom mrežom potreban je najmanje jedan čamac za polaganje mreže u more i najmanje dva ribara, po jedan na svakom kraju mreže. Nakon što je mreža postavljena, ribari je zatvaraju povlačeći svaki svoj kraj na obali ili na brodu (sl. 11).[44]



Slika 10. Rekonstrukcija armanja mreže kuglastim keramičkim utezima
Figure 10. Fitting net with ceramic spherical weights – reconstruction
crtež / drawing by: **I. Čondić**

Utezi od olova u vrijeme antike bili su različitih oblika i težine, a koristili su se i na uzicama na ribarskom štapu i za potapanje ribarskih mreža, pa se često mogu pomiješati. Olovo se koristilo zbog svoje težine i otpornosti na koroziju

42 Opijan u svom djelu *O ribolovu* opisuje neke vrste mreža i navodi kako su one *mýrioi* (*μύριοι*), bezbrojne, da neki više vole postavljati mreže i da među njima postoje one koje se zovu mreže za bacanje – *amphíblestron* (*ἀμφίβληστρον*) i one koje se nazivaju mreže na povlačenje – *grîphos* (*γρῖφος*). Vidi Opijan, *Ἁλιευτικά*, III, 80–84.

43 Konop s plutima na vrhu mreži je davao plovnost, a kako je riječ o organski vrlo osjetljivom materijalu, jako je malo predmeta tog tipa preživjelo, za razliku od brojnih keramičkih i metalnih utega. Plovci su bili izrađeni uglavnom od kore drveta običnog bora (*Pinus sylvestris*) ili hrasta plutnjaka (*Quercus suber*), ali i od kore drugih stabala s laganim drvom, kao što je crna topola (*Populus nigra*), pa čak i od biljaka koje imaju tendenciju da plutaju određeno vrijeme, kao što je papirus (*Cyperus papyrus*).

44 D. Romanović 2016, 42–44.

features are sometimes not visible due to wearing out of the material and rounded edges. The diameter of the perforation (1.6cm) indicates that this weight was probably used for a larger net. Another category of ceramic weights we can single out here are the so-called re-used weights. There is also only one of them (Cat. No. 76). This weight was originally a ceramic object made for a different purpose but was later remodeled to fit the new purpose as a weight for a fishing net.

Slika 9. Keramički kuglasti utezi za ribarsku mrežu
Figure 9. Ceramic spherical weights for fishing net
foto / photo by: **D. Romanović**

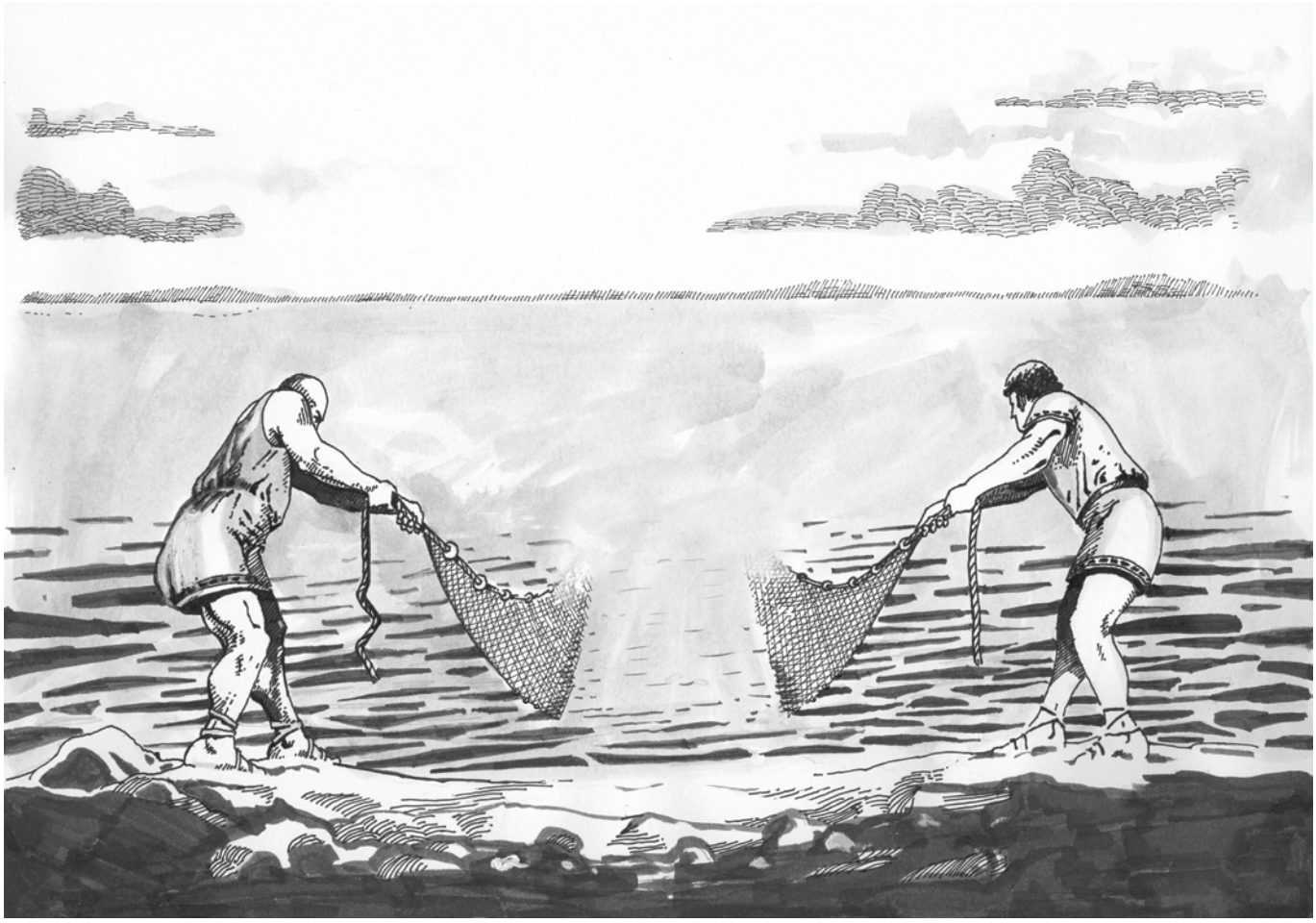
This type of ceramic weights was probably used for rectangular dragnets or *grîphos* (*γρῖφος*).[42] This type of net would be lower into water, vertically to the stream. Its lower part would be weighted, while the upper part would be kept on the surface by means of floats (Fig. 10).[43] For handling this type of fishing net, at least one boat and two fishermen were required – one for each end of the net. After the net was suspended, each fisherman would drag his end towards himself while standing on the shore or on the boat (Fig. 11).[44]

Lead weights of the Antiquity varied in size and weight. They were used both for weighing fishing lines

42 In his work *On Fishing*, Oppian describes some types of nets. He says they are *mýrioi* (*μύριοι*, countless), that some prefer using nets and that there are cast nets – *amphíblestron* (*ἀμφίβληστρον*) – and dragnets – *grîphos* (*γρῖφος*). See Oppian, *Ἁλιευτικά*, III, 80–84.

43 A rope with floats ensured buoyancy of the net. As it was made of a sensitive organic material, very few of these objects remain, unlike numerous ceramic and metal weights. Floats were mostly made of the Scots pine (*Pinus sylvestris*) bark or cork oak (*Quercus suber*) bark, but the bark of other light trees such as black poplar (*Populus nigra*) was also used. The use of plants that tend to float for a while, like papyrus (*Cyperus papyrus*) was also widespread.

44 D. Romanović 2016, 42–44.



Slika 11. Rekonstrukcija upotrebe mreže na povlačenje *γρῖφος*
Figure 11. Use of dragnet (*γρῖφος*) – reconstruction
crtež / drawing by: **I. Čondić**

u doticaju s vodom. U slojevima antičke luke nalazimo dva tipa utega za mreže, linijski i prstenasti, svaki zastupljen s po dva primjerka i svi potječu iz starog fundusa, što znači da za njih nemamo relevantne stratigrafske podatke.

Linijski utezi (kat. br. 55–56) najčešći su tip olovnih utega u antici. Izrađeni su presavijanjem tanke olovne ploče, obično pravokutnog oblika, što rezultira U ili V presjekom, ovisno o širini užeta s kojim je korišten (sl. 12). Ta vrsta utega bila je čvrsto pričvršćena za donji dio konopa mreže i to vrlo vjerojatno dok je olovo još bilo vruće, a svoj konačni oblik dobila je čekićanjem (sl. 13). U antici je ta vrsta utega ponekad na sebi imala i neku vrstu dekoracije u vidu geometrijskog ukrasa (linije, krugovi), a ponekad i razrađenijih motiva (sidro, morski val, riblja kost), pa čak i slova.[45]

Ovaj tip olovnih utega se vjerojatno koristio na manjim okruglim mrežama za bacanje tipa *amphíblestron*

and for weighing fishing nets. Mixing up the two is easy. Lead was used because it is heavy and is resistant to corrosion when in contact with water. Two types of fishing net weights are found in the layers of the Roman port: rolled-plate weights and ring weights. Two specimens of each type were found. Both of them are from the old holdings, so no relevant stratigraphic data for them are available.

Rolled-plate weights (Cat. No. 55–56) are the commonest type of lead weights of the Antiquity. They were made by bending a thin (usually rectangular) lead sheet, in such way that it acquires a U or V-shaped cross section, depending on the width of the rope they were attached to (Fig. 12). This type of weights would be tightly fixed to the lower end of the net's rope, probably while the lead was still hot. Than it would be hammered to its final shape (Fig. 13). In the Antiquity, this type of weights was sometimes decorated with geometrical patterns (lines, circles), and sometimes even with more elaborate motifs (an anchor, wave, fishbone) and letters.[45]

This type of lead weights was probably used for smaller round cast nets of the *amphíblestron* (*ἀμφίβληστρον*)

45 Više o ukrašavanju olovnih utega vidi E. Galili, B. Rosen, J. Sharvit 2002, 188–191.

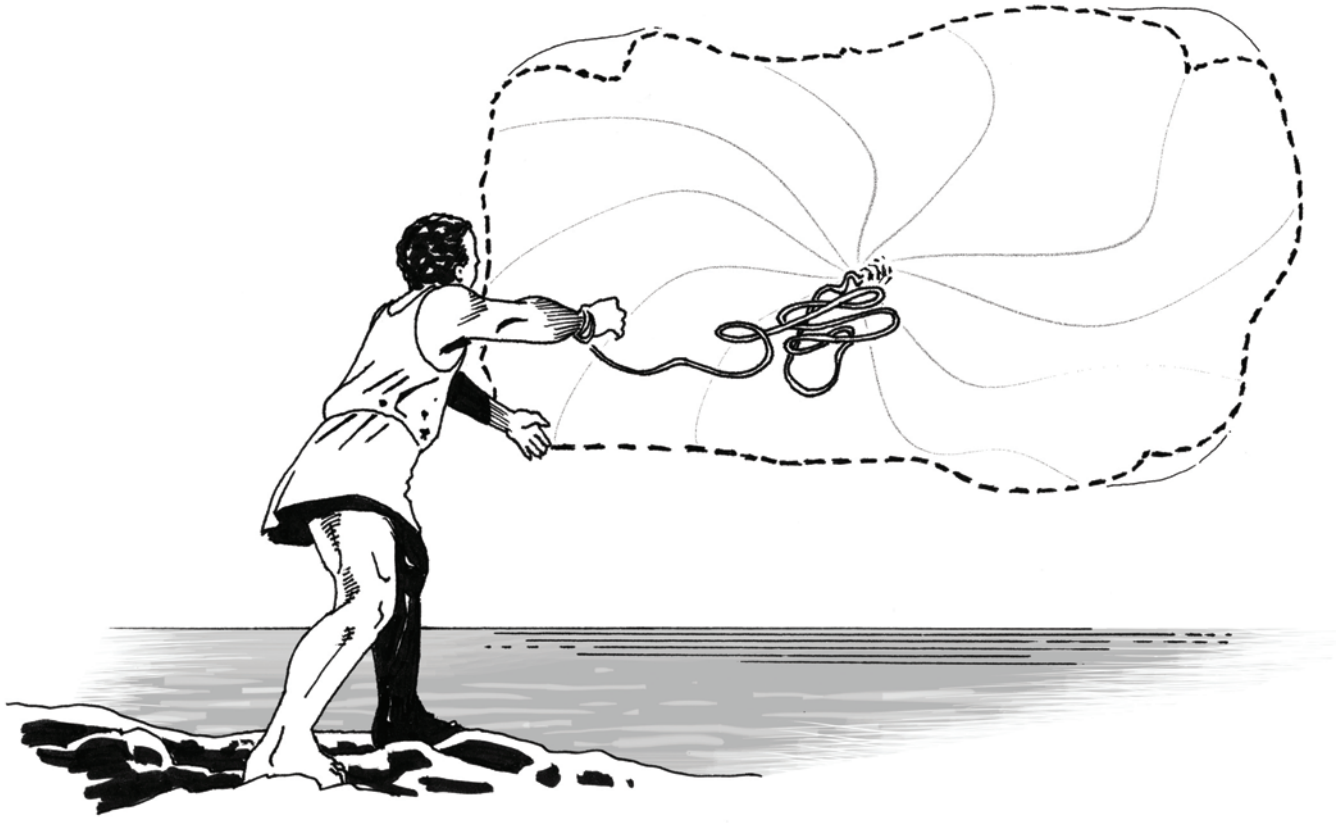
45 For more on lead weight decorations, see E. Galili, B. Rosen, J. Sharvit 2002, 188–191.

Slika 12. Olovni linijski uteg za ribarsku mrežu, Arheološki muzej Zadar, inv. br. 3437H
Figure 12. Lead rolled plate weight for fishing net, Archaeological Museum Zadar, Inv. No. 3437H
foto / photo by: **A. Gospić**

Slika 13. Rekonstrukcija armanja mreže linijskim olovnim utezima
Figure 13. Fitting net with lead rolled plate weights – reconstruction
crtež / drawing by: **I. Čondić**

(*ἀμφίβληστρον*),[46] što bi zahtijevalo da budu jedinstvene težine i pravilno raspoređeni kako bi mreža tijekom bacanja bila dobro izbalansirana. Taj tip ribarske mreže kojom upravlja jedan ribar koristi se tako da je ribar baca iz ruku u more. Kada mreža padne na morsku površinu, ona se raširi i potone pod težinom olovnih utega. Mreža tonući obavija jato riba, a ribar je, povlačeći konop, zatvara i izvlači na obalu ili na brod (sl. 14).[47]

type.[46] This is why they had to be of a uniform weight and positioned in a pattern to ensure good balance of the net when being cast. Handling this type of net required a single fisherman. He casts it into the sea. When the net touches the surface, it spreads and sinks, dragged downwards by the lead weights. While sinking, the net wraps around a shoal of fish. By pulling the rope, the fisherman pulls it out on the shore or on the deck (Fig. 14).[47]

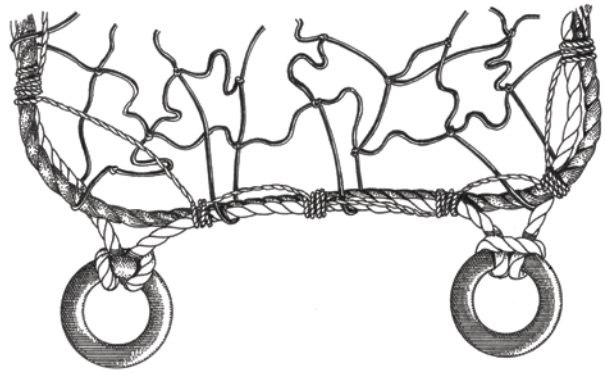


Slika 14. Rekonstrukcija upotrebe mreže za bacanje *ἀμφίβληστρον*
Figure 14. Use of cast net (*ἀμφίβληστρον*) – reconstruction
crtež / drawing by: **I. Čondić**

46 Opijan, Ἁλιευτικά, III, 80.
47 D. Romanović 2016, 41–42.

46 Oppian, Ἁλιευτικά, III, 80.
47 D. Romanović 2016, 41–42.

Prstenasti utezi (kat. br. 57–58) imaju kružni oblik, sličan prstenu, ali su mnogo deblji. Taj tip utega ima određene prednosti u odnosu na linijske jer se ne zapetljavaju u mrežu nakon što se na nju montiraju. Jednostavno se stavljaju i skidaju s dugog užeta a da se mreža ne mora rastavljati (sl. 15).



Slika 15. Rekonstrukcija armanja mreže prstenastim olovnim utezima
Figure 15. Fitting net with ring lead weights – reconstruction
crtež / drawing by: **I. Čondić**

Utezi od kamena nisu čest nalaz na našim priobalnim nalazištima. Uglavnom se radi o jednostavnom priklesanom kamenju manje veličine, s prirodnom ili naknadno izvedenom perforacijom kroz koju se mogao provući konop, a koristili su se najčešće za sidrenje mreža. Ta prirodna sirovina bila je lako dostupna i uz malu obradu mogla je vrlo dobro poslužiti kao uteg. Ovaj tip utega u antičkoj luci u Zatonu je zastupljen sa samo jednim primjerkom (kat. br. 77), potječe iz novog fundusa, a pripada sloju 6. Riječ je o plosnatom kamenom utegu nepravilnog oblika sa središnjom perforacijom (sl. 16).

IGLE ZA KRPANJE I ŠIVANJE MREŽA

Još jedan indirektan dokaz upotrebe mreža za ribolov nalazi su igala za krpanje i šivanje mreža. Tehnika izrade mreža bila je relativno jednostavna. Sve što je bilo potrebno jest komad užeta koji se postupno ispreplitao putem čvorova. Za pletenje se obično upotrebljavala posebna igla za tu namjenu, a specijalist za izradu mreža nazivao se *linoplókos* (*λινοπλόκος*). Prisutnost igala za krpanje i šivanje mreža predstavlja jasan dokaz o upotrebi ribarskih mreža, a također se prema veličini ušice mogu donijeti i određeni zaključci o veličini mreže za koju je bila namijenjena.[48] Nove tehnologije omogućuju proučavanje ostataka vla-

Ring weights (Cat. No. 57–58) are spherical. They look like rings, but are much thicker. This type of weights has certain advantage over the rolled-plate weights: it does not become entangled in the net after fixing to it. They are easy to fix and to remove from the long rope without having to unstitch the whole net (Fig. 15).

Stone weights are rarely found on Croatian coastal sites. They are mostly simple, roughly chiseled stones of a small size, with natural or drilled perforation through which a string could be threaded. They were mostly used for anchoring the fishing nets. This raw material was easily available and, after some dressing, it could be used as a weight. In the Zaton port, only one such specimen was found (Cat. No. 77). It belongs to the new holdings and was found in Layer 6. It is an asymmetrical flat stone weight perforated in the center (Fig. 16).

Slika 16. Kameni uteg za ribarsku mrežu, Arheološki muzej Zadar, inv. br. 2114H
Figure 16. Stone weight for fishing net, Archaeological Museum Zadar, Inv. No. 2114H
foto / photo by: **A. Gospić**

NEEDLES FOR PATCHING AND SEWING OF FISHING NETS

Needles for patching and sewing of fishing nets can be seen as another indirect evidence of use of the nets. The technique of net making was relatively simple. All that was needed was a length of rope that would be gradually woven by making knots. A special needle was usually used for this purpose. The net-making specialist was called *linoplókos* (*λινοπλόκος*). The presence of netting needles is clear evidence of use of fishing nets. Also, by the size of a needle's eye, we can make some conclusions about the size of the net for which it was intended.[48] New technologies can help us examine fiber remains in order to learn

48 D. Bernal *et al.* 2010, 341.

48 D. Bernal *et al.* 2010, 341.

kana kako bi se više saznalo o sirovini koja se koristila za izradu mreža u antici. Jedan takav komadić tankog konopca pronađen je na pregibu unutar ušice igle za krpanje i šivanje mreža na otoku Visu.[49] Igle za izradu i krpanje ribarskih mreža uglavnom su bile izrađene od metala, najčešće bronce. Postoji vjerojatnost da su se i te igle izrađivale od kosti, a možda i drveta, ali nisu ostale sačuvane iz već spomenutih razloga. Igle su uglavnom bile jednostavnog ravnog tijela s glavicom u obliku ušice.[50] Veća dužina igle značila je da je mogla nositi više niti, dok je zatvoreni oblik vilice omogućavao igli da prođe kroz, često mali, otvor mreže (sl. 17). U slojevima antičke luke pronađene su 3 takve igle (kat. br. 52–54) i sve tri potječu iz starog fundusa, pa za njih nažalost nemamo relevantne stratigrafske podatke.

more about the raw material used for making nets in the Antiquity. One such tiny piece of a thin string was found stuck in the eye of a netting needle on the island of Vis.[49] These needles were mostly made of metal, usually bronze. It is possible that they were also made of bone, perhaps even of wood, but such specimens have not been preserved due to the above explained reasons. The needles usually had a plain, straight stem and an eye on its end.[50] The longer the needle, the more threads it could carry. The framed fork allowed the needle to pass through an often small opening of the net (Fig. 17). Three such needles were found in the Roman port in Zaton (Cat. No. 52–54). As all of them belong to the old holdings, no relevant stratigraphic data is available.

Slika 17. Igla za krpanje i šivanje ribarskih mreža, Arheološki muzej Zadar, inv. br. 3477H
Figure 17. Needle for patching and sewing of fishing nets, Archaeological Museum Zadar, Inv. No. 3477H

foto / photo by: **A. Gospić**

Materijal od kojeg su mreže izrađivane u antici velika je nepoznanica jer je riječ o organskom materijalu koji je vrlo podložan propadanju.[51] Mreže su se, prema izvorima, izrađivale od vlakana dobivenih od različitih biljaka i kora drveta, a uglavnom su se koristila vlakna kore lipe (*Tilia*) i vrbe (*Salix*).[52] Za izradu mreža također su se često koristila vlakna lana (*Linum usitatissimum*), ali su mreže izrađene od njega imale kratak vijek trajanja (dva do tri mjeseca), i konoplja (*Cannabis*), koja je bila idealna za izradu mreža jer su njezina vlakna bila puno jača od lana.[53]

Very little is known about the material the nets in the Antiquity were made of. It was an organic material very prone to decomposition.[51] According to sources, nets were made of the fibers obtained from various plants and tree bark. The fibers of linden-tree (*Tilia*) and willow (*Salix*) bark were mostly used.[52] Flax (*Linum usitatissimum*) fibers were also frequently used, but flax nets did not last long (two to three months). The fibers of hemp (*Cannabis*), on the other hand, were ideal for net making because they were much stronger than the flax fibers.[53]

MORSKA PREHRANA

Pronađeni ribarski alat i pribor pokazuje nam kako je posada na brodovima koji su pristizali u luku dio hrane vjerojatno osiguravala i ribolovom. Stoga je dio rada posvećen obradi ostataka ribljih kostiju, školjaka i morskih puževa koji su nam vrijedan podatak o prehrani mornara i ostalih korisnika u luci.

FOOD FROM THE SEA

The fishing tools and implements found in the port indicate that the crews of the incoming ships ensured part of their food by fishing. This is why part of this paper deals with the remains of fish bones, seashells and sea snails that can tell us a lot about the diet of the sailors and other users of the port.

49 B. Čargo *et al.* 2018, 46.
50 Slični primjerci pronađeni su u Saloni, a više o njima vidi u D. Kliškić 2002, 498–503, T. IV: 3–4.
51 Najbolje sačuvani organski ostatci ribarskih mreža potekli su iz mulja jezera i laguna, jer mulj i blato štite organske tvari i nedostatak kisika sprječava njihovo raspadanje.
52 S unutrašnje strane kore vlakna su se razdvajala, koliko je bilo moguće, u fine trake koje su zatim bile opredene u jednostavno predivo. Potom bi se dva takva prediva upletala zajedno kako bi dobili dvostruko predivo koje je zapravo činilo dio strukture mreže.
53 C. Alfaro Giner 2010, 65–66.

49 B. Čargo *et al.* 2018, 46.
50 Similar specimens were found at Salona. For more on them, see D. Kliškić 2002, 498–503, pl. IV: 3–4.
51 The best preserved organic remains of fishing nets were found in the lake and lagoon ooze, because mud and ooze preserve organic matter and lack of oxygen prevents its decomposition.
52 The fibers on the inside of a bark would be separated – as much as possible – into fine ribbons and then spun into a simple yarn. Two such yarns would then be spun together in order to obtain a double yarn that formed part of the net's structure.
53 C. Alfaro Giner 2010, 65–66.

Pri arheološkim istraživanjima, kopnenim i podvodnim, sve veća pažnja pridaje se i ostatcima životinjskog podrijetla, pa je na terenu vrlo važna suradnja arheologa i zoologa. Dok je ostatke životnjskih kostiju dosta lako uočiti, ostatke ribljih kostiju, s obzirom na njihovu veličinu, dosta je teško pronaći na terenu, a još ih je teže pravilno determinirati s obzirom na brojnost vrsta.[54] Tijekom istraživanja antičke luke u Zatonu iz svih istraženih kvadranata i slojeva uzeti su uzorci koji su kasnije prosijavani kroz tri sita veličine 2,5, 1 i 0,315 mm, što je rezultiralo uspješnom analizom biljnih i životinjskih ostataka. Bilo je logično očekivati djelomičnu prisutnost morske hrane, a pronalazak ribljih kostiju, školjaka i morskih puževa u slojevima tu je pretpostavku i potvrdio.

Malakološkom analizom izvađenih uzoraka utvrđeno je da su puževi zastupljeni s 15 morskih i dvije kopnene vrste – poljski puž (*Helix cincta*) i brdski puž (*Helix secernenda*), školjke su zastupljene s 22 morske vrste, dok su glavonošci zastupljeni sa samo 1 vrstom – sipa (*Sepia officinalis*). Sve su vrste i danas prisutne u lokalnoj fauni. Najzastupljenija vrsta u uzorcima bila je kunjka (*Arca noae*). Od ostalih vrsta najčešće se nalaze ljušture kamenica (*Ostrea edulis*), dagnji (*Mytilus galloprovincialis*) i naročito bodljikavih volaka (*Bolinus brandaris*)[55] (sl. 18).[56] Većina je tih puževa i školjaka jestiva, a neke od njih su se vjerojatno koristile i kao mamac za udicu.

Slika 18. Školjke i morski puževi iz slojeva antičke luke u Zatonu
Figure 18. Seashells and sea snails from layers of Roman-period port in Zaton

foto / photo by: **D. Romanović**

54 S. Kužir *et al.* 2009, 256.
55 Bodljikavi volak (*Bolinus brandaris*) koristio se i u komercijalne svrhe jer se od njegovih žlijezda dobivala cijenjena purpurna boja za bojenje tkanina.
56 Više o provedenoj analizi i rezultatima vidi S. Gluščević *et al.* 2007, 147–161.

Since recently, remains of animal origin have attracted growing attention during archaeological excavations, both underwater and on land, making the field cooperation between archaeologists and zoologists very important. While animal bone remains are rather easy to spot, the remains of fish bones are hard to detect due to their size. It is even harder to identify the species they belong to, given the variety of species.[54] Samples were taken from all the excavated quadrants and layers and were later sifted through 2.5, 1.0 and 0.315mm sieves, enabling a successful analysis of plant and animal remains. Expecting a share of marine food among them was logical. The expectation was confirmed when fish bones, seashell and sea snails were found in the layers.

A malacological analysis of the samples established that the snails were represented by 15 marine and two land species – Roman snail *(Helix cincta)* and land snail *(Helix secernenda)*. Seashells were represented with 22 marine species and cephalopods with only one species – common cuttlefish (*Sepia officinalis*). All these species are still represented in the local fauna. The most numerous one among the samples was Noah's ark shell (*Arca noae*). Of other species, shells of oysters (*Ostrea edulis*), mussels (*Mytilus galloprovincialis*) and, particularly, spiny dye-murexes (*Bolinus brandaris*)[55] are most frequently found (Fig. 18).[56] Most of these snails and seashells are edible and some of them were probably used as hook baits.

An analysis of the preserved fish-bone remains has identified 21 vertebrae and two jaws (Fig. 19). These vertebrae mostly belong to smaller fish species; the vertebrae of bigger species are rare. The samples include two fish jaw specimens positively identified as belonging to some predator species. Based on the size (diameter) of the fish vertebrae found in the port, we can divide them into four groups: very small (< 0.5cm) – four specimens; small (0.5-1.5cm) – eight specimens; medium (1.5-2.5cm) – five specimens; and large (> 2.5cm) ones – four specimens. These fish mostly weigh from a few dozen grams (very small vertebrae) to several kilograms (large vertebrae). All of the analyzed vertebrae belong to bony fishes of unidentified species. By analyzing the bone remains, we cannot identify the species. Most of the fish that populated the waters off Zadar in Antiquity are still dominant here, although in lower numbers and of a much smaller size.[57] This means that

54 S. Kužir *et al.* 2009, 256.
55 Spiny dye-murex (*Bolinus brandaris*) was also used for commercial purposes; it was harvested because of its glands which produce once highly regarded purple textile dye.
56 For more on the analysis and its results, see S. Gluščević *et al.* 2007, 147–161.
57 A number of classical authors provide an insight into the fishes caught in the Antiquity – for example, *Naturalis Historia* (*Natural History*) by Pliny the Elder (1st century AD), *De alimentorum facultatibus* (*On the Properties of Foodstuffs*) by Galen, *Halieutica*; *Ἁλιευτικά* (*On Fishing*) by Oppian (2nd century AD), *Deipnosophistae*; *Δειπνοσοφισταί* (*Scholars at the Dinner Table*) by Athenaeus (late 2nd century) and *De Natura Animalium* (*On the Nature of Animals*) by Aelian (3rd century AD). Pliny the Elder, Oppian and Aelian are focused on fishes as marine organisms and not food; Athenaeus is more concerned with rare, tasty and expensive fishes.

Analizom sačuvanih ostataka ribljih kostiju izdvojen je 21 kralježak i dvije čeljusti (sl. 19). Većinom je riječ o kralješcima manjih riba, dok su kralješci većih riba slabije zastupljeni. U uzorcima su izdvojena i dva primjerka riblje čeljusti za koje je potvrđeno da pripadaju nekoj od predatorskih vrsta ribe. S obzirom na veličinu pronađenih uzoraka ribljih kralježaka (razmatran je njihov promjer), možemo ih podijeliti u četiri grupe: vrlo mali (< 0,5 cm) s četiri primjerka, mali (0,5 – 1,5 cm) s osam primjeraka, srednji (1,5 – 2,5 cm) s pet primjeraka i veliki (> 2,5 cm) s četiri primjerka. Uglavnom se radi o ribama od nekoliko desetaka grama (vrlo mali kralješci) do onih od nekoliko kilograma (veliki kralješci). Svi analizirani kralješci pripadaju koštunjavim ribama neodređene vrste. Naime, iz ostataka kostiju ne može se zaključiti o kojim je ribljim vrstama riječ. Riblje vrste u ihtiofauni šireg zadarskog područja koje su u Jadranu živjele u vrijeme antike uglavnom prevladavaju i danas, ali u manjem broju i veličinom su dosta manje.[57] To znači da su sve vrste koje suvremeni ribar može uloviti vjerojatno bile dostupne i antičkom ribaru.[58]

U vrijeme antike riba se konzumirala konzervirana i svježa. Temeljna razlika između konzumiranja konzervirane i svježe ribe u rimskom svijetu je ta što je prva bila dio prehrane velikog dijela populacije, a druga je uglavnom bila rezervirana za bogatije slojeva društva.[59] Neke su vrste riba bile skupe i tražio ih je bogati sloj društva, a druge su bile smatrane namirnicama za obične ljude. Iako je na tržištu bilo dosta varijacija u kvaliteti i cijeni konzervirane ribe, proizvodi od usoljene ribe uglavnom su bili nadohvat običnih ljudi. Svježa riba, naročito rijetki primjerci, bila je vrlo skupa. Tako Juvenal[60] u svom djelu *Satire* spominje crvenog cipla od 2 kg koji je prodan u Rimu za 6000 sestercija.[61] S druge strane, neki kvalitetni proizvodi od usoljene ribe postizali su visoku cijenu, kao npr. vrlo cijenjeni garum.[62] Budući da je riba bila konzervirana, njome se trgovalo u regijama koje nisu bile u neposrednoj blizini mora ili rijeka i jezera, pa je na taj način riba mogla biti dio prehrane velikog dijela populacije.

Slika 19. Ostatci ribljih kostiju iz slojeva antičke luke u Zatonu
Figure 19. Fish bone remains from layers of Roman-period port in Zaton

foto / photo by: **D. Romanović**

all the species available to present-day fishermen were probably also available to ancient fishermen.[58]

In the Antiquity, fish was consumed both conserved and fresh. The basic difference was that the former was consumed by most of the population in the Roman world and the latter was mostly reserved for wealthier classes.[59] Some fish species were expensive and were in demand among wealthy Romans, while others were considered food for common people. Although the conserved fish in the market varied in quality and price, salted fish products were usually available to common people. Fresh fish, especially some rare species, was very expensive. In his work *Satires*, Juvenal[60] mentions a 2kg red mullet sold in Rome for 6,000 sestertii.[61] On the other hand, some quality salt fish products fetched high prices, like the highly-regarded garum.[62] Conserved fish was sold in the regions relatively far from the sea, rivers or lakes and was thus part of the diet of large part of the population.

57 Opći pregled vrsta riba koje su se lovile u vrijeme antike pružaju nam djela brojnih antičkih pisaca, npr. *Naturalis Historia* (*Povijest prirode*) Plinija Starijeg iz 1. st., Galenova *De alimentorum facultatibus* (*O svojstvima hrane*) i Opijanova *Halieutica*; *Ἁλιευτικά* (*O ribolovu*) iz 2. st., zatim Atenejeva *Deipnosophistae*; *Δειπνοσοφισταί* (*Filozofi na večeri*) s kraja 2. st., i Elijanova *De Natura Animalium* (*O prirodi životinja*) iz 3. st. Plinije Stariji, Opijan i Elijan više se fokusiraju na ribu kao oblik morskog života, a ne hranu, dok Atenej više govori o rijetkim, ukusnim i skupim ribama.

58 D. Romanović 2016, 66–68.

59 A. Marzano 2018, 438.

60 Decim Junije Juvenal (lat. *Decimus Iunius Iuvenalis*) bio je rimski satiričar iz sredine 1. – početka 2. st. Sačuvano je 16 njegovih satira skupljenih u 5 knjiga pod nazivom *Satire* (lat. *Satires*) u kojima je duhovito, s mnogo humora i ironije, opisao naličje propadajućeg Rima. Njegovim satirama pripisuju se krilatice *panem et circenses* („kruha i igara“) te *mens sana in corpore sano* („zdrav duh u zdravu tijelu“) i dr.

61 Juvenal, *Satires*, knjiga 1.4.

62 U tijesnoj vezi s ribarstvom proizvodnja je vrlo cijenjenog ribljeg umaka, u antici poznatog pod nazivom garum. Garum je bio vrlo specifičan intenzivan začin koji se radio od ikre većih riba i malih neočišćenih riba, uglavnom srdela, koje bi se posložile u velike posude, posolile i ostavile da fermentiraju na suncu. Kasnije bi se preostali sok cijedio kroz gusto pletenu košaru i spremao u amforu. Garum je bio jedan od osnovnih sastojaka u antičkoj kuhinji.

58 D. Romanović 2016, 66–68.

59 A. Marzano 2018, 438.

60 Juvenal (Lat. *Decimus Iunius Iuvenalis*) was a Roman satirist who lived from mid-1st century AD to early 2nd century. Sixteen of his satires collected in five books entitled *Satires* have been preserved. With plenty of humor and irony, he depicted in them the dark side of the declining Roman Empire. Some of the well-known catchphrases like *panem et circenses* ("Bread and circuses") and *mens sana in corpore sano* ("A healthy mind in a healthy body") etc. are attributed to his satires.

61 Juvenal, *Satires*, Book 1.4.

62 Closely associated with fishing was the production of the highly-regarded fish sauce known in Antiquity as garum. Garum was a very specific, intensive spice made of fish-roe of larger fish and of smaller fish, mostly sardines, that would be placed in large dishes, cured in salt and left to ferment in the sun. The remaining sauce would then be drained through a wicker basket and stored in an amphora. Garum was one of the basic ingredients of the Roman cuisine.

Još jedan nalaz iz antičke luke u Zatonu koji bismo indirektno mogli povezati s ribolovom, jer se najčešće i koristio za pripremu ribe, jesu gradele (kat. br. 78) (sl. 20). Gradele potječu iz starog fundusa i za njih nemamo relevantne stratigrafske podatke. Oblik gradela tijekom povijesti nije bio podložan čestom mijenjaju. Keramičke gradele bile su jeftinije, pa samim time i dostupnije većem broju ljudi, ali su se u vrijeme antike koristile i željezne gradele.[63] Riječ je o keramičkim gradelama s pet krakova i polukružnom omčom, koje su dijelom rekonstruirane. Stoje na četiri nožice i bile su lako prenosive, a na jednom su kraju imale omču za ovjes nakon upotrebe.

There is one more find the Roman-period port in Zaton that could indirectly be associated with fishing because it was often used for grilling fish. It is grill (Cat. No. 78) (Fig. 20). This grill belongs to the old holdings, so it lacks relevant stratigraphic data. Grill has not changed very often throughout history. Ceramic grills were cheaper and thus available to more people, but iron grills were also in use in Antiquity.[63] The ceramic grill from the Museum's holdings has five bars and a semicircular noose. It is partly reconstructed. It stood on four feet and was easily portable. On one end, it had a noose for hanging after use.

Slika 20. Keramičke gradele
Figure 20. Ceramic grill
crtež / drawing by: **I. Čondić**

DATIRANJE RIBARSKOG ALATA I PRIBORA

Relevantni stratigrafski podatci (kvadrant i sloj) zabilježeni su samo za ribarski alat i pribor iz novog fundusa. Od 78 obrađenih predmeta samo njih 12 (15 %) potječe iz novog fundusa, i to dva predmeta pripadaju sloju 3, pet predmeta sloju 6, dva predmeta sloju 7, dva predmeta sloju 8 i jedan predmet sloju 9 (graf. 2). Uglavnom je riječ je o udicama i utezima.

Ribarski alat i pribor vrlo je problematično datirati i staviti u neki vremenski okvir. Naime, većina spada u predmete koji su u svim razdobljima zadržali isti oblik i koji su se koristili istodobno tijekom dugog razdoblja. Spor tipološki razvoj ribarskog alata i pribora, uglavnom udica, utega i igala za krpanje i šivanje mreža, za vrijeme antike i preporučuje da se vremenski okvir njihove upotrebe postavi na široko razdoblje.[64] Za njihovo datiranje najbitniji je siguran arheološki kontekst. Udice su najbolji primjer takvog ribarskog alata koji je uvijek bio dizajniran isključivo za ribolov

DATING OF THE FISHING TOOLS AND IMPLEMENTS

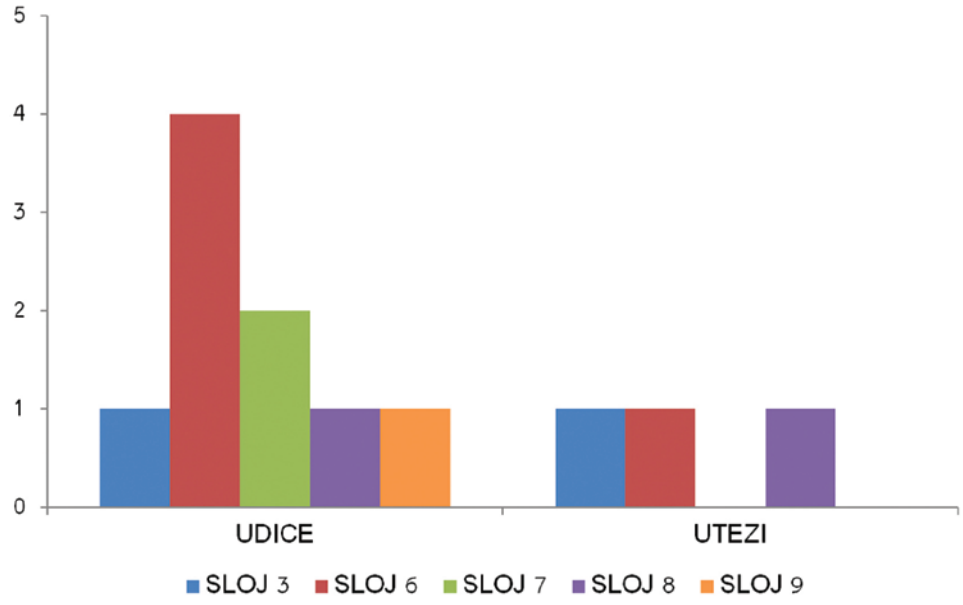
Relevant stratigraphic data (quadrant and layer) are available only for the fishing tools and implements belonging to the Museum's new holdings. Of 78 objects analyzed, only 12 (15%) belong to the new holdings: two objects were found in Layer 3, five were found in Layer 6, two in Layer 7, two in Layer 8 and one in Layer 9 (Chart 2). These are mostly hooks and weights.

Dating fishing tools and implements closely is very difficult. Most of these objects had maintained their shape throughout all periods of time and were used simultaneously over a long period. As the typological development of fishing tools and implements (mostly hooks, weights and netting needles) in the Antiquity was rather slow, it is recommended that they be dated only roughly.[64] A positively identified archaeological context is the most important for their dating. Hooks are the best example of a tool always designed for fishing only; their shape has remained

63 A. Kunac 2009, 252.
64 D. Bernal *et al.* 2010, 337.

63 A. Kunac 2009, 252.
64 D. Bernal *et al.* 2010, 337.

Grafikon 2. Broj ribarskog alata i pribora po slojevima
Chart 2. Ffishing tools and implements by layers
priredila / prepared by: **D. Romanović**



i njihov oblik ostao je isti sve do danas, što vrlo dobro vidimo na modernim primjercima. Isto možemo reći i za osti. Utezi također spadaju u predmete koji svoj oblik nisu pretjerano mijenjali tijekom vremena. Igle za krpanje i šivanje mreža isti oblik zadržavaju od prapovijesti pa se preciznije mogu datirati samo na osnovi arheološkog konteksta nalaza. Ono što se najviše promijenilo u odnosu na današnje primjerke jest materijal od kojeg su ti predmeti bili izrađeni, odnosno danas se izrađuju od kvalitetnijih materijala koji odolijevaju morskoj soli.

U većini slojeva luke, pa tako i u slojevima 3, 6 i 7, pronađen je kronološki dobro datiran materijal. U sloju 3 nalazimo zdjelu sjevernoafričke proizvodnje tipa Hayes 23B[65] koja se datira u vrijeme od sredine 2. do početka 3. stoljeća.[66] U sloju 6 nalazimo zdjelicu sjevernoitalske proizvodnje[67] koja se datira u vrijeme od početka 2. do sredine 2. stoljeća.[68] U sloju 7 nalazimo zdjelicu sjevernoafričke proizvodnje tipa Hayes 19[69] koja se datira u vrijeme od kraja 1. do početka 2. stoljeća.[70] U istom sloju nalazimo i zdjelicu sjevernoitalske proizvodnje[71] koja se datira u sredinu 1. stoljeća.[72] Nažalost, za vrlo mali broj ribarkog alata i pribora imamo relevantne stratigrafske podatke, ali nećemo pogriješiti ako većinu nalaza ribarskog alata i pribora iz slojeva antičke luke u Zatonu široko datiramo od 1. do 3. st. poslije Krista, u vrijeme kada je luka i egzistirala.

the same to the present-day. The same can be said for fish spears. Weights have also not changed significantly over time. Needles for patching and sewing have also stayed the same since prehistory and only a positively identified archaeological context can help us date them closely. The only thing that has really changed over time are the materials these objects are made of. Today, they are made of much better materials, more resistant to salt water.

In most of the layers in the port, including the Layers 3, 6 and 7, rather closely dated objects were found. Layer 3 yielded a North African bowl of Hayes 23B type,[65] dated to the period from the mid-2nd century AD to early 3rd century.[66] In Layer 6, a small Italic bowl was found.[67] It was dated to the period from the early 2nd century AD to mid-2nd century.[68] A small North African bowl of Hayes 19 type[69] was found in Layer 7. It was dated to the period from the late 1st century AD and early 2nd century.[70] The same layer also yielded a small North Italic bowl[71] dated to the mid-1st century AD.[72] Unfortunately, relevant stratigraphic data are available only for a very small number of fishing tools and implements. However, most of the fishing tools and implements found in the layers of the Roman port in Zaton can safely be dated to the lengthy period of time spanning the 1st and the 3rd centuries AD, when the port flourished.

65 Inv. br. 530H.
66 J. W. Hayes 1972, 45–48.
67 Inv. br. 2256H.
68 Lj. Plesničar-Gec 1977, T. 1: 74.
69 Inv. br. 2176H.
70 J. W. Hayes 1972, 35–37.
71 Inv. br. 1812H.
72 Lj. Plesničar-Gec 1977, T. 1: 19.

65 Inv. no. 530H.
66 J. W. Hayes 1972, 45–48.
67 Inv. no. 2256H.
68 Lj. Plesničar-Gec 1977, pl. 1: 74.
69 Inv. no. 2176H.
70 J. W. Hayes 1972, 35–37.
71 Inv. no. 1812H.
72 Lj. Plesničar-Gec 1977, pl. 1: 19.

KATALOG

1. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,3 cm / širina luka: 1,1 cm; inv. br. 3309H.
Literatura: Z. Brusić 2006, T. II: 1, 39; D. Romanović 2016, 83.

2. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 1,2 cm; inv. br. 3311H.
Literatura: D. Romanović 2016, 83.

3. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 1,2 cm; inv. br. 3315H.
Literatura: Neobjavljeno.

4. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,6 cm / širina luka: 0,8 cm; inv. br. 3317H.
Literatura: Z. Brusić 2006, T. II: 1, 39; D. Romanović 2016, 83.

5. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 1,2 cm; inv. br. 3318H.
Literatura: Neobjavljeno.

6. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,6 cm / širina luka: 1,0 cm; inv. br. 3319H.
Literatura: D. Romanović 2016, 83.

7. Udica
Vrlo mala udica s oštećenom bodljom i oštećenom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,9 cm / širina luka: 1,1 cm; inv. br. 3324H.
Literatura: Neobjavljeno.

8. Udica
Vrlo mala udica s bodljom kojoj nedostaje dio drške i glava.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,4 cm / širina luka: 1,0 cm; inv. br. 3326H.
Literatura: Neobjavljeno.

9. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 1,2 cm; inv. br. 3455H.
Literatura: D. Romanović 2016, 84.

10. Udica
Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2011. (kv. B1/3 sl. 8); 1. – 3. st.
Bronca; visina: 2,5 cm / širina luka: 1,2 cm; inv. br. 6452H.
Literatura: Neobjavljeno.

CATALOGUE

1. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.3cm / gap: 1.1cm; Inv. No. 3309H.
Literature: Z. Brusić 2006, Pl. II: 1, 39; D. Romanović 2016, 83.

2. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 1.2cm; Inv. No. 3311H.
Literature: D. Romanović 2016, 83.

3. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 1.2cm; Inv. No. 3315H.
Literature: Unpublished.

4. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.6cm / gap: 0.8cm; Inv. No. 3317H.
Literature: Z. Brusić 2006, Pl. II: 1, 39; D. Romanović 2016, 83.

5. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 1.2cm; Inv. No. 3318H.
Literature: Unpublished.

6. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.6cm / gap: 1.0cm; Inv. No. 3319H.
Literature: D. Romanović 2016, 83.

7. Hook
Very small hook with damaged barb and damaged eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.9cm / gap: 1.1cm; Inv. No. 3324H.
Literature: Unpublished.

8. Hook
Very small hook with barb, part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.4cm / gap: 1.0cm; Inv. No. 3326H.
Literature: Unpublished.

9. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 1.2cm; Inv. No. 3455H.
Literature: D. Romanović 2016, 84.

10. Hook
Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2011 (Quadrant B1/3 Layer 8); 1st-3rd centuries AD
Bronze; height: 2.5cm / gap: 1.2cm; Inv. No. 6452H.
Literature: Unpublished.

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11. Udica

Vrlo mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2011. (kv. B1/1 sl. 6); 1. – 3. st.
Bronca; visina: 2,6 cm / širina luka: 1,2 cm; inv. br. 6456H.
Literatura: Neobjavljeno.

12. Udica

Mala udica s bodljom kojoj nedostaje dio drške s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,6 cm / širina luka: 1,3 cm; inv. br. 280H.
Literatura: Neobjavljeno.

13. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,7 cm / širina luka: 1,8 cm; inv. br. 3306H.
Literatura: Neobjavljeno.

14. Udica

Mala udica s bodljom i oštećenom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,7 cm / širina luka: 1,7 cm; inv. br. 3310H.
Literatura: Z. Brusić 2006, T. II: 1, 39.

15. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,7 cm / širina luka: 1,7 cm; inv. br. 3312H.
Literatura: D. Romanović 2016, 85.

16. Udica

Mala udica s oštećenom bodljom i oštećenom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,8 cm / širina luka: 1,7 cm; inv. br. 3316H.
Literatura: Neobjavljeno.

17. Udica

Mala udica s oštećenom bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,3 cm / širina luka: 1,5 cm; inv. br. 3320H.
Literatura: Neobjavljeno.

18. Udica

Mala udica s čekićanom glavom kojoj nedostaje bodlja.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: -; inv. br. 3321H.
Literatura: Neobjavljeno.

19. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,8 cm / širina luka: 1,7 cm; inv. br. 3372H.
Literatura: Z. Brusić 2006, T. II: 1, 39; D. Romanović 2016, 85.

20. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,3 cm / širina luka: 1,4 cm; inv. br. 3314H.
Literatura: Neobjavljeno.

11. Hook

Very small hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2011 (Quadrant B1/1 Layer 6); 1st-3rd centuries AD
Bronze; height: 2.6cm / gap: 1.2cm; Inv. No. 6456H.
Literature: Unpublished.

12. Hook

Small hook with barb, part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.6cm / gap: 1.3cm; Inv. No. 280H.
Literature: Unpublished.

13. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.7cm / gap: 1.8cm; Inv. No. 3306H.
Literature: Unpublished.

14. Hook

Small hook with barb and damaged eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.7cm / gap: 1.7cm; Inv. No. 3310H.
Literature: Z. Brusić 2006, Pl. II: 1, 39.

15. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.7cm / gap: 1.7cm; Inv. No. 3312H.
Literature: D. Romanović 2016, 85.

16. Hook

Small hook with damaged barb and damaged eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.8cm / gap: 1.7cm; Inv. No. 3316H.
Literature: Unpublished.

17. Hook

Small hook with damaged barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.3cm / gap: 1.5cm; Inv. No. 3320H.
Literature: Unpublished.

18. Hook

Small hook with flattened eye, barb missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: -; Inv. No. 3321H.
Literature: Unpublished.

19. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.8cm / gap: 1.7cm; Inv. No. 3372H.
Literature: Z. Brusić 2006, Pl. II: 1, 39; D. Romanović 2016, 85.

20. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.3cm / gap: 1.4cm; Inv. No. 3314H.
Literature: Unpublished.

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21. Udica

Mala oštećena udica kojoj nedostaje bodlja i drška s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,4 cm / širina luka: -; inv. br. 3450H.
Literatura: Neobjavljeno.

22. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,3 cm / širina luka: 1,7 cm; inv. br. 3454H.
Literatura: Z. Brusić 2006, T. II: 1, 39; D. Romanović 2016, 85.

23. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,6 cm / širina luka: 1,7 cm; inv. br. 3458H.
Literatura: Neobjavljeno.

24. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,5 cm / širina luka: 1,3 cm; inv. br. 4030H.
Literatura: Neobjavljeno.

25. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,6 cm / širina luka: 1,3 cm; inv. br. 5368H.
Literatura: D. Romanović 2016, 84.

26. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2011. (kv. B1/4 sl. 6); 1. – 3. st.
Bronca; visina: 2,3 cm / širina luka: 1,3 cm; inv. br. 6467H.
Literatura: Neobjavljeno.

27. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,4 cm / širina luka: 1,3 cm; inv. br. 6468H.
Literatura: D. Romanović 2016, 84.

28. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2011. (kv. B1/1 sl. 7); 1. – 3. st.
Bronca; visina: 2,5 cm / širina luka: 1,4 cm; inv. br. 6480H.
Literatura: Neobjavljeno.

29. Udica

Mala udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2012. (kv. C1/2 sl. 13); 1. – 3. st.
Bronca; visina: 2,6 cm / širina luka: 1,3 cm; inv. br. 6596H.
Literatura: Neobjavljeno.

30. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 4,2 cm / širina luka: 2,2 cm; inv. br. 282H.
Literatura: Z. Brusić 2006, T. II: 1, 39; D. Romanović 2016, 86.

21. Hook

Small damaged hook; barb, shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.4cm / gap: -; Inv. No. 3450H.
Literature: Unpublished.

22. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.3cm / gap: 1.7cm; Inv. No. 3454H.
Literature: Z. Brusić 2006, Pl. II: 1, 39; D. Romanović 2016, 85.

23. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.6cm / gap: 1.7cm; Inv. No. 3458H.
Literature: Unpublished.

24. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.5cm / gap: 1.3cm; Inv. No. 4030H.
Literature: Unpublished.

25. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.6cm / gap: 1.3cm; Inv. No. 5368H.
Literature: D. Romanović 2016, 84.

26. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2011 (Quadrant B1/4 Layer 6); 1st-3rd centuries AD
Bronze; height: 2.3cm / gap: 1.3cm; Inv. No. 6467H.
Literature: Unpublished.

27. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.4cm / gap: 1.3cm; Inv. No. 6468H.
Literature: D. Romanović 2016, 84.

28. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2011 (Quadrant B1/1 Layer 7); 1st-3rd centuries AD
Bronze; height: 2.5cm / gap: 1.4cm; Inv. No. 6480H.
Literature: Unpublished.

29. Hook

Small hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2012 (Quadrant C1/2 Layer 13); 1st-3rd centuries AD
Bronze; height: 2.6cm / gap: 1.3cm; Inv. No. 6596H.
Literature: Unpublished.

30. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 4.2cm / gap: 2.2cm; Inv. No. 282H.
Literature: Z. Brusić 2006, Pl. II: 1, 39; D. Romanović 2016, 86.

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31. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 4,2 cm / širina luka: 2,0 cm; inv. br. 3303H.
Literatura: D. Romanović 2016, 86.

32. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,8 cm / širina luka: 2,1 cm; inv. br. 3304H.
Literatura: Neobjavljeno.

33. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,5 cm / širina luka: 2,1 cm; inv. br. 3307H.
Literatura: Neobjavljeno.

34. Udica

Srednja udica s oštećenom bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,8 cm / širina luka: 2,6 cm; inv. br. 3308H.
Literatura: Neobjavljeno.

35. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 4,5 cm / širina luka: 2,1 cm; inv. br. 3313H.
Literatura: D. Romanović 2016, 86.

36. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 5,5 cm / širina luka: 2,4 cm; inv. br. 3448H.
Literatura: Z. Brusić 2006, T. II: 1, 39.

37. Udica

Srednja udica s bodljom kojoj nedostaje dio drške s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,2 cm / širina luka: 2,0 cm; inv. br. 4031H.
Literatura: Neobjavljeno.

38. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,8 cm / širina luka: 2,1 cm; inv. br. 4032H.
Literatura: D. Romanović 2016, 86.

39. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2011. (kv. A1/1 sl. 6); 1. – 3. st.
Bronca; visina: 4,5 cm / širina luka: 2,2 cm; inv. br. 6464H.
Literatura: Neobjavljeno.

40. Udica

Srednja udica s bodljom i čekićanom glavom.
Zaton, rt Kremenjača, 2007. (kv. C1/4 sl. 7); 1. – 3. st.
Bronca; visina: 3,8 cm / širina luka: 2,0 cm; inv. br. 6478H.
Literatura: D. Romanović 2016, 85.

31. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 4.2cm / gap: 2.0cm; Inv. No. 3303H.
Literature: D. Romanović 2016, 86.

32. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.8cm / gap: 2.1cm; Inv. No. 3304H.
Literature: Unpublished.

33. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.5cm / gap: 2.1cm; Inv. No. 3307H.
Literature: Unpublished.

34. Hook

Medium hook with damaged barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.8cm / gap: 2.6cm; Inv. No. 3308H.
Literature: Unpublished.

35. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 4.5cm / gap: 2.1cm; Inv. No. 3313H.
Literature: D. Romanović 2016, 86.

36. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 5.5cm / gap: 2.4cm; Inv. No. 3448H.
Literature: Z. Brusić 2006, Pl. II: 1, 39.

37. Hook

Medium hook with barb; part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.2cm / gap: 2.0cm; Inv. No. 4031H.
Literature: Unpublished.

38. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.8cm / gap: 2.1cm; Inv. No. 4032H.
Literature: D. Romanović 2016, 86.

39. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2011 (Quadrant A1/1 Layer 6); 1st-3rd centuries AD
Bronze; height: 4.5cm / gap: 2.2cm; Inv. No. 6464H.
Literature: Unpublished.

40. Hook

Medium hook with barb and flattened eye.
Zaton, Cape Kremenjača, 2007 (Quadrant C1/4 Layer 7); 1st-3rd centuries AD
Bronze; height: 3.8cm / gap: 2.0cm; Inv. No. 6478H.
Literature: D. Romanović 2016, 85.

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41. Udica

Srednja udica s bodljom kojoj nedostaje dio drške s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 3,9 cm / širina luka: 2,7 cm; inv. br. 6514H.
Literatura: Neobjavljeno.

42. Udica

Srednja udica s bodljom kojoj nedostaje dio drške s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,6 cm / širina luka: 2,0 cm; inv. br. 6522H.
Literatura: Neobjavljeno.

43. Udica

Velika udica s bodljom kojoj nedostaje dio drške s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 4,0 cm / širina luka: 2,8 cm; inv. br. 3305H.
Literatura: Neobjavljeno.

44. Udica

Velika udica s bodljom kojoj nedostaje drška s glavom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; duž: 3,5 cm / širina luka: -; inv. br. 3325H.
Literatura: Neobjavljeno.

45. Udica

Velika udica s oštećenom bodljom i oštećenom glavom.
Zaton, rt Kremenjača, 2011. (kv. A1/3 sl. 7); 1. – 3. st.
Bronca; visina: 4,6 cm / širina luka: 2,7 cm; inv. br. 6454H.
Literatura: Neobjavljeno.

46. Udica

Udica s oštećenom bodljom i izrazito dugom drškom kojoj nedostaje glava.
Zaton, rt Kremenjača, 2011. (kv. B1/4 sl. 6); 1. – 3. st.
Bronca; visina: 3,5 cm / širina luka: 1,0 cm; inv. br. 6469H.
Literatura: Neobjavljeno.

47. Udica

Udica sa zašiljenim vrhom i oštećenom drškom kojoj nedostaje glava.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 1,8 cm; inv. br. 3302H.
Literatura: Neobjavljeno.

48. Udica

Udica sa zašiljenim vrhom i oštećenom drškom kojoj nedostaje glava, možda dio skosavice.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,1 cm / širina luka: 2,2 cm; inv. br. 3322H.
Literatura: Neobjavljeno.

49. Udica

Udica sa zašiljenim vrhom i oštećenom drškom kojoj nedostaje glava, možda dio skosavice.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,2 cm / širina luka: 2,1 cm; inv. br. 3323H.
Literatura: Neobjavljeno.

41. Hook

Medium hook with barb; part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 3.9cm / gap: 2.7cm; Inv. No. 6514H.
Literature: Unpublished.

42. Hook

Medium hook with barb; part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.6cm / gap: 2.0cm; Inv. No. 6522H.
Literature: Unpublished.

43. Hook

Large hook with barb; part of shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 4.0cm / gap: 2.8cm; Inv. No. 3305H.
Literature: Unpublished.

44. Hook

Large hook with barb; shank and eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; duž: 3.5cm / gap: -; Inv. No. 3325H.
Literature: Unpublished.

45. Hook

Large hook with damaged barb and damaged eye.
Zaton, Cape Kremenjača, 2011 (Quadrant A1/3 Layer 7); 1st-3rd centuries AD
Bronze; height: 4.6cm / gap: 2.7cm; Inv. No. 6454H.
Literature: Unpublished.

46. Hook

Hook with damaged barb and very long shank, eye missing.
Zaton, Cape Kremenjača, 2011 (Quadrant B1/4 Layer 6); 1st-3rd centuries AD
Bronze; height: 3.5cm / gap: 1.0cm; Inv. No. 6469H.
Literature: Unpublished.

47. Hook

Hook with sharpened point and damaged shank, eye missing.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 1.8cm; Inv. No. 3302H.
Literature: Unpublished.

48. Hook

Hook with sharpened point and damaged shank, eye missing; perhaps part of multi-hook.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.1cm / gap: 2.2cm; Inv. No. 3322H.
Literature: Unpublished.

49. Hook

Hook with sharpened point and damaged shank, eye missing; perhaps part of multi-hook.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.2cm / gap: 2.1cm; Inv. No. 3323H.
Literature: Unpublished.

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50. Skosavica

Ulomak višestruke udice „skosavice" sa sedam vrhova.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 1,5 cm / širina: 1,4 cm; inv. br. 283H.
Literatura: Z. Brusić 2006, T. II: 2, 39; D. Romanović 2016, 87.

51. Skosavica

Višestruka udica „skosavica" sa šest-sedam vrhova.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; visina: 2,5 cm / širina: 2,4 cm; inv. br. 6523H.
Literatura: D. Romanović 2016, 87.

52. Igla za mreže

Igla za krpanje i šivanje mreža čija oba kraja završavaju u obliku kraćih raršlji.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; dužina: 13,8 cm; inv. br. 3477H.
Literatura: Z. Brusić 2006, T. II: 3, 39; D. Romanović 2016, 90.

53. Igla za mreže

Igla za krpanje i šivanje mreža čija oba kraja završavaju u obliku kraćih raršlji.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; dužina: 10,8 cm; inv. br. 4141H.
Literatura: D. Romanović 2016, 89.

54. Igla za mreže

Igla za krpanje i šivanje mreža čija oba kraja završavaju u obliku kraćih raršlji, u dva dijela.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Bronca; dužina: 17,0 cm; inv. br. 6521H.
Literatura: Neobjavljeno.

55. Olovni uteg

Linijski uteg za ribarsku mrežu izrađen presavijanjem tanke olovne ploče pravokutnog oblika.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Olovo; dužina: 6,9 cm; inv. br. 3436H.
Literatura: D. Romanović 2016, 90.

56. Olovni uteg

Linijski uteg za ribarsku mrežu izrađen presavijanjem tanke olovne ploče pravokutnog oblika.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Olovo; dužina: 7,2 cm; inv. br. 3437H.
Literatura: D. Romanović 2016, 90.

57. Olovni uteg

Prstenasti uteg za ribarsku mrežu.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Olovo; promjer: 2,8 cm; inv. br. 4132H.
Literatura: D. Romanović 2016, 91.

58. Olovni uteg

Presavijeni uteg za ribarsku mrežu.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Olovo; dužina: 2,5 cm / širina: 1,0 cm; inv. br. 6581H.
Literatura: D. Romanović 2016, 91.

50. Multi-hook

Fragment of multi-hook (with seven points).
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 1.5cm / width: 1.4cm; Inv. No. 283H.
Literature: Z. Brusić 2006, Pl. II: 2, 39; D. Romanović 2016, 87.

51. Multi-hook

Multi-hook (with six or seven points).
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; height: 2.5cm / width: 2.4cm; Inv. No. 6523H.
Literature: D. Romanović 2016, 87.

52. Netting needle

Needle for patching and sewing of fishing nets; both ends forked.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; length: 13.8cm; Inv. No. 3477H.
Literature: Z. Brusić 2006, Pl. II: 3, 39; D. Romanović 2016, 90.

53. Netting needle

Needle for patching and sewing of fishing nets; both ends forked.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; length: 10.8cm; Inv. No. 4141H.
Literature: D. Romanović 2016, 89.

54. Netting needle

Needle for patching and sewing of fishing nets; both ends forked; in two parts.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Bronze; length: 17.0cm; Inv. No. 6521H.
Literature: Unpublished.

55. Lead weight

Rolled plate weight for fishing net made by bending thin rectangular lead plate.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Lead; length: 6.9cm; Inv. No. 3436H.
Literature: D. Romanović 2016, 90.

56. Lead weight

Rolled plate weight for fishing net made by bending thin rectangular lead plate.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Lead; length: 7.2cm; Inv. No. 3437H.
Literature: D. Romanović 2016, 90.

57. Lead weight

Ring weight for fishing net.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Lead; diameter: 2.8cm; Inv. No. 4132H.
Literature: D. Romanović 2016, 91.

58. Lead weight

Bent weight for fishing net.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Lead; length: 2.5cm / width: 1.0cm; Inv. No. 6581H.
Literature: D. Romanović 2016, 91.

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59. Osti

Osti s nasadnom drškom i četiri zupca, u vrlo lošem stanju.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Željezo; dužina: 21,6 cm / širina: 9,7 cm / debljina drške: 4,7 cm; inv. br. 6595H.
Literatura: Neobjavljeno.

60. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 3,8 cm / visina: 2,5 cm / promjer rupice: 1,2 cm; inv. br. 3471H.
Literatura: D. Romanović 2016, 91.

61. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 3,8 cm / visina: 2,6 cm / promjer rupice: 1,2 cm; inv. br. 3468H.
Literatura: D. Romanović 2016, 91.

62. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 3,9 cm / visina: 2,6 cm / promjer rupice: 1,1 cm; inv. br. 2712H.
Literatura: D. Romanović 2016, 91.

63. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 3,9 cm / visina: 2,9 cm / promjer rupice: 1,1 cm; inv. br. 2710H.
Literatura: D. Romanović 2016, 91.

64. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača, 1983.; 1. – 3. st.
Keramika; promjer: 3,9 cm / visina: 3,0 cm / promjer rupice: 1,1 cm; inv. br. 3265H.
Literatura: D. Romanović 2016, 92.

65. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,0 cm / visina: 2,9 cm / promjer rupice: 1,0 cm; inv. br. 2709H.
Literatura: D. Romanović 2016, 92.

59. Fish spear

Four-pronged fish spear with extension for fitting on shaft, in very poor condition.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Iron; length: 21.6cm / width: 9.7cm / handle thickness: 4.7cm; Inv. No. 6595H.
Literature: Unpublished.

60. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 3.8cm / height: 2.5cm / perforation diameter: 1.2cm; Inv. No. 3471H.
Literature: D. Romanović 2016, 91.

61. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 3.8cm / height: 2.6cm / perforation diameter: 1.2cm; Inv. No. 3468H.
Literature: D. Romanović 2016, 91.

62. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 3.9cm / height: 2.6cm / perforation diameter: 1.1cm; Inv. No. 2712H.
Literature: D. Romanović 2016, 91.

63. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 3.9cm / height: 2.9cm / perforation diameter: 1.1cm; Inv. No. 2710H.
Literature: D. Romanović 2016, 91.

64. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača, 1983; 1st-3rd centuries AD
Ceramics; diameter: 3.9cm / height: 3.0cm / perforation diameter: 1.1cm; Inv. No. 3265H.
Literature: D. Romanović 2016, 92.

65. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.0cm / height: 2.9cm / perforation diameter: 1.0cm; Inv. No. 2709H.
Literature: D. Romanović 2016, 92.

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66. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,0 cm / visina: 2,9 cm / promjer rupice: 1,1 cm; inv. br. 6624H.
Literatura: D. Romanović 2016, 92.

67. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,1 cm / visina: 3,4 cm / promjer rupice: 1,0 cm; inv. br. 3470H.
Literatura: D. Romanović 2016, 92.

68. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,2 cm / visina: 2,6 cm / promjer rupice: 1,2 cm; inv. br. 2711H.
Literatura: D. Romanović 2016, 92.

69. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,2 cm / visina: 3,1 cm / promjer rupice: 1,0 cm; inv. br. 2708H.
Literatura: D. Romanović 2016, 92.

70. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača, 2007. (A 1/4 sl. 8); 1. – 3. st.
Keramika; promjer: 4,3 cm / visina: 3,3 cm / promjer rupice: 1,3 cm; inv. br. 5465H.
Literatura: D. Romanović 2016, 93.

71. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,5 cm / visina: 3,5 cm / promjer rupice: 1,5 cm; inv. br. 3469H.
Literatura: D. Romanović 2016, 93.

72. Keramički uteg

Kuglasti uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača, 1983.; 1. – 3. st.
Keramika; promjer: 4,6 cm / visina: 3,6 cm / promjer rupice: 1,3 cm; inv. br. 3264H.
Literatura: D. Romanović 2016, 93.

66. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.0cm / height: 2.9cm / perforation diameter: 1.1cm; Inv. No. 6624H.
Literature: D. Romanović 2016, 92.

67. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.1cm / height: 3.4cm / perforation diameter: 1.0cm; Inv. No. 3470H.
Literature: D. Romanović 2016, 92.

68. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.2cm / height: 2.6cm / perforation diameter: 1.2cm; Inv. No. 2711H.
Literature: D. Romanović 2016, 92.

69. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.2cm / height: 3.1cm / perforation diameter: 1.0cm; Inv. No. 2708H.
Literature: D. Romanović 2016, 92.

70. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača, 2007 (A 1/4 Layer 8); 1st-3rd centuries AD
Ceramics; diameter: 4.3cm / height: 3.3cm / perforation diameter: 1.3cm; Inv. No. 5465H.
Literature: D. Romanović 2016, 93.

71. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.5cm / height: 3.5cm / perforation diameter: 1.5cm; Inv. No. 3469H.
Literature: D. Romanović 2016, 93.

72. Ceramic weight

Spherical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača, 1983; 1st-3rd centuries AD
Ceramics; diameter: 4.6cm / height: 3.6cm / perforation diameter: 1.3cm; Inv. No. 3264H.
Literature: D. Romanović 2016, 93.

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73. Keramički uteg

Bikonični uteg za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 2,9 cm / visina: 2,2 cm / promjer rupice: 0,7 cm; inv. br. 2782H.
Literatura: D. Romanović 2016, 93.

74. Keramički uteg

Bikonični uteg za ribarsku mrežu sa središnjom perforacijom.
Zato, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; promjer: 4,1 cm / visina: 2,4 cm / promjer rupice: 0,8 cm; inv. br. 2781H.
Literatura: D. Romanović 2016, 93.

75. Keramički uteg

Uteg u obliku diska za ribarsku mrežu sa središnjom perforacijom.
Zaton, rt Kremenjača, 2007. (C 1/3 sl. 7); 1. – 3. st.
Keramika; promjer: 5,9 cm / visina: 2,3 cm / promjer rupice: 1,6 cm; inv. br. 2388H.
Literatura: D. Romanović 2016, 93.

76. Keramički uteg

Dorađeni uteg za ribarsku mrežu s perforacijom.
Zaton, rt Kremenjača (stari fundus); 1. – 3. st.
Keramika; dužina: 5,3 cm / širina: 3,4 cm / debljina: 1,8 cm / promjer rupice: 0,9 cm; inv. br. 2564H.
Literatura: D. Romanović 2016, 94.

77. Kameni uteg

Uteg nepravilnog ovalnog oblika za ribarsku mrežu s perforacijom.
Zaton, rt Kremenjača, 2006. (A 1/1 sl. 6); 1. – 3. st.
Kamen; dužina: 8,7 cm / širina: 5,7 cm / debljina: 1,4 cm / promjer rupice: 0,6 cm; inv. br. 2114H.
Literatura: D. Romanović 2016, 94.

78. Gradele

Gradele s pet krakova koje stoje na četiri nožice. Na jednom su kraju imale polukružnu omču za ovjes. Dijelom su rekonstruirane.
Zaton, rt Kremenjača, 1979.; 1. – 3. st.
Keramika; dužina: 28,2 cm / širina: 16,2 cm / visina: 4,8 cm; inv. br. 4624H.
Literatura: D. Romanović 2016, 101.

Autori fotografija: Aleksandar Gospić i Dušanka Romanović

73. Ceramic weight

Biconical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 2.9cm / height: 2.2cm / perforation diameter: 0.7cm; Inv. No. 2782H.
Literature: D. Romanović 2016, 93.

74. Ceramic weight

Biconical weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; diameter: 4.1cm / height: 2.4cm / perforation diameter: 0.8cm; Inv. No. 2781H.
Literature: D. Romanović 2016, 93.

75. Ceramic weight

Disk-shaped weight for fishing net, perforated in center.
Zaton, Cape Kremenjača, 2007 (C 1/3 Layer 7); 1st-3rd centuries AD
Ceramics; diameter: 5.9cm / height: 2.3cm / perforation diameter: 1.6cm; Inv. No. 2388H.
Literature: D. Romanović 2016, 93.

76. Ceramic weight

Re-used weight for fishing net, perforated in center.
Zaton, Cape Kremenjača (old holdings); 1st-3rd centuries AD
Ceramics; length: 5.3cm / width: 3.4cm / thickness: 1.8cm / perforation diameter: 0.9cm; Inv. No. 2564H.
Literature: D. Romanović 2016, 94.

77. Stone weight

Asymmetrical oval perforated weight for fishing net.
Zaton, Cape Kremenjača, 2006 (A 1/1 Layer 6); 1st-3rd centuries AD
Stone; length: 8.7cm / width: 5.7cm / thickness: 1.4cm / perforation diameter: 0.6cm; Inv. No. 2114H.
Literature: D. Romanović 2016, 94.

78. Grill

Grill with five bars standing on four small feet. One semicircular noose for hanging on one end. Partly reconstructed.
Zaton, Cape Kremenjača, 1979; 1st-3rd centuries AD
Ceramics; length: 28.2cm / width: 16.2cm / height: 4.8cm; Inv. No. 4624H.
Literature: D. Romanović 2016. 101.

Photo authors: Aleksandar Gospić and Dušanka Romanović

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