

# ENTRE MARES

*Emplazamiento, infraestructuras y organización de los puertos romanos*

Mertxe Urteaga

Antonio Pizzo

(Eds.)



Volumen II



«L'ERMA» di BRETSCHNEIDER  
Roma - Bristol

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organización de los puertos romanos*

VOLUMEN II

*Edición del volumen:*  
Mertxe Urteaga y Antonio Pizzo

*Coordinación editorial:*  
Mertxe Urteaga y Antonio Pizzo

*Diseño y maquetación:*  
Artes Gráficas Rejas, S. L. Mérida (Spain)

Ilustración de la cubierta: Reelaboración de un segmento de la Tabula Peutingeriana (K. Miller, 1898)

ENTRE MARES  
Emplazamiento, infraestructuras y organización de los puertos romanos  
(Hispania Antigua, Serie Arqueológica, 15)

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Via Marianna Dionigi, 57  
00193 Roma - Italia  
www.lerma.it  
70 Enterprise Drive, Suite 2  
Bristol, 06010 - USA

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ENTRE MARES. Emplazamiento, infraestructuras y organización de los puertos romanos

1012 p.; 21x29,7 cm. (Hispania Antigua. Serie Arqueológica, 15)

ISBN brosurita: 978-88-913-3270-7

ISBN PDF: 978-88-913-3271-4

DOI: 10.48255/9788891332714

CDD 930 Archeologia

ISSN: 2612-0003

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# ROMAN COASTAL SETTLEMENT AT FIZINE IN THE NORTH-WESTERN ISTRIA (SLOVENIA): RECENT RESEARCH OF HARBOUR COMPLEX WITH FISHPONDS

Asentamiento costero romano de Fazine en el noroeste de Istria (Eslovenia): investigación reciente del complejo portuario con piscifactoría\*

Andrej Gaspari (corresponding author)\*\* , Rene Masaryk\*\*\* , Matej Draksler\*\*\*\* , Matic Perko\*\*\*\*\* , Saša Koren\*\*\*\*\* , Danica Mitrova\*\*\*\*\* , Maks Merela\*\*\*\*\*

## Abstract

The ancient settlement complex with harbour and fish ponds in Fazine in the western part of Portorose Bay is one of the most interesting archaeological sites on the Slovenian coast in northwestern Istria on the upper Adriatic. The area was inhabited at least from the last decades of the Roman Republic (second half of the 1st century BC) to the early Middle Ages (6th/7th century AD), thanks to its naturally sheltered position from north winds. This paper reviews the results and findings of archaeological research since 1963, focusing on the finds from the 2017, 2018, and 2021 underwater interventions.

The underwater architecture on the nearshore part of the seabed was recognised as a facility for breeding and/or keeping marine animals (vivarium) with landing piers. Remains on the walls of the extensive jetty forming two enclosed basins are reliable indicators of the relative rise in sea level from the beginning of the 1st century AD, when the building was constructed, to the present day, estimated at  $1.5 \text{ m} \pm 20 \text{ cm}$ . The presumed fish farm and associated shoreline facilities were probably in use until the 5th century.

Recent underwater trial excavations in the western part of the bay revealed a stone fill combined with horizontal logs and wooden piles that probably served as a breakwater. Special attention is given to the finds of a yard or spar of a spritsail and a masthead with integral pulley, both of which were reused as mooring piles, as well as discarded pieces of ship rigging and fishing gear. The AMS dating of the wooden elements and the pottery from the associated deposits attests to the use of the harbour between the 3rd and 4th/5th centuries.

**Keywords:** Adriatic, Istria, Fazine, harbour, fishpond, breakwater, mast, toggle, *tubi fitilli*, Imperial period, Late Roman Period.

## Resumen

El antiguo complejo de asentamientos con puerto y estanques piscícolas de Fazine, en la parte occidental de la bahía de Portorose, es uno de los yacimientos arqueológicos más interesantes de la costa eslovena, en el noroeste de Istria, en el Alto Adriático. La zona estuvo habitada al menos desde las últimas décadas de la República Romana (segunda mitad del siglo I a.C.) hasta principios de la Edad Media (siglos VI-VII d.C.), gracias a su posición naturalmente protegida de los vientos del norte. Este artículo revisa los resultados y hallazgos de la investigación arqueológica desde 1963, centrándose en los hallazgos de las intervenciones subacuáticas de 2017, 2018 y 2021.

La arquitectura subacuática en la parte cercana a la costa del lecho marino fue reconocida como una instalación para la cría y/o mantenimiento de animales marinos (vivarium) con muelles de amarre. Los restos en las paredes del extenso embarcadero que formaban dos cuencas cerradas son indicadores fiables de la subida relativa del nivel del mar desde principios del siglo I d.C., cuando se construyó el edificio, hasta la actualidad, estimada en  $1,5 \text{ m} \pm 20 \text{ cm}$ . La presunta piscifactoría y las instalaciones costeras asociadas estuvieron probablemente en uso hasta el siglo V.

Recientes excavaciones submarinas de muestreo en la parte occidental de la bahía revelaron un relleno de piedra combinado con troncos horizontales y pilotes de madera que probablemente sirvió de rompeolas. Se presta especial atención a los hallazgos de una verga o mástil de una vela "spritsail" y un tope de mástil con polea integral, ambos reutilizados como pilotes de amarre, así como piezas desechadas de aparejos de barco y artes de pesca. La datación por AMS de los elementos de madera y de la cerámica de los yacimientos asociados atestiguan el uso del puerto entre los siglos III y IV/V.

**Palabras clave:** Adriático, Istria, Fazine, puerto, estanque piscícola, rompeolas, mástil, cabilla, *tubi fitilli*, época imperial, época tardorromana.

\* La traducción del título al castellano, el resumen y palabras clave se deben a los editores.

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## Introduction

The ancient settlement complex with harbour and fishponds at Fazine in the Portorož (Portorose) Bay is one of the most interesting archaeological sites on the Slovenian coast northwest of Istria (Fig. 1) on the upper Adriatic (Imperial Regio X of Italy and late Roman province Venetia et Histria of Italia Annonaria). The area between Cape Bernardin and the 19<sup>th</sup> century salt warehouses in the western part of the bay was inhabited at least from the last decades of the Roman Republic (second half of the 1st century BC) to the early Middle Ages (6th/7th century AD), thanks to its naturally sheltered position from north winds. This overview provides an update on the results and findings of archaeological research since 1963, focusing on the results of the 2017, 2018 and 2021 underwater interventions.

## Coastal settlement

Evidence for Roman occupation of the western part of the bay, characterised by two shallow coves that are now partially obscured by modern coastline, includes the building complex in the lower part of the eastern cove documented during rescue excavations in 1998, and an early mediaeval church with mosaic floors recorded on the slopes above the bay in 1913. The latter possibly relates to an undiscovered settlement core from the period of the restoration of Byzantine rule in Istria. Remains of building walls and mosaic pavements have also been reported from Cape Bernardin, which closes the bay of Fazine on the western side. These remains could belong to the early imperial *villa marittima*, whose existence is also suspected by the discovery of the 1st AD tombstone of the freedman Achaicus. The Italian name of the site, Fisine, together with the toponym Fornace, which identifies the nearby site that was inhabited in the late Republican and early Imperial period, testifies to an exploitation of local clay deposits and the presence of kilns for the production of ceramic building materials. In Fazine

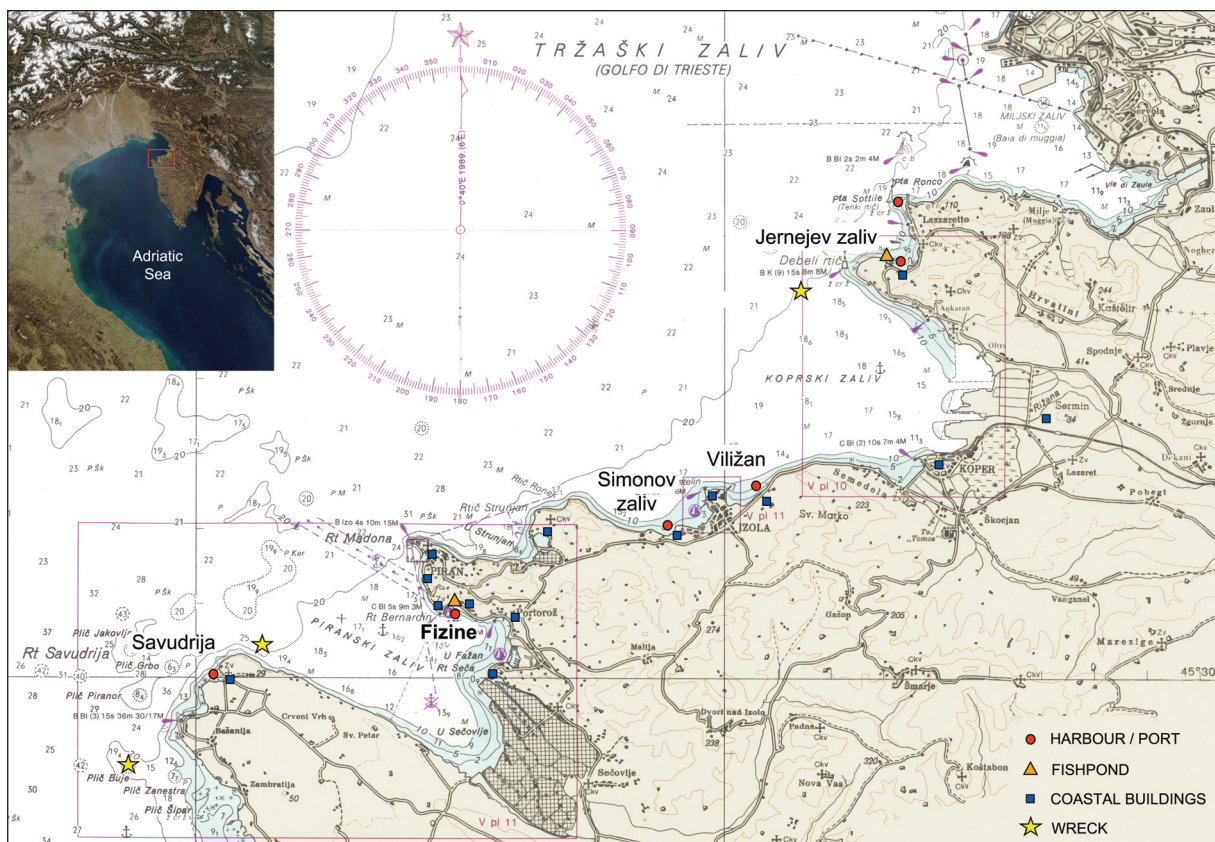


Fig. 1. Map of north-western Istria with coastal sites from Roman period (graphic rendering: Andrej Gaspari; base layer: nautical chart Gulf of Trieste, 1989).



this activity was also carried out in the second half of the 19th century, when the breakwater was built in the immediate vicinity of the late Roman mooring area in front of the western cove in the central part of the bay.

The earliest settlement of Fazine refers to the remains of the dry-stone wall along the beach of the eastern cove (Fig. 2), made sometime before the last decades of the 1st century BC (Gaspari *et al.*, 2007). In order to widen the narrow coastal plain for the construction of the 1st and 2nd century settlement complex, perhaps also to allow the passage of the road, the area was levelled and then overbuilt by masonry walls of coastal buildings. Tableware and amphorae from the corresponding deposits are predominantly of Italic origin and match the regionally common ensembles. Massive bronze nails and smaller flat-headed nails used to attach protective sheet metal to ship hulls, ceramic weights, and large sewing needles indicate facilities for ship repair and storage of fishing gear. The fragment of a ceramic vessel with massive walls could belong to a large jar (pithos), similar to the jars used for the production of fish sauces, completing the picture of the exploitation of maritime resources. During the preventive excavations of a narrow trench in 1998, a corridor perpendicular to the coast was uncovered, which probably led to the interior of the settlement, located on the surrounding slopes. The Late Roman phase of the complex involved a partial reconstruction of the coastal buildings, which included a limited secondary use of the marble elements of the earlier residential architecture. The large quantities of late Roman amphorae, fine tableware and kitchenware of North African and East Mediterranean origin are complemented by a considerable number of coins dating to the 4th and first half of the 5th century, although some ceramic forms indicate continued occupation into the 6th and perhaps even 7th centuries. A revival of settlement and an economic flourishing of the Fazine area in the 4th and 5th centuries is also evidenced by the numerous finds from the underwater part of the complex.

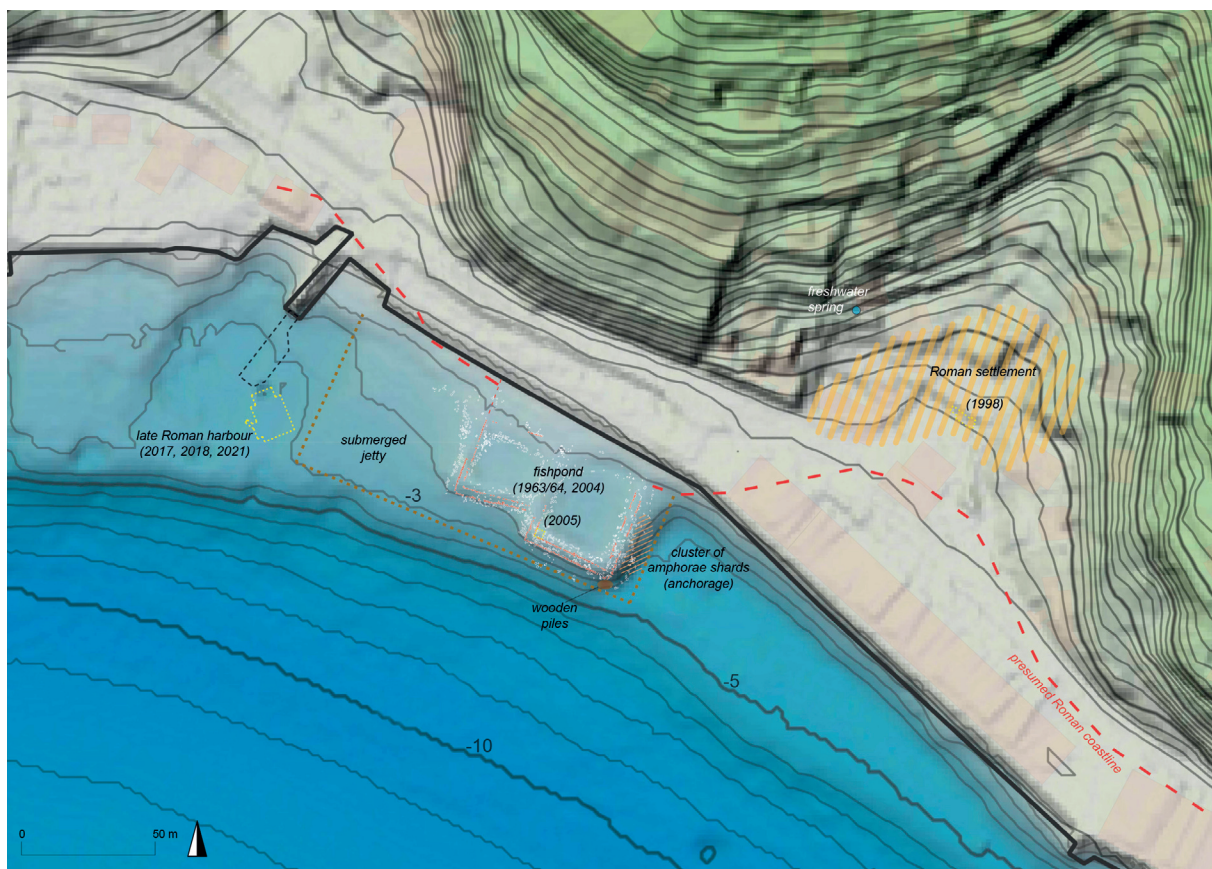


Fig. 2. Ancient settlement complex in Fazine: 1 - coastal buildings and corridor (1998); 2 - fish farm (2004-2005); 3 - mooring area and breakwater (2017-2021) (graphic rendering: Gregor Babič).

### **Fish farm with landing piers**

The large rectangular stone structure with two basins on the nearshore part of the seabed between the two coves is one of the most widely known underwater sites found on the Slovenian coast of Istria, often mentioned together with the Roman port in Simon Bay (San Simone) near Izola (Isola) and the sunken structures in Jernejeva draga (Valle San Bartolomeo) near Ankaran (Ancarano) (Stokin *et al.*, 2008).

The structure was built on an extensive stone jetty that formed two enclosed basins and was recognized as a facility for breeding and/or keeping marine animals (vivarium) with landing pier (Fig 2). The preserved perimeter walls, 2.7-3.5m wide, and the partition wall consist of inner and outer walls made of large blocks of local sandstone (flysch) with a stone filling in between, which is a commonly attested Roman construction technique for marine and fish breeding facilities on the coast of Istria (Busana, 2018; Carre and Auriemma, 2009). The whole structure is 67 m long, 30-35 m wide and the surface of the inner basins measures about 1770 m<sup>2</sup>. The construction period can be deduced from the sherds of Dressel 6B type amphorae for transporting locally produced olive oil found in the lower rubble layers along the inner sides, which also contain fragments of masonry from ruins of buildings on the coast. At least two or perhaps three upper rows of blocks with floor surfaces are scattered near the walls or are missing due to swell and exploitation of building materials in later periods. The presumed height of the walking surfaces can be inferred from the preserved coastal platform, which also provides one of the most reliable indicators of relative sea level rise from the beginning of the 1st century AD to the present, estimated at 1.5m ± 20cm (Florido *et al.*, 2011).

The gaps between the blocks of the superstructure and the porosity of the underlying stone base assured free circulation of the seawater and the spring above the eastern cove supplied the alleged fish farm with fresh water needed to oxygenate and lower the temperature of the seawater in the pools. The mooring was most likely located in the southeast corner of the eastern basin. Two rows of mulberry (*Morus sp.*) piles that were discovered during investigations in 1963 at the edge of the jetty where it slopes steeply to the natural seafloor, might serve as anchorage, but this interpretation must be considered with some reservation, as the piles may have been driven into the jetty for reinforcement. A more valid argument for a mooring at this location is the fact that the largest scatter of amphora sherds around the structure has been discovered precisely at the presumed mooring near the southeast corner. According to the chronologically tangible pottery, the facility was in use until the end of the 5th century, perhaps even into the 6th century. In the later phase, it could have been fish and shellfish ponds (*piscinae neptuniae*) and facilities for salting fish and making fish sauces (*garismatia*) from Cassiodorus' 6th century descriptions of Istria (Busana, 2018).

### **Late Roman harbour with breakwater, mooring piles and associated finds of nautical equipment**

Underwater excavations near the old municipal pier in the western part of the bay, conducted between 2017 and 2021, yielded extensive evidence of harbour activity in the submerged area off the western cove (Fig. 2 & 3). This area actually provided better protection than the area off the eastern cove, which was somewhat more exposed to currents and wave action. In the first phase of the preventive investigations, prior to the reconstruction of the municipal pier, extensive deposits of rubble were found near the shore and in the deeper part fine-grained layers formed during the use of the harbour in the 4th and 5th centuries. In the course of the investigation, it was found that the distribution of the thinner piles was consistent with the elongated area of stone and tile rubble oriented perpendicular to the southern wind and wave direction. This led to the assumption that the structure was the breakwater, possibly extending toward the southwest corner of the fish farm. A well-protected mooring area only a few dozen metres wide between the presumed breakwater and the shoreline only a few dozen metres wide is evidenced by individual piles and groups of piles driven vertically into the silty seafloor, as

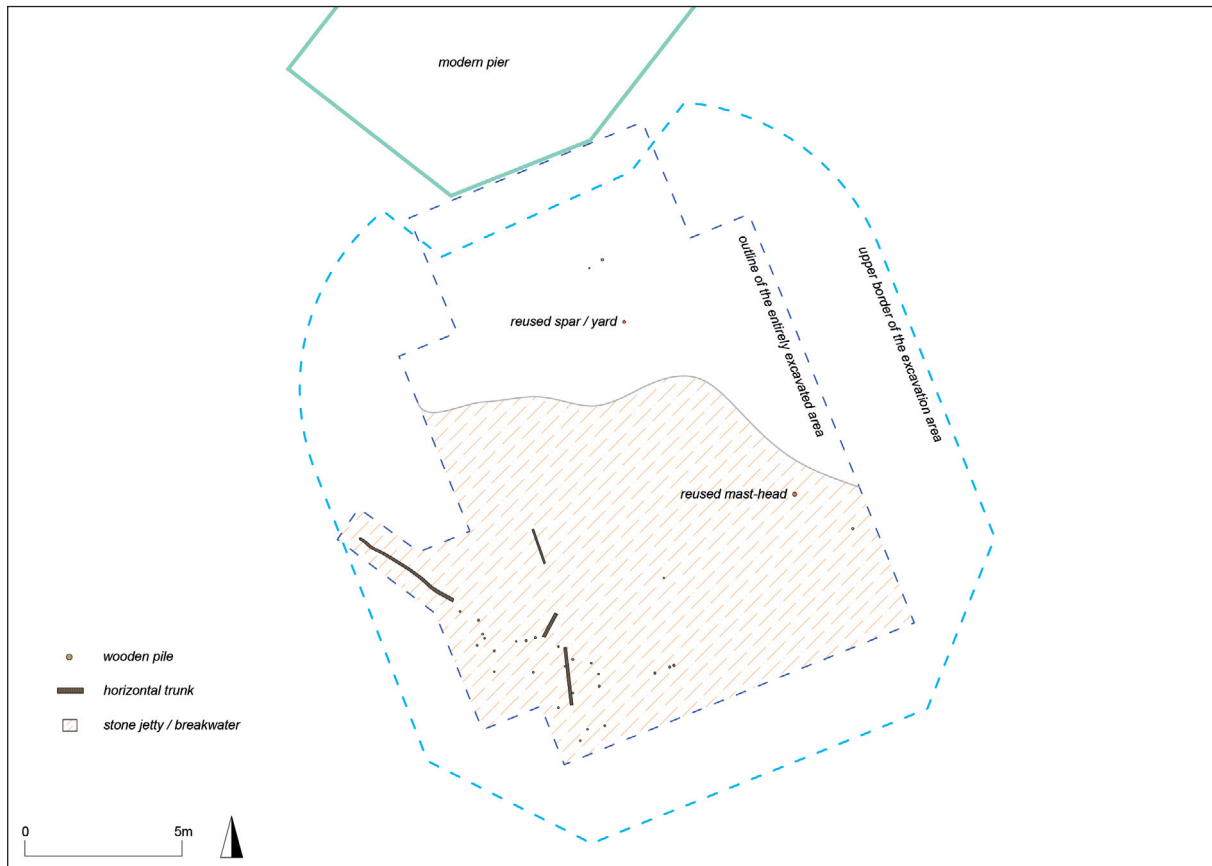


Fig. 3. Ground plan of the Late Roman moorings and remains of breakwater near Municipal pier (graphic rendering: Gregor Babič).

well as numerous ensembles of pottery and other finds belonging to discarded cargo or ship's equipment. The deposits accumulated during the operation of the breakwater and the use of the moorings date between the second quarter of the 3rd and the end of the 6th century, with most finds belonging to the 4th and the first half of the 5th century, as shown by the chronology of fine tableware, kitchenware, and amphorae. So far, all fineware imports can be attributed exclusively to various North African workshops. Multiple Hayes 50, Hayes 59 and Hayes 61 plate forms as well as Hayes 58 and Hayes 91 bowl forms appear in several derivations. A number of African cookware vessels were also discovered, with deep casseroles of type Hayes 197 and pans of type Hayes 181 being predominant alongside their corresponding lids (Hayes 196 and Hayes 182, respectively). Some amphorae belong to the Africana II and Africana III groups, while others can be identified as products of the Aegean area (LRA 1, LRA 2). Additionally, at least one vessel can be related to Aegean cooking ware, and two oil lamps suggest corinthian origin.

Three discovered examples of terracotta vaulting tubes (*tubi fittili*), found close to each other near the presumed moorings, are a typical product of Tunisian workshops from the 4th century AD. The tubes probably did not end up on the harbour floor as part of the debris of collapsed late Roman buildings near the bay, used to widen the older jetty to the west, but were probably used on one of the ships anchored here, perhaps to secure the amphora cargo during transport and then disposed of along with the broken transport containers. Only a few obviously relocated or reused finds of earlier origin (e.g. 1st c. AD stamped roof tiles) were discovered, indicating exclusive use of this area in late Roman period.

Of particular interest are finds of the ship's rigging. A piece of a spruce (*Picea abies*) log used as an anchor pile and radiocarbon dated to 251-397 cal AD is thinned and perforated at one end, while the other end was broken off slightly above where it protruded from the sediment (Fig. 4: A). Based on its dimensions and features, it could be an oar, but we are more inclined to interpret it as a diagonal support beam (spar) of a spritsail, as used in antiquity on smaller ships, especially in the northern Aegean (Jones and Günsekin, 2021). Even more interesting is the upper part of the fir (*Abies alba*) mast with integrated pulley, made of oak (*Quercus ilex*) (Fig. 4: B). The pulley axle was made of ash (*Fraxinus* sp.). AMS (14C) analysis of mast last preserved tree ring dates its manufacture between the late 2nd and early 4th century AD (222-322 cal AD; 68.2% probability). Currently, among the published finds of rigging from the ancient Mediterranean, there are no comparisons for this type of mast known to the authors. The reuse of oars and wooden elements of ship rigging for mooring piles is attested, for example, from the late Roman phase of the ancient port of Neapolis, where they were used for the construction of small moles and/or as stakes of fixed gillnets (for the site Gianpaola *et al.*, 2005). More common, but still rare, finds from the 2021 excavations include an olive wood (*Olea europea*) toggle made on a lathe (Fig. 4: C) that resembles specimens from Marseilles (1st-2nd century AD) and the late 3rd/early 4th century AD shipwreck of Laurons 2 (Polzer, 2008, 238, Fig. 15: A; Beltrame, 2002, 14, Fig. 15), and two massive lead rings of relatively large diameter and rectangular cross-section found close to each other (Fig. 4: D, E). Similar objects are occasionally found on shipwrecks and explained as net weights or rings for brail lines and as rings for detangling (Beltrame, 2002, 66-68). Other lead objects include some fragments of thin sheet metal patches and a massive cylindrical weight. Only a few spherical clay weights were discovered, in contrast to their massive occurrence in the deposits of the nearby settlement.

## Conclusion

Two-metre-high columns of seafloor deposits were collected to conduct a detailed analysis of the 3m-tall sedimentary sequence, including the study of geological, chemical, and biological markers and other relevant indicators of sea level variations and conditions in the particular part of the bay over the past millennia. The documented data on archaeological features will be enriched by the ongoing artefact studies and provenance analysis of various collected materials from the relevant layers, i.e., plant remains, mollusks, exogenous rocks and ballast stones, raw glass, obsidian, and mortar. The first results of the underwater excavations were presented to the public with the exhibition at the Maritime Museum «Sergej Mašera» in Piran in 2021, and the consortium of research partners is planning a comprehensive monographic publication shortly after the conservation of the finds is completed.



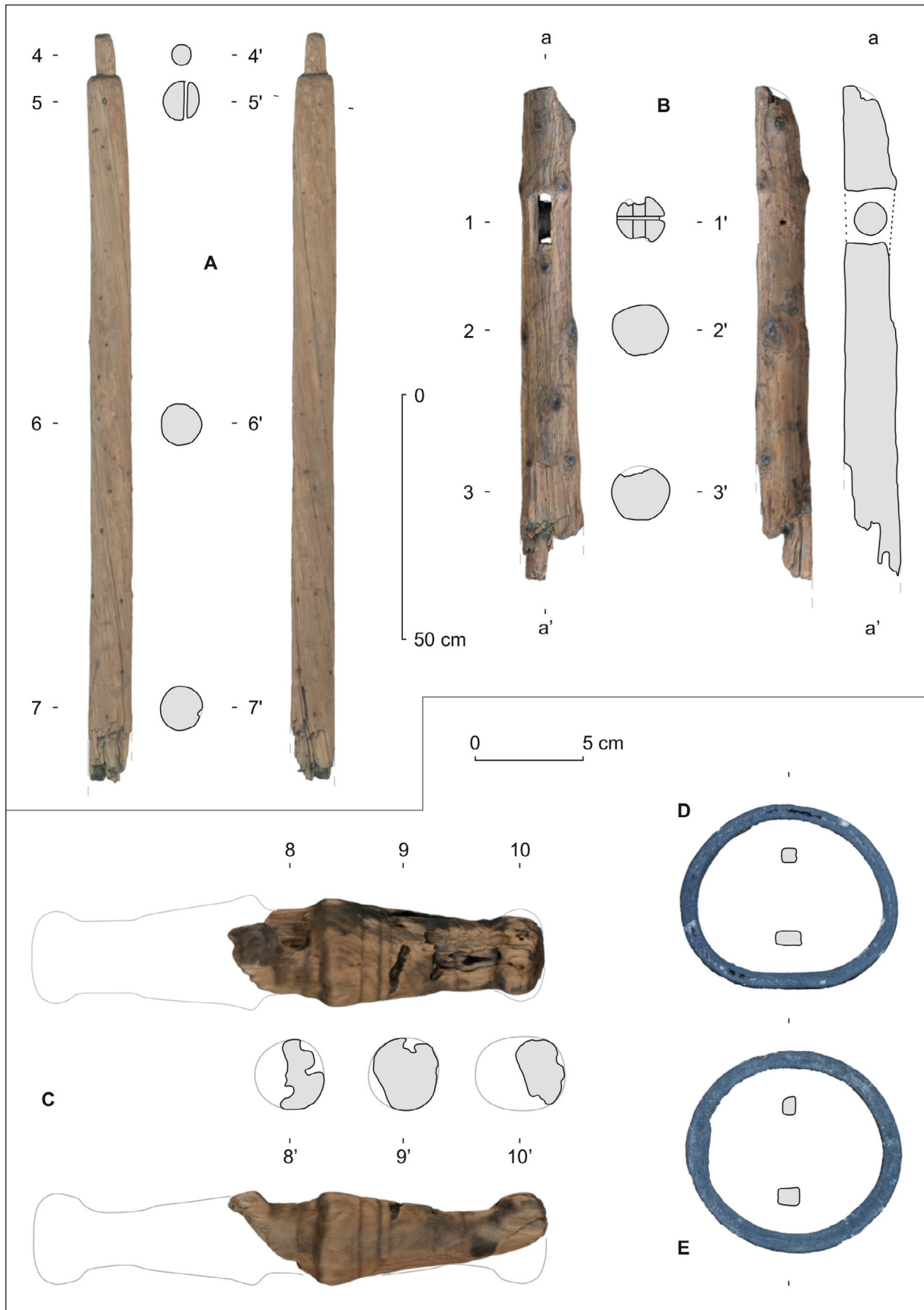


Fig. 4. Selection of wooden and lead objects from 2017-2021 excavations: 1 - spar; 2 - masthead with integrated pulley; 3 - toggle; 4 - lead rings (graphic rendering: Rene Masaryk).

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