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REGIONAL
STATUS QUO ANALYSIS
REPORT

Friuli-Venezia Giulia, Veneto, Split-Dalmatia
County, Puglia

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REGIONAL STATUS QUO ANALYSIS

Friuli Venezia Giulia Region

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1. General premises and state of art

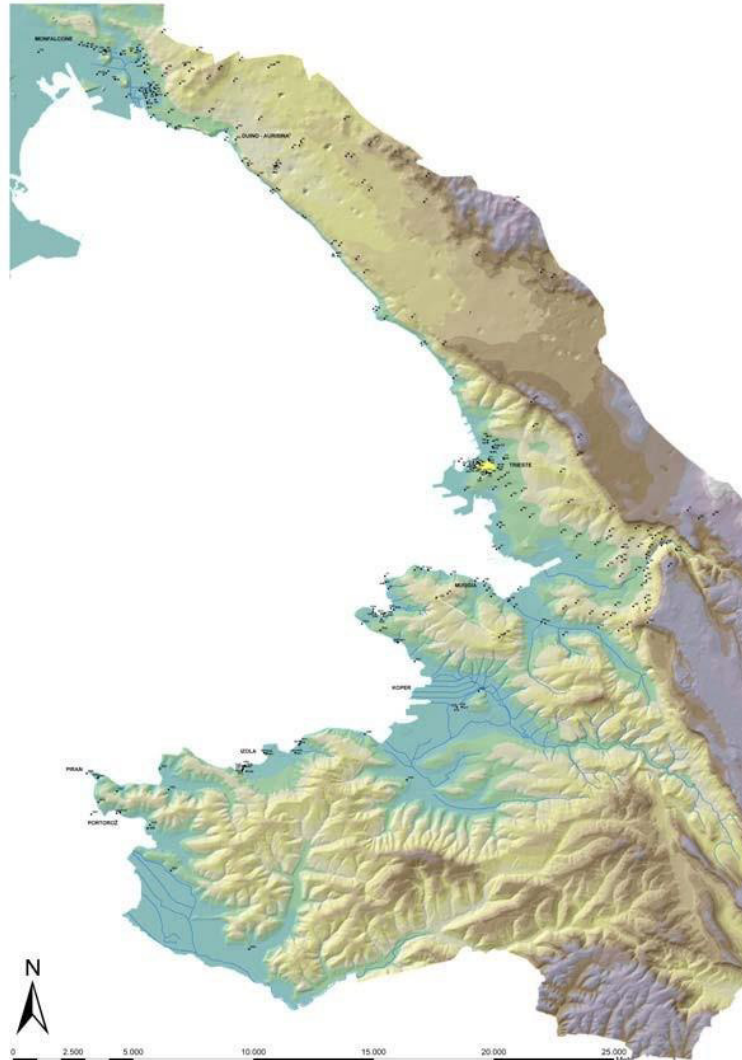
1.a The UCH in the region: history of the research and recent projects

After the intense season of excavations and studies on the Grado 1 wreck (1987-1999), ended with the whole recovery of the load and hull (but we are still waiting for the musealization of the wreck himself), the underwater archaeological researches in Friuli Venezia Giulia region stopped. During this institution's stalemate, the University of Trieste promoted a lot of scientific projects targeted at the knowledge and valorization of the underwater cultural heritage. This action was done through the holistic approach of the landscape archaeology, the coastal landscapes, in order to restore a common identity to the country.

First of all, we'd like to quote the project Interreg Italia – Slovenia IIIA “The coastal sites of the upper Adriatic: topographical surveys on land and at sea” (**AltoAdriatico**, 2004-2007)¹, during which Preroman and Roman structures were studied, partially or totally submerged. Furthermore, archaeological evidence placed in the territory between the mouths of Timavo and Pirano. This study aims to redefine the coastal population and the landscape profile in ancient times.

The only study that embraces the entire coastal area is that of Attilio Degrassi (1887-1969). Attilio Degrassi was a famous scientist of the last century who conducted a mapping campaign of underwater archaeological sites, with traditional methodologies and instruments, so that it wasn't possible to have a complete screening of the sites and a detailed analysis of the types of building and construction techniques.

¹ After the first agreement between the Department of Ancient Sciences of the University of Trieste, the "Sergej Mašera" Museum of the Sea in Piran and ENEA, many other institutions join us, thanks to the Special Climate Global Project: the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio), the Institute for the Protection of Cultural Heritage of Slovenia, the Territorial Unit of Piran and the Group of Underwater Archeology, the Department of Geological, Environmental and Marine Sciences of the University of Trieste.



The AltoAdriatico project

The new data, resulting from the Project, add a lot of information on the number of sites, much more known than before, on the types of tests, on the construction techniques, which are really particular and, above all, on the evaluation of the changes in the coastal profile and on the increase in the sea level. As for the variety of typologies, we can list piers, docks, banks, submerged floors, fish ponds, ports, sections of houses.

After the AltoAdriatico Project, the similar **Stories from the Sea Project**² followed. In this project the study areas were wider and more diverse, in order to increase the range of experimentation and strengthen the methodology. The areas selected were the **Marano Lagoon** (Ud), in Italy, and the wide inlet of the port of Salvore/Savudrija (Umago/Umag), along the Istrian coast.



Stories from the Sea Project

As results of the project we have achieved:

- a hypothesis of reconstruction of the paleo-landscape, through the study of the relative changes in the sea-level and the morphological evolution of the lagoon environment;
- the planning of an archaeological itinerary, on land, islands and underwater, connected to the existing environmental one, capable of enriching the high quality tourist offer.

In the 90s of the last century Mario Gaddi conducted a research, mapping the sites of the Grado Lagoon, in order to update and integrate, through modern methodologies, the pioneering studies of Virgilio Degrassi³.

² The project, presented by the Department of Ancient Sciences of the University of Trieste on the L.R. 19/2004, was approved and approved for financing with decree no. 2386 / 30.11.09 of the University, Research and Innovation Service (Scientific responsible: Monika Verzari; Coordinator: Rita Auriemma). The research activities led to the start of fruitful collaborations and memoranda of understanding with the municipality of Marano lagoon, the Department of GeoSciences of the University of Trieste, the Civic Museums of Udine, the Regional Basin Authority, the Nucleo dei Underwater Carabinieri of Trieste, the Diver Corps of the Guardia di Finanza and foreign institutes, such as the Museums of Pula, Porec and Umag, Croatia.

³ Gaddi 2001, with previous ones; Degrassi 1950.

We must mention the surveys on the **internal port of Aquileia**, a complex system of natural and artificial water way : since the beginning of the last century (Brusin’s excavations 1926-1930), to the 90s⁴ until more recent times (in particular 2004-2005 excavations of Canale Anfora and the 2017-2018’ campaign on t e area of Brusin)⁵.



Stella river researches

And about the inland river waters, we should mention the **Stella river researches**, promoted by the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) and the NAUSICAA team (Stella 1 wreck and isolated finds) during the nineties of the last century and again in the 2011 year, inside the *Anaxum. Archaeology and History Project of a river landscape* (Stella 1 wreck, via Annia bridge and Precenicco wreck)⁶. The Stella river was a privileged waterway from the Neolithic, thanks to its constant flow rate due to the resurgences. In the 2016 the Udine University started a

⁴ Excavations of the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) and excavations in collaboration with the École Française de Rome and the University of Trieste in the north area of Brusin.

⁵ Carre, Maffei Scotti 2001; Canale Anfora 2017. The samples in the Brusin excavation area were conducted by the joint venture between Aquileia Foundation and Regional Body for Cultural Heritage - ERPaC FVG to point out some questions regarding the various phases of installation and use.

⁶ Capulli 2018.

study for the eco-historical park of the Stella river, in order to enhance the environmental aspects and to valorize the archaeological sites, the historical buildings and the rural architectures.

1.b The GIS/portal/websites/social networks devoted to the FVG UCH

The Regional Information System of the Cultural Heritage - SIRPaC FVG (www.ipac.regione.fvg.it; Catalogo dei Beni Culturali; Carta dei Beni Culturali) contains the GIS archives of the **AltoAdriatico** and **Stories from the Sea** projects (mapping the evidence along the Trieste coast and the Marano Lagoon area) and the data-base of the underwater archaeological sites in the **Grado Lagoon**. The Regional Information System is connected to the general **WebGIS** of the Region FVG, the EAGLE FVG (sistemiwebgis.regione.fvg.it/eagle/). The database is available for citizens and stakeholders operating in the territory, an archive, constantly updating, good for knowledge, social-cultural-economic development, territorial planning and safeguard.

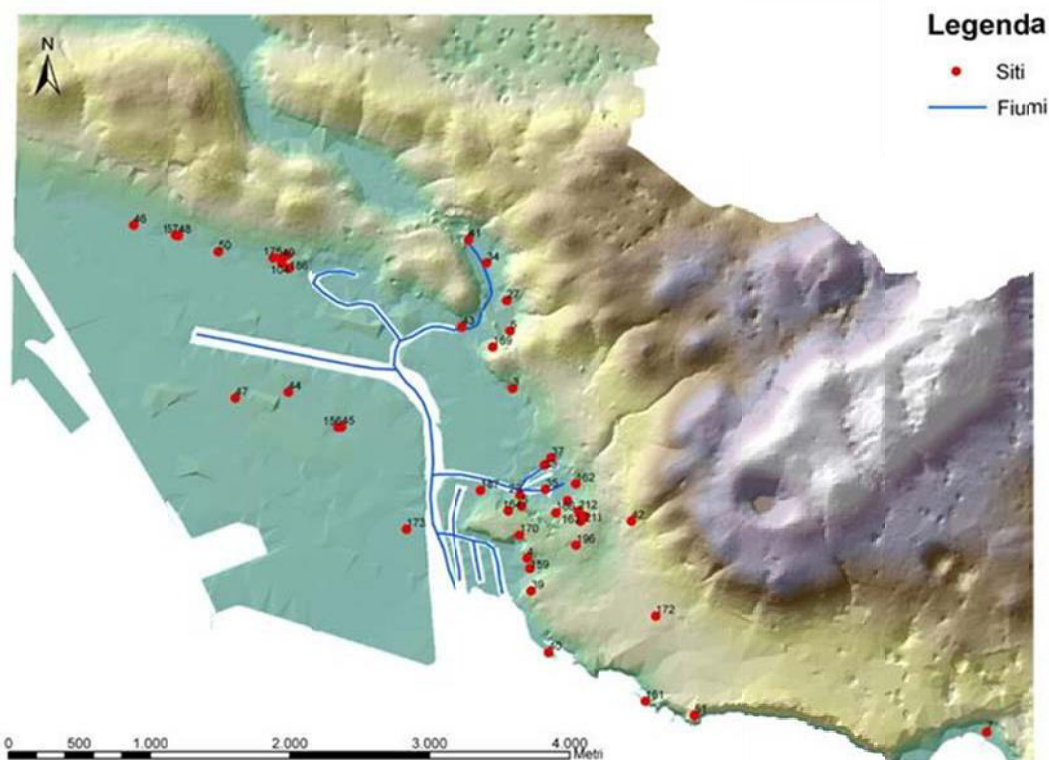
The submerged archaeological heritage is only minimally recorded also in the **Raptor portal**, an instrument of the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) aimed essentially at protection, not free access (<http://www.sabap.fvg.beniculturali.it/attivita-2/tutela/software-raptor-ricerca-archivi-e-pratiche-per-la-tutela-operativa-regionale>).

Touristic or cultural websites or social networks, dedicated to the underwater cultural heritage, are unknown.

1.c. Overview of the submerged sites (wrecks and structures) with references

Thanks to the AltoAdriatico project and its researches it was possible to redefine the Trieste coastal line, starting from the **lacus Timavi** area (Monfalcone), violently altered by the human actions. Originally, in ancient times, the area was supposed to be a lagoon surrounded by islands, a large wooden area in the hinterland and many various settlements along and near the fresh or

salt water: holy places, houses, production centers, perhaps a large thermal area and, first of all, landing places for any single villas and one or more port complexes. The surveys conducted in the branches and in the mouth of the Timavo river have again ascertained the presence of piling and bank arrangements, wheels of the mills that were in the area until the eighteenth century, and archaeological materials from the pre-Roman, Roman and Renaissance periods, already identified by the Superintendence in the 80s.



The archaeological sites of the *lacus Timavi* from the Roman age: digital model

Leaving the *Lacus Timavi* we can find a high coast, not so easy to live, but with its resources: villas on several levels, low and half-hidden among the vegetation, with small landings, typical of the straight stretches of coast, with a U-shaped or a “Γ” shape pier and, sometimes, with a second minor arm to reduce the mouth. This shape was replicated by the modern age

mandracchio, in which the investigations of the Project took place (Cedas, S. Crace, Filtri, Canovella, Grignano ecc.).

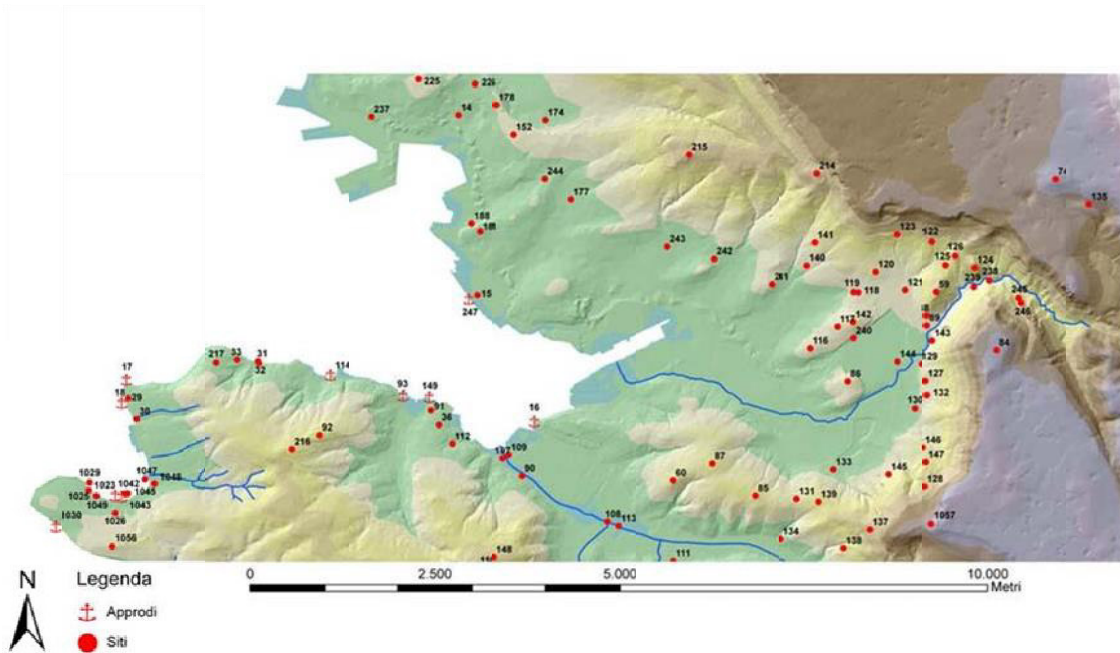
In the **bay of Grignano**, for the Roman era, we can design a more complex system: a northern basin, the port of Grignano, with the pi-shaped pier known to Kandler and documented in historical cartography and also by Degrazi in the last century; a second small landing, or rather boats to the south, at the mouth of the Aurisina stream, where a pier, an L-shaped dry stone pier, 70 m long, 2 m high, has been documented in front of the Miramare Stables.



Grignano: the Roman villa, the mural in front of the stables, the pier

Both sites must be connected to one or more important coastal residences, the traces of which—mosaics, brick stamps, etc.—were found on a kilometer long stretch of coast. Submerged and geoarchaeological tests could enrich the already wide offerings of the MPA, and provide further training opportunities, educational and tourist programs.

The third area under systematic analysis was the **Muggesano territory**, where two maritime nuclei were highlighted: one on the mouth of the river Osso, the other in the bay of S. Bartolomeo; a lesser “visibility” has the port of the city, actually Muggia square, according to Kandler and Degrassi.



The Muggesano territory: archaeological sites

The river landing of the **Osso** shows harbor appropriations at the mouth and a series of settlements, especially along the western shore, which probably used the river route, originally more moved to the north.

The **S. Bartolomeo bay**, “cut” in two by the Italian-Slovenian border, was originally a unitary compartment, consisting of sites along and behind the shore. Here small service jetties to the villas behind have been investigated, reported in recent years, powerful docking structures (the “molere”) and an imposing fishpond built with a jetty of “lost stones” on the promontory of Punta Grossa. All the submerged evidence, investigated in the bay, was certainly related to buildings on the shore, traces of which were seen until a few decades ago, and perhaps one or

more quarries. The area was certainly characterized by mining and the exploitation of agricultural and maritime resources: this aspect is confirmed by the richness and extent of its archaeological, historical and cultural heritage.

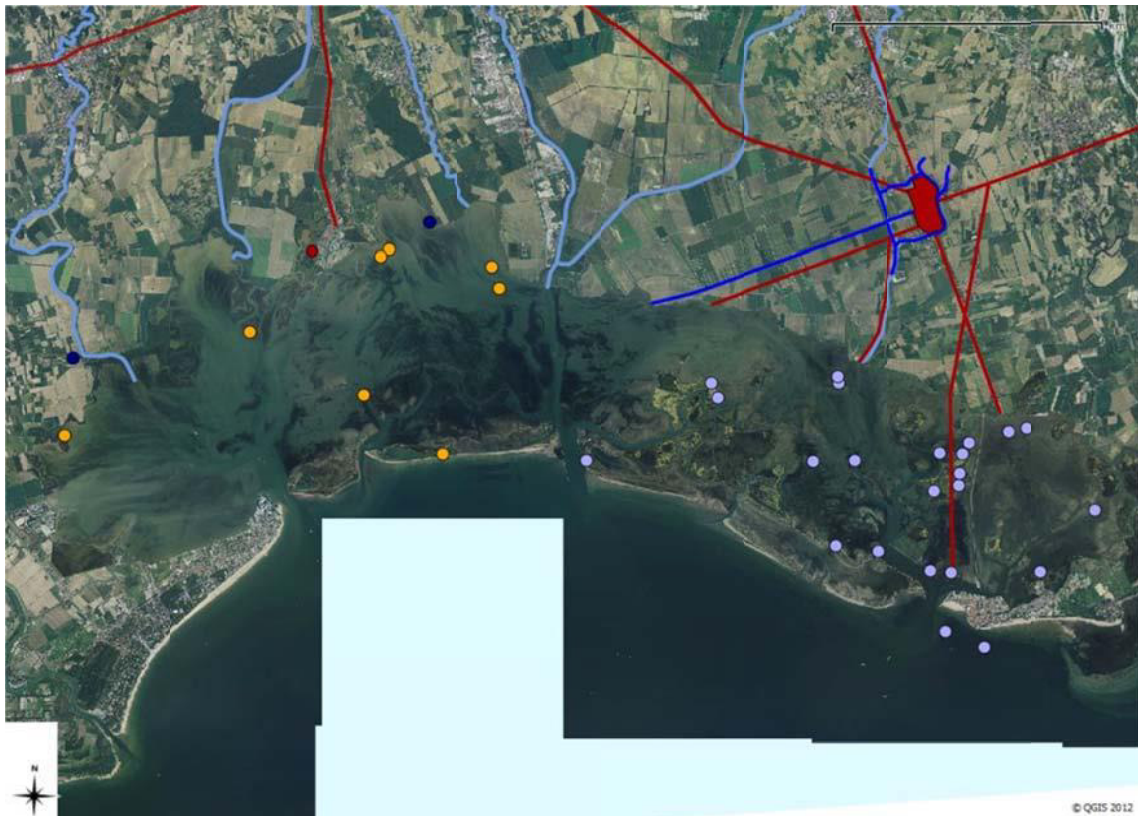


S. Bartolomeo bay: the coastal context

Important results have come from studies on sea level changes and coastal profile transformations. A negative tectonic movement (lowering of the mainland) during the post-Roman era and a general inclination (*tilting*) towards southeast-northwest, still active, were conjectured.

The **Stories from the Sea** research project, carried out by the University of Trieste and the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio), had the **lagoon** area of **Marano** as its primary area, frequented since the Neolithic age and showing a strong role in commerce supported mainly by inland waterways evident from the Iron age.

It is possible to reconstruct for the Roman era a settlement structure articulated with strategic approaches both on the islands and on the perimeter of the lagoon, which represented strategic points in close connection with the port system of Aquileia.

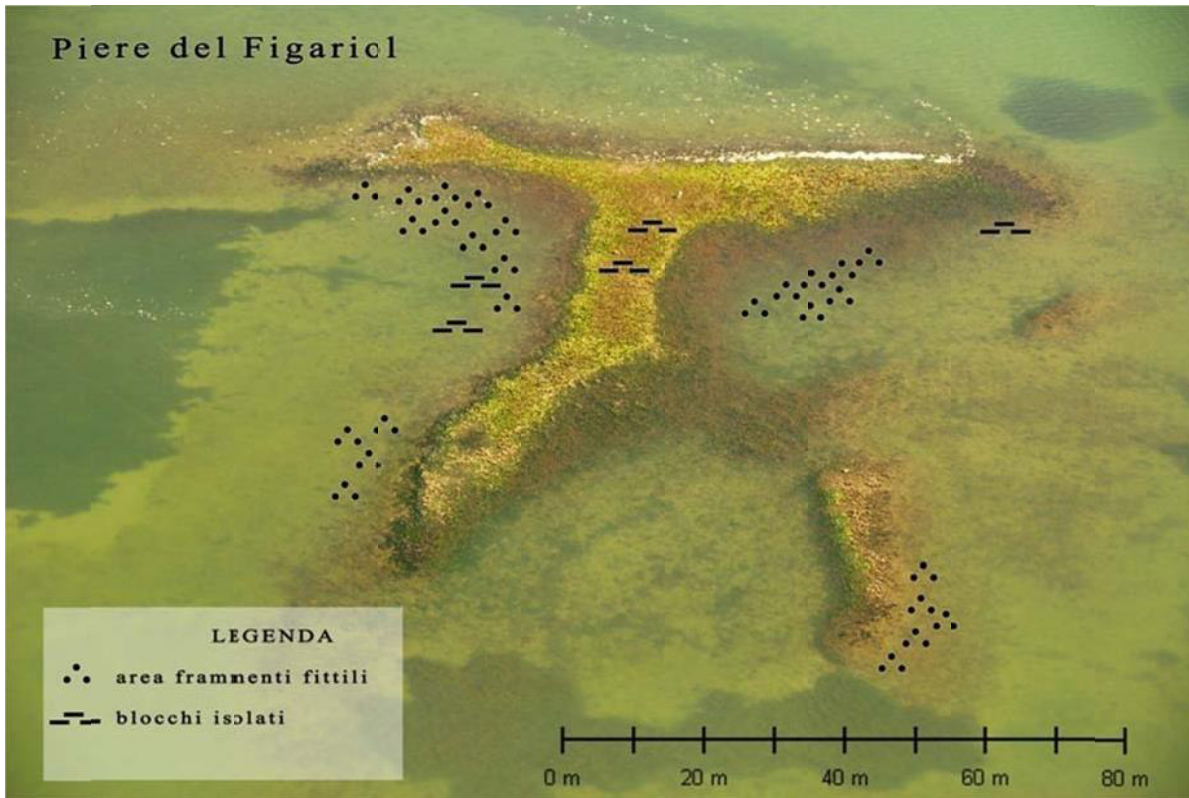


The lagoons of Marano and Grado and the port system of Aquileia

The import from different areas of the Mediterranean (food, pottery and other goods) indicates the vitality of trade flows and, together with the wrecks from the riverbeds and probably also from the lagoon, has highlighted the role of the area as a node between the routes of land, those of rivers and maritime routes.

Near the two Regional Reserves, Mouth of Stella and Vall Canal Novo, there are other archaeological sites, investigated during the Project, such as the mosaic room in **Piere d'Isela**, the ceramic archaeological materials in **Piere del Ficariol**, the complex building pertinent to

Piere del Tribel, structures and deposits of the early Middle Ages located on the island of S. Andrea, hypothetically referring to a Christian church, founded by the Patriarch Elia at the end of the 6th cent. AD.



The “lost lands”: Piere del Ficariol



The “lost lands”: Pie e del Tribel

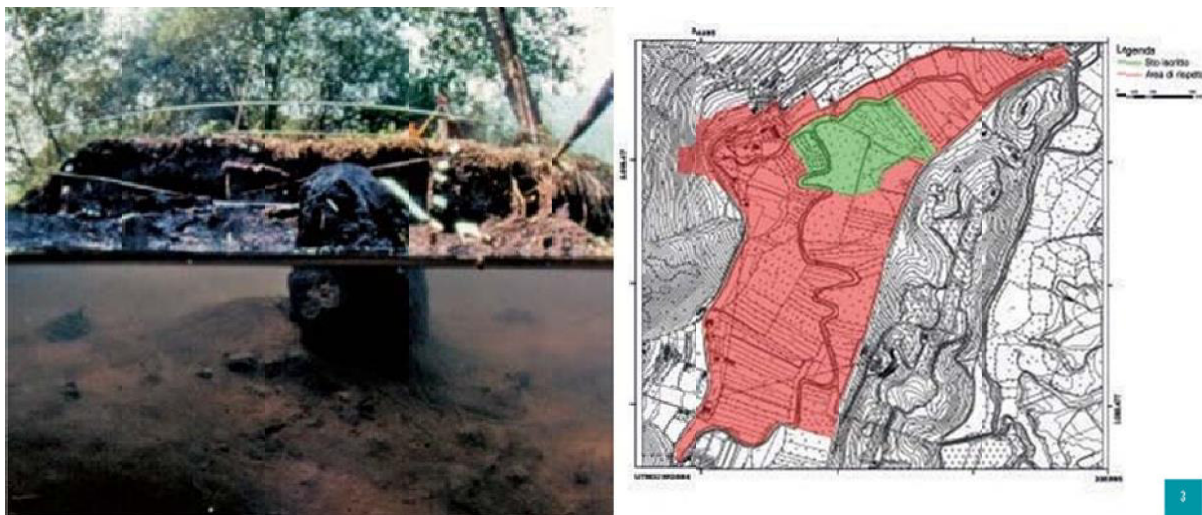
From the waters of the Lagoon also come out of context but very interesting finds, such as the medieval sword (early 11th-mid 13th century) recovered in 2011 at the island of Martignano⁷. For the **Grado Lagoon**, equally characterized by different types of settlements (for residential, cultural, funerary but above all commercial and storage purposes, sea and river ports), an organic system seems to be recognized consisting of two lines parallel to the coast: one along the littoral cord, link between the sea and the lagoon/Aquileian hinterland, consisting of a series of commercial infrastructures, warehouses and transit docks; the other, more internal, has more heterogeneous settlements, for example production plants, because it is closer to the city and the agricultural territory⁸.

⁷ Capulli, Milocco 2018.

⁸ Gaddi 2001.

Furthermore, research was mentioned in the **Stella river**, which led to the documentation of the remains of the bridge of the Via Annia, in the Municipality of Pazzolo (half, second half of the 2nd century BC)⁹.

In the wet and marshy area of **Palù di Livenza**, between the municipalities of Ceneva and Polcenigo, there is a Neolithic pile-dwelling village. The discovery of wooden poles was already known since the nineteenth century but the archaeological relevance of the site was ascertained in 1965 after the excavation of the Canale Maggiore. Since the 1980s, research coordinated by the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) has become systematic and has included geological cores, underwater surveys and archaeological surveys.



The Palù di Livenza area registered on the UNESCO list

Research has highlighted the fact that the most intense occupation refers to a recent and late Neolithic period, when the village occupied an area of about 60,000 square meters in the northern part of the basin. A new phase of research was started in 2013 and is currently underway by the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of

⁹ Capulli 2018.

Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio)¹⁰. Since 27 June 2011, Palù has been included in the series of prehistoric pile-dwelling sites in the Alpine arc of the UNESCO List. It is a transnational serial site that extends into Swiss, Austrian, French, German, Italian and Slovenian territory and includes a selection of 111 pile dwelling villages considered particularly significant among the approximately 1000 known in the Alpine area. The Italian part includes 19 locations distributed between Piemonte [2], Lombardia [10], Provincia Autonoma di Trento [2], Veneto [4] and Friuli Venezia Giulia (1) Region. The acquired data confirm the chronological horizon already known and in particular the dates obtained from two shells of charred hazelnuts indicate how frequented the chronological arc between 3950 and 3650 BC. Among the materials found in the most recent investigations there are clay pintaders, attributable to different types, ceramic pottery often decorated with plastic cords and digital hems, fragments of loom weights and a flint tools (arrowheads, blades and scratchers).

In general, research on lagoon areas and inland waters has benefited from a series of geological and geomorphological studies of fundamental importance for the reconstruction of paleo-landscapes, conducted both by the University of Trieste and by the University of Padua.

As for the **wrecks**, there are records dating back to the Roman Republican age: late Greek-Italian amphorae, from the central decades or the second half of the third century. B.C., come from a field off the coast of Grado, **Grado 2** (near the other wreck, Grado 1, entirely excavated and recovered).

¹⁰ Micheli 2017.



The Grao 2 wreck covered by metal cage and the recovery of an anchor

The load, presumably of Adriatic production, which constitutes the oldest evidence of transmarine trade in the upper Adriatic, prior to the foundation of Aquileia, has undergone a protective intervention with metal grids and will hopefully be enhanced thanks to the pilot project envisaged within the framework of UnderwaterMuse¹¹.

In the **Sdrettolo channel of the Grado lagoon**, in front of the island of Villanova, the small remains of a considerable tonnage merchantmen were spotted, dropping steeply into one of the navigable canals that led to the small internal ports of call. The few associated amphora materials, related to a Lamb. 2/Dr. 6A transition form and to Dr. 6B (two of which with the well-known *Apici* and *Rasonis Coctor* stamps), and the fragments of fine ceramic, northern Italian sigillata and black gloss pottery, date the shipwreck to the Augustan age.

Presumed traces of a similar cargo were found on the bottom of the **Mee canal**, always in the lagoon, together with a lead anchor stock, scattered¹².

¹¹ Capulli, Tortorici 2018. Tortorici 2000.

¹² See at least Gaddi 2001, 265-268.



Aquileia and the Anfoia Channel (virtual reconstruction)

Remains of one or more sewn boats come from the **Anfoia Channel**, in **Aquileia**¹³, while another example of *sutilis navis* has been identified in the final stretch of the **Stella river**, near **Palazzo**, in the Friuli plain.



Sutilis navis of the Stella river

¹³ Gaddi 2017.

The boat carried a load of building material: *imbrices* and *tegulae*, with various stamps that refer to the first half of the 1st century A.D. and to a production area which is the one immediately surrounding it. Through the river route these products reached the Adriatic sea (perhaps Aquileia) and from there the Marche, Emilia Romagna, Veneto, Dalmatian coasts, as evidenced by the distribution of the stamps. Among other things, the first imperial age, to which the wreckage was reported, sees a great demand for construction material from the new centers of the eastern Adriatic coast (Poreč, Pula, Zadar), obviously still without production facilities¹⁴. The seams seem to be found only in the keel, while the upper part of the sides is assembled with mortises and tenons¹⁵.



The Roman boat of Monfalcone

The Roman boat of Monfalcone, although found in the inland waters, on the islands that served as a diaphragm between the ancient “lagoon” of the Timavo and the sea (presently Lisert) has the planking assembled with mortises and tenons. The surviving part (coinciding with

¹⁴ Vitri *et alii* 2003.

¹⁵ Beltrame 2001, p. 444; Capulli 2018, with bibliography.

almost all the careen) has recently been subjected to an instrumental survey and a study by the University of Udine for the 3D modeling ¹⁶.



The Grado 1 wreck

The cargo of the **Grado 1** wreck is emblematic in the perspective of redistribution, reuse and short-and-medium-haul circulation. The boat, armed or rented by the owner of a workshop for fish processing, transported fish sauces and preserves, the latter in containers of various origins, reused. These are in fact Aegean amphorae (type Knossos A / 53 and a specimen of Cnidia amphora) and North African (Tripolitana I, Africana I and earlier), but also Italic (at least two specimens of amphora from Forlimpopoli and Dr. 21-22) and northern Italian fish amphorae (Grade 1 form), containing, according to the *tituli picti, garum*, probably of Aquileian production¹⁷. The boat also carried other recycled material: fragments of glass pottery, in a wide variety of shapes and sizes, which, constipated inside a barrel, were intended for recasting¹⁸.

¹⁶ Bertacchi, Bertacchi 1988; Capulli 2011.

¹⁷ Auriemma 2000; Auriemma, Pesavento Mattioli 2009; Auriemma 2016; Auriemma, Maggi 2017.

¹⁸ See also *Iulia Felix* 1999; Mandruzzato 2017.

We also report the presence of an underground wreck dating back to the Middle age (XI-XIII cent.), that of **Precenico**, excavated and recovered in 2014 in an area that was once a floodplain. The boat was of a particular type: *bottom-based* with the use of asymmetrical floors in “L” shaped, alternate¹⁹.



The Precenico wreck

The modern age is represented by a well-known deposit, the **wreck** of the **brick Mercure** (see Veneto report), while various testimonies refer to the two world wars: the first remains of the **battleship Wien**, a Monarch-class battleship of the Navy of the Austro-Hungarian Empire, sunk by Mas of Luigi Rizzo on the night of December 10, 1917, while it was anchored in the bay of Muggia, with 33 crewmen. During the 1925 the bow ram and the part of the stern with the name of the battleship were recovered from the wreck, and are actually preserved in the Vittoriale Museum and in Naval History Museum of Venice.

The underwater survey, conducted on the occasion of the exhibition “*In the sea of intimacy*”, verified the presence of the remains where it was sank, less than half a mile away from the Ferriera of Servola and about 20 m deep²⁰.

¹⁹ Capulli 2018.

²⁰ Spirito 2017a.



Recovery of the B24 tail flap

The **B24 bomber**, which lies at the bottom of the sea off Grado, was part of the 716th Bomb Squadron, stationed at Grottaglie airport, in Taranto. The aircraft was hit on February 28, 1945 by the anti-aircraft during a raid on the skies of Bressanone, but managed to reach the Gulf of Trieste attempting a desperate sea landing. None of the eleven crew members survived the crash. The bomber wreck, discovered in the eighties, was identified in the 2013 on the base of information provided by the researcher Freddy Furlan and following recovery of the tail flap, displayed at the exhibition “*In the sea of intimacy*” and after that, in the visitable galleries *Kleine Berlin* of Trieste²¹.

Among the various types of boats identified in Grado lagoon or in the waters in front²² there is the wreck of an armed pontoon of the Italian Royal Navy (c.d. “maona” for the defence of the lagoon) near **Punta Sdobba**²³ and the wreck of the **trabaccolo** of the flotilla engaged in the First World War during the **Operation Aquädukt**, the system of convoys that left from Trieste and crossed the gulf to supply the Austro-Hungarian troops in the first line of the low

²¹ Spirito 2017b.

²² D. Gaddi, Modern wrecks in Grado, report to the international conference “*Underwater archeology of the Adriatic and Ionian seas. Research, protection and enhancement of wrecks*”, Grado 2010 (not published in the Acts).

²³ <https://ilpiccolo.gelocal.it/trieste/cronaca/2017/06/03/news/grande-guerra-relitto-di-un-pontone-armato-trovato-nel-golfo-di-trieste-video-1.15437259?ref=search>.

Piave river. The boat carried one 15cm marine cannon L/40 with its accessories and ammunition. The trabaccolo sank in November, 1917, due to a sudden storm²⁴.

²⁴ <https://ilpiccolo.gelocal.it/trieste/cronaca/2018/02/06/news/bonifica-sul-relitto-dell-operazione-aquadukt-1.16442403?ref=search>.

1.d. Overview of the museums or of the most important or most recent exhibitions dedicated to this heritage

The Regional Museum Center includes:

- **the National Underwater Archaeological Museum of Grado**, started 30 years ago but never opened, which should house the hull and the cargo of the wreckage of Grado 1, wholly recovered, and other materials coming from the maritime and inland waters of the Region²⁵.



The "Terre di mare" exhibition hosted in the rooms of the Grado museum

- **The National Archaeological Museum of Aquileia** houses remains coming from contexts of the river port, the Monfalcone boat (currently cannot be visited continuously due to the restoration operations to which the boat was subjected) and some Roman anchors; unfortunately there isn't a section dedicated to the river archaeology.

²⁵ Auriemma, Beltrame 2014.



The National Archaeological Museum of Aquileia

- **The Maritime Museum of Trieste** exhibits one of the richest collections of the Mediterranean basin. For that reason the Trieste Municipality moved the Museum in the old venue of via Campo Marzio - Porto Vecchio inside the Magazzino 26. The construction works for the new museum are still ongoing, but the section dedicated to the Lloyd collection, the shipping company that marked Trieste's seafaring history, is already open in the permanent exhibition "*Lloyd. Deposito a vista*". A thousand objects, including ship models, publications, charts and nautical instruments, silver and porcelain, are currently in the large spaces of Magazzino 26 to tell the story of the company and its fleet, but also life on board large cruise ships, between lunches and entertainment.



**The Maritime Museum of Trieste in the Magazzino 26 and
the permanent exhibition *Lloyd – deposito a vista***

- The **Archaeological Museum of Marano lagoon** (fb *Museo Archeologico Laguna Marano*; http://www.ipac.regione.fvg.it/asp/ViewProspIntermedia.aspx?tsk=MCF&idSc_heda=187&idAmb=120&idstem=1&tp=vMap&idMenu=845), established in 2007 near the Civic Center of Marano, preserves and enhances contexts and objects coming from the Marano lagoon. After a decades-long work of collecting ancient objects, coming from occasional recoveries and underwater surveys in the Marano and Grado lagoons, and moreover along the line behind coast and inside the Stella river, more than 500 objects enriched the collection of the museum.

Following the projects above, some exhibitions and workshops started:

- The traveling exhibition “*Terre di Mare – Obmorske dežele*”, (*AltoAdriatico* Project: Trieste 2007, Grado, Portorose, Ljubljana, Nazionale Museum, 2008);
- The exhibition “*Alle porte del mare. Paesaggi d’acqua e di storia nella laguna di Marano*”, (*Stories from the sea* Project: Marano, old fishery, 1st September – 3rd November 2013);
- The traveling exhibition exhibited the results of the researches on the brick *Mercure*: “*Il relitto del Mercurio. Archeologia marittima in alto Adriatico*” (Lignano and Grado, 2010 - Ca’ Foscari University);
- The international, multidisciplinary and diachronic exhibition “*In the sea of intimacy. Underwater archaeology tells the Adriatic*”, devoted to the memory of Predrag Matvejević (Trieste, December 17, 2017 – May 1, 2018), promoted by ERPAC - Regional Agency for Cultural Heritage of the Friuli Venezia Giulia Region and by Municipality of Trieste, in collaboration with 60 Italian and foreign partners, who offered, in an overview, about a thousand finds coming from the numerous submerged sites and lent for the occasion by Italian, Croatian, Slovenian and Montenegrin museums.

1.d. Policies for the regional UCH

- ***management***

The underwater cultural heritage of the lagoons and the sea of Friuli Venezia Giulia is under the management and jurisdiction of the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio).

- ***legislation/regulations***

- C.P.C.M. 3763/6 del 20.04.1982 (Circolare Spadolini)
- Framework law of 6 December 1991 on marine protected areas
- DPR 554, 1999 or regulation of Merloni law
- Codice dei Beni Culturali DL 42, 22/01/2004 e s.m.i.; Art. 10, comma 4, i) Ships and floats having artistic, historical or ethno-anthropological interest
- UNESCO Convention 2001. Convention of the protection of the Underwater Cultural Heritage = L.n. 157, 23 ottobre 2009. *Ratification and execution of the Convention on the Protection of the Underwater Cultural Heritage, with Annex, adopted in Paris on November 2, 2001, and rules for adapting internal regulations*
- Faro Convention 2005
- DM 244/2019

- *protection, accessibility and valorisation (in situ and/or through VR/AR)*

No itineraries or underwater parks have been set up in the region for the use of evidence along the coast line, even if the *AltoAdriatico* and *Stories from the sea* projects have provided for the enhancement of some of the contexts investigated, both in the Muggesano area (piers of Punta Sottile N, Punta Sottile SW, Punta Ronco, Molere of S. Bartolomeo, etc.), and in the Marano Lagoon.

None of the marine deposits mentioned is currently accessible or usable *in situ* or remotely, except for *Mercurio*, whose materials are exhibited in the Museum of Caorle (see Veneto report).

The *Grado 2* shipwreck was involved in an *in situ* protection project through a video surveillance system on the seabed and on the surface, studied by the University of Udine but never realized, and in a protection intervention with metal grids applied on a portion of 32 sq.m., which was also to allow accessibility²⁶. Actually, to date, use of the site is not possible, which should hopefully

²⁶ Capulli 2018.

be guaranteed by the interventions foreseen within the UnderwaterMuse project, with the extension of the modular grid system to the entire field and to the structuring of the related services²⁷.

The late-Neolithic pile-dwelling site of **Palù di Livenza** is one of the ecomuseum cells of the Regional Ecomuseum of the Dolomiti Friulane – Lis Aganis, enhanced through visits and dedicated publications, in concert with the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio)²⁸.

²⁷ Auriemma et al. c.s.

²⁸ Micheli 2013; Micheli 2017; Micheli et al. 2018; Micheli et al. 2019.

2. Data collection

- number and compiling level of the questionnaire

Only 10 questionnaires out of 38 have been compiled.

- categories of replaying stakeholders

6 different categories were distinguished:

1. **Public / regional authorities/bodies:** 3

Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio); Grado-Civil Protection (Protezione Civile); WWF-MPA Miramare.

2. **Cultural Institutions:** 1

Museums Department of Friuli Venezia Giulia (Polo Museale Regionale FVG – MiBACT).

3. **Interest groups including NGOs:** 3

Center of Altoadriatic Antiquities-Centro di Antichità Alto Adriatiche, Aquileia; Diving club Trieste (CST); Aquileia Foundation (Fondazione Aquileia).

4. **SMEs**

Deepdiving Udine; Gradesesub; Maniago sub; Tursub-dive project.

1. **Underwater Cultural Heritage significance assessment**

Stakeholders agree on the high value and historical, archaeological significance of the underwater cultural heritage.

2. **UCH status of knowledge**

Only a few of those questioned, in particular a technician employed in the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage (Soprintendenza Archeologia Belle Arti e

Paesaggio) and one from the Civil Protection, know some of the technological tools used in underwater archaeology.

The known tools are Site Recorder, GIS, catalogues, maps, Rov, mini Rov, scuba drones, Laser Scanner; someone quotes the non- technological oral reports. In a particular case, the knowledge is specific of the environmental topic (WWF- Miramare Marine Protected Area). Five stakeholders have no answer.

In the opinion of the stakeholders, maps and GIS have been implemented by the Conservation Office for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) and by University, but wrongly also by Military Navy (the Navy does not deal with mapping archaeological sites) and, exclusively for the environment, by Miramare Marine Protected Area.

In their opinion, the data is not easily accessible and eventually not open.

3. UCH *in situ* valorization and accessibility

Stakeholders agree with the first rule of the UNESCO Convention, provided that the *in situ* conservation can guarantee the effective protection and conservation of the underwater site.

a. Archaeological parks, Blue trails e AMP

There are no archaeological parks in the region, but some diving point of archaeological interest, such as 2 shipwrecks off Grado, some other points along the coast (porto Buso, sources of the Timavo) and in the south east of the gulf of Trieste. There is a well-known protected sea area, the Miramare Marine Protected Area, and some other area of naturalistic interest, such as Dosso di Santa Croce, Foce Isonzo, Val Cavanata.

While there is someone who mentioned 15 blue trails, not clarifying the names, the diver of the Trieste Divers Club (who showed a deep knowledge of the area) said that there is a project for a blue trail in the Area of Dosso di Santa Croce.

b. Diving / snorkelling

Half of the stakeholders say that the available underwater sites are accessible by diving and half with snorkeling. Only one said that it is possible with both techniques.

c. Web sites

The range goes from 1 (inadequate) to 5 (optimal). Two answers, value 1; two answers, value 2; one answer, value 3; two answers, value 4; the rest gave no answer. In conclusion, we could say, based on these values and other responses to the questionnaire, that the valorisation and promotion of UCH through the information on the website is inadequate.

d. Diving

There is a little awareness on the subject. Knowledge of submarine routes with cages, tablets or panels in Friuli Venezia Giulia is really poor (only a stakeholder knows something about the existence of cages on the Grado wreck and has ideas about that).

Responses from stakeholders on specific diving authorizations or licenses are general; on the possibility of diving with people with disabilities, they generally say that it is not allowed (only in one case the stakeholder cited a trail on the Muggesana coast and by Strugnano).

4. UCH Virtual Reality /Augmented Reality valorisation

Stakeholders consider digital technology attractive to the public and important for the enhancement of cultural heritage, but knowledge about VR/AR is really scarce. In fact, they consider VR/AR not easy to follow.

5. UCH Museum and exhibition valorisation

Stakeholders have some information on the Archaeological Museum of the Sea of Caorle (only two stakeholders, and, most important thing, Caorle is not in our region) and on the

National Museum of Underwater Archaeology of Grado (three stakeholders), not available yet; Marano Lagoon Museum (only one stakeholder). We could consider that the exploitation and dissemination of information on VR/AR in underwater archaeology does not always reach the public.

Some exhibitions have been held over the past ten years and the best known is “In the sea of intimacy”; then “Stories from the sea”.

The marine park and the exhibition on the biological object are mentioned, but they are actually out of the question.

6. UCH protection

a. Authority / body

The authorities responsible for UCH protection are Conservation Offices for Archaeology, Fine Arts and Landscape Heritage of Friuli Venezia Giulia (Soprintendenza Archeologia Belle Arti e Paesaggio) and Port Captaincy.

b. Regulations

Most of the stakeholders know the regulations active in our country.

c. Measures

Most stakeholders believe that access is compatible with the protection of underwater archaeological sites.

7. UCH vulnerability assessment

Stakeholders are aware that underwater research and excavations could damage cultural heritage and its ecosystem if these are not carried out following the correct evaluation and method. The underwater archaeological heritage could also be damaged by tourist access, if the tourist himself is not specially trained or if access is not managed suitably. Fishing is also dangerous for underwater archaeological sites.

8. UCH local involvement

Stakeholders identified the local actor to be involved, as institutions, universities, museums, research centres and diving centres. In addition, stakeholders favourably considered the use of social media and suggested local events, awareness-raising campaigns on cleanliness, involving schools, universities, etc., organizing exhibitions, seminars and festivals as the best communication channels.

9. UCH fundraising

The answers are generally empty. Two stakeholders mentioned the *art bonus* and another said, wrongly, that anyone can donate money through the Ministry of Culture (MiBACT). In fact, there is no possibility to donate funds directly to the Ministry, but rather to participate in projects by supporting them economically.

10. UCH management

As regards management, there is a slight confusion regarding the roles of the various authorities in charge. According to the stakeholders, the underwater cultural heritage is managed and regulated by the legislation of the authorities and public bodies such as the Ministry of Cultural Heritage (MiBACT) and the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage (Soprintendenza Archeologia Belle Arti e Paesaggio), as well as by the Port Captaincy. In reality the Port Captaincy take care of regulating activities at sea, especially from the point of view of operational safety, but they do not deal absolutely with UCH management and the laws that regulate it.

Only if the management is conducted with the best valorisation practises, say the stakeholders, could the UCH be truly compatible with the public access. A stakeholder cited the positive example of Egadi Island and the negative example of Grado Museum.

11. Underwater tourism context and sustainability

Alternative tourism is highly appreciated by divers and the public, who love to visit archaeological sites with the guidance of archaeologists or ad hoc trained people. Snorkeling is considered much more accessible than diving.

3. Heritage community awareness

From the interpretation of the data derived from the screening of the completed questionnaires we can draw some interesting conclusions.

The stakeholders interviewed replied in a percentage between 26 and 27% (10 responses out of 38 interviewed).

All assertively and concisely state that UCH has a significant meaning; someone goes so far as to say that the cultural heritage also extends to the eras closest to ours, demonstrating a knowledge of the updates related to the archaeological discipline or at least an uncommon sensitivity. The same maintains that underwater research is important in all fields of science (geology, biology etc), not only in the archaeological one. In addition, he gives the underwater heritage an emotional value.

As for UCH knowledge, 50% of the stakeholders do not respond or do not know, while the remaining 50% know it through specialized publications, GIS, instrumental surveys, but also through the oral transmission of local enthusiasts.

According to the stakeholders, the bodies responsible for the production of publications and maps are the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage (Soprintendenza Archeologia Belle Arti e Paesaggio), the University, but also the Navy (we have already explained the inconsistency of this answer). In this regard and in general on each topic dealt with, the WWF contact person, questioned through the questionnaires, provides answers exclusively in the biological field, effectively excluding what is at the heart of the questionnaire.

All respondents are in favor of the enhancement of submerged archaeological sites; 2 declare that they do not know any site, trail or area of interest; 1 cites them only numerically, without specifying which ones they are.

In particular, the following are mentioned: the two wrecks off the coast of Grado; some minor archaeological sites along the coast (Porto Buso, the sources of the Timavo, piers and artifacts from the Roman era, fish ponds) and along the Istrian coast (Slovenia and Croatia) in addition to the southeast portion of the Gulf of Trieste. Among the protected marine areas, Miramare is mentioned by all, while few others mention the Areas of Naturalistic Interest, such as Dosso di Santa Croce, Mouth of the Isonzo, Val Cavanata. Also in this, as in the case of the recognition of the protection authorities, some confusion is created in the responses. In fact, areas of simple naturalistic interest are listed among the protected marine areas.

As for the authorities that supervise the protection of cultural heritage, 50% of the stakeholders answer Ministry of Cultural Heritage (MiBACT) and the Conservation Offices for Archaeology, Fine Arts and Landscape Heritage (Soprintendenza Archeologia Belle Arti e Paesaggio), thus demonstrating a minimum knowledge of the current legislation. Someone, mixing the roles as already clarified above, also mentions the Port Captaincy Office, the Ministry of the Environment, as well as the body responsible for safeguarding the Miramare Marine Protected Area, the latter two obviously for issues relating to biological aspects.

The local museums (Trieste Sea Museum, Trieste Aquarium, National Museum of Underwater Archeology of Grado, Marano Museum) are well known by the stakeholders who deal with or interact with them (Museum Department and Aquileia Foundation), while only one sport diver has a good knowledge of local realities. In a couple of cases, the National Museum of Archeology of the Sea of Caorle is mentioned, a sign of the good resonance that the opening of the structure has had, but also a symptom of the confusion found in some questionnaires where the stakeholders provided non-adhering answers to the question (others, for example, have mentioned museums in other parts of Italy or Croatia).

As for virtual enhancement, 3 of the 10 respondents do not answer, while 3 know no examples, but consider it attractive; finally 4 stakeholders know examples and on the basis of these they can affirm that it is attractive, even if not always understandable. In essence, it seems to understand that on this front there is not yet much awareness.

The submerged archaeological parks are unknown by 7 out of 10 stakeholders, obviously because they do not actually exist; 1 stakeholder says he knows 1, without specifying which; another cites marine protected areas; finally, one last refers to the sites listed in the orders of the Port Captaincy Office. Also in this case the protection is sent back to Conservation Offices for Archaeology, Fine Arts and Landscape Heritage (Soprintendenza Archeologia Belle Arti e Paesaggio) and in one case to the Port Captaincy Office. The confusion already clarified above is confirmed once again.

On accessibility to the sites, 50% answer yes, the sites are accessible, while the other 50% do not respond. In general, all stakeholders believe that the sites are vulnerable, but that, if carried out with due precautions, the research or use can be compatible with the conservation of the archaeological site.

Most of the stakeholders know the bodies involved in different ways and levels in the management of UCH and some of them, moreover, recognize themselves in this role.

The most suitable communication channels for raising citizenship about the cultural theme are social media, but also exhibitions, conferences, festivals, beach cleaning campaigns.

Websites or social networks are not known, except, in two cases, on the Facebook site of Archeomar and on the sites of underwater associations and scientific bodies that deal with the underwater biological heritage.

Underwater tourism is mostly seen in a positive way, even if it must be managed responsibly. It is tourism for a few, as it requires the relative patents, but it can be for many if conducted in snorkeling gear.

In conclusion, the stakeholders who replied to the questionnaire, in rare cases demonstrated their knowledge of the area and its heritage, but in general they communicated an affection and interest in the matter that must certainly be nourished and encouraged, even with the use of modern technologies, at the moment still too little used.

References

Alle porte del mare. Paesaggi d'acqua e di storia nella laguna di Marano, 2013, Catalogo della mostra, a cura di R.Auriemma e P.Maggi, Trieste.

Auriemma R., 2000, Le anfore del relitto di Grado e il loro contenuto, "Melanges de l'Ecole Francaise de Rome. Antiquité" 112, 1, 27-51.

Auriemma R., 2016, *Fish and ships: la filiera del pesce nell'Alto Adriatico in età romana*, in *L'alimentazione nell'Antichità*, a cura di G.Cuscito, "Antichità Altoadriatiche" 84, 475-497.

Auriemma R., Pesavento Mattioli S., 2009, *I titoli picti delle anfore di Grado*, in *Olio e pesce in epoca romana. Produzione e commercio nelle regioni dell'Alto Adriatico*, Atti del Convegno (Padova, 16 febbraio 2007), a cura di S.Pesavento Mattioli, M.B. Carre, Padova, 275-280.

Auriemma R., Beltrame C. 2014, *Il museo di archeologia subacquea di Grado. La storia senza fine (?)*, in "L'Archeologo Subacqueo" XX, 18-19.

Beltrame C., Gaddi D., 2005, *The Rigging and the Hydraulic System of the Roman Wreck at Grado, Gorizia, Italy*, in "International Journal of Nautical Archaeology" 34, 1, 79-87.

Beltrame C., Gaddi D., 2007, *Preliminary Analysis of the Hull of the Roman Ship from Grado, Gorizia, Italy*, in "International Journal of Nautical Archaeology" 36, 1, 138-147.

Beltrame C., Gaddi D., Parizzi S., 2011, *A presumed Hydraulic Apparatus for the Transport of Live Fish Found on the Roman Wreck at Grado, Italy*, in "The International Journal of Nautical Archaeology" 40, 453-478.

Capulli M., Castro F., 2016, *A preliminary report of recording the Stella 1 Roman River Barge, Italy*, "International Journal of Nautical Archaeology" 45,1,2016, 29-41.

Capulli M., 2018, *Anaxum Project, archeologia e storia di un paesaggio fluviale: ricerca e didattica*, in M. Capulli (ed.), *Il patrimonio culturale sommerso. Ricerche e proposte per il futuro dell'archeologia subacquea in Italia*, Udine, 303-316.

Capulli M., Molocco A. 2018, *Una spada medievale dalle acque dell'Isola di Martignano*, in M. Capulli (ed.), *Il patrimonio culturale sommerso. Ricerche e proposte per il futuro dell'archeologia subacquea in Italia*, Udine, 111-118.

Capulli M., Tortorici E. 2018, *"The preservation in situ" come opzione prioritaria. Sperimentazioni sul relitto Grado 2*, in M. Capulli (ed.), *Il patrimonio culturale sommerso. Ricerche e proposte per il futuro dell'archeologia subacquea in Italia*, Udine, 89-96.

Gaddi D. 2017, *Imbarcazione cucita*, in P. Maggi, F. Maselli Scotti, S. Pesavento Mattioli, E. Zulini (a cura di), *Materiali per Aquileia. Lo scavo di Canale Anfora (2004-2005)*, Scavi di Aquileia IV, Trieste, 443-447.

Maggi P., 2017. *Titoli picti su anfore di produzione adriatica dallo scavo di Canale Anfora*, in *Voce concordi*. Scritti per Claudio Zaccaria, a cura di F. Mainardis, "Antichità Altoadriatiche" 85, 423-438.

Micheli R., (ed.) 2013, *Vivere sull'acqua. Il mondo delle palafitte neolitiche di Palù di Livenza*, EcoMuseo Lis Aganis, Quaderni del fare 3, Roveredo in Piano.

Micheli R., (ed.) 2017, *Il Palù di Livenza e le palafitte del sito UNESCO: nuovi studi e ricerche*, Pagine dall'ecomuseo 17 - Percorso acqua. Maniago (PN), ISBN 978-88-97377-11-5.

Micheli, R., Bassetti, M., Degasperi, N., Fozzati, L., Martinelli, N. & M. Rottoli, 2018, *Nuove ricerche al Palù di Livenza: lo scavo del Settore 3*, in Borgna, E., Cassola Guida, P. & S. Corazza (eds.), *Preistoria e Protostoria del Caput Adriae*, Studi di Preistoria e Protostoria 5, 481-490, Firenze.

Micheli, R., Bassetti M. & N. De Gasperi, 2019, *Nuove indagini e prospettive della ricerca nella palafitta preistorica del Palù di Livenza*, Quaderni Friulani di Archeologia XXIX, 37-48.

Terre di mare. L'archeologia dei paesaggi costieri e le variazioni climatiche, 2008, Atti del convegno internazionale di Studi (Trieste, 8-10 novembre 2007), a cura di R.Auriemma, S.Karinja, Trieste-Pirano.

Toniolo A., 2007, “...pallentia solphurata fractis permutat vitreis...” *Il carico di rottami di vetro del relitto di Grado*, in *Il vetro nell'Alto Adriatico*, Atti delle IX giornate Nazionali di Studio (Ferrara 13-14 dicembre 2003), a cura di D.Ferrari, A.M. Visser Travagli, Imola, 57-69.

Tortorici, E., 2000, *Un nuovo relitto di età repubblicana dal mare di Grado*, in AA.VV. *Archeologia delle acque*, Anno II n. 4, La Spezia, 91-98.

Vitri S., Bressan F., Maggi P., Dell'Amico P., Martinelli N., Pignatelli O., Rottoli M., 2003, *Il relitto romano del fiume Stella (UD)*, in *L'Archeologia dell'Adriatico dalla Preistoria al Medioevo*, Atti del Convegno Internazionale (Ravenna, 7-9 giugno 2001), a cura di F.Lenzi, Firenze, 324-338.

D 3.2.2

REGIONAL STATUS QUO ANALYSIS

Veneto Region

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1. General premises and state of art

1.a. The UCH in the region: brief history of the research

The first activities of research on the underwater cultural heritage begun between the end of the '70s and the beginning of the '80s. In that period, a team of the amateur diving club Sub San Marco of Venice was very active in the exploration and documentation of archaeological sites both in the lagoon and in the sea of Venice. Many were the researches in the shallow channels of the northern lagoon (such in the site of the Early Medieval submerged island of Costanziaco), in the inland waters of the Veneto region (Bacchiglione river) and off the Lido, such as on the “Glass wreck of Malamocco”. The activity of this diving club, initially coordinated by Antonio Rosso, who followed also the reporting of the amateur archaeologist Ernesto Canal, continued between the '80s and the '90s under the coordination of Giuliano Mognato exploring an area of wreckage off Alberoni, close the site of the “Glass wreck”, where some objects of Roman period were recovered. In that period, the “Ceppe wreck” of the harbour of Malamocco and the “Bricks wreck” of the Lido were also discovered.

The intense activity of the amateurs in Veneto has brought also to the introduction of courses for the training of divers in documentation in underwater archaeology (OTAS, Operatore Tecnico per l'Archeologia Subacquea, as in A. Rosso's definition).

The establishment of the STAS office of the Ministry of Culture, specialized in the management of the UCH, allowed the first activities contracted to private companies by the state. The Roman tower of the Canale San Felice and the “Glass wreck” were excavated by the STAS and the local Soprintendenza, through Idra Srl company, and an exhibition about the site was organized in Palazzo Ducale.

In the '90s, the activity of the Soprintendenza begun more and more intense, but this was more an activity of control and rescue archaeology than of research. The activity in the lagoon was mainly

carried out by the Magistrato alle Acque, through the Consorzio Venezia Nuova, during public works, while the activity in the sea was reduced at some short investigations (the wreck of Eraclea, the “Brick wreck”, the “Caorle 1” Roman wreck). The management of the underwater heritage was carried out by a special office of the Soprintendenza per i Beni Archeologici del Veneto, the NAUSICAA directed by Luigi Fozzati in Venice.

The most important discovery during the activity of NAUSICAA was of course the *Galea* and the “*rascona*” of the submerged island of San Marco in Boccalama, which were found during the activity of control of the Magistrato alle Acque-CVN along the channel Malamocco-Marghera in the southern lagoon. The site was excavated and documented but the two wrecks were buried for their protection (Fig. 1).



Fig. 1. The excavation of the S. Marco in Boccalama shipwrecks, on the left, and *rascona* shipwreck on the right (photos from A.a.V.v., 2003, *La Galea ritrovata. Origine delle cose di Venezia*, Marsilio, Venezia).

With the beginning of the works to build the MOSE, in the three entrances of the lagoon, it was necessary to carry out an extraordinary project of preventive underwater archaeology to explore these areas and eventually recover the archaeological evidence. It was carried out a systematic

research with side-scan sonar and magnetometer and every target was verified through divers. This long activity allowed the recovery of many iron anchors and the identification of the following wrecks: “Molo Sud wreck” (fig. 2), *Croce Rossa* wreck, “Rocchetta wreck”, “Ceppe wreck”, “Tubes wreck” (already known), in the entrance of Malamocco; two wrecks with a cargo of stones in the entrance of Lido. Each wreck was excavated and recovered when possible, while the *Croce Rossa* vessel was covered with a protective system made by sand, geotextile and small stones and the “Molo Sud” and “Rocchetta 1” were both moved and buried close the last one, beneath the seabed of a protected area near the newly built reef. Unfortunately, these operations have removed any trace of archaeological evidence in the area of the three entrances, so the wrecks are now either recovered and stored or buried and not visible underwater anymore.



Fig. 2. The Molo Sud shipwreck during the recovery (photo: C. Beltrame).

In 2001 the *Mercurio* wreck was discovered by a fisherman off Punta Tagliamento. The wreck was investigated in the same year by the Soprintendenza and from 2004 till 2011 it was the object of a project of research carried out by the Università Ca' Foscari. The site, which has been partially excavated, is now protected with sandbags and only partially visible.

In this last years, after the reform of the Ministry of the Culture, the UCH of the lagoon and of the sea of Venice is under the management of the Soprintendenza Archeologia, Belle Arti e Paesaggio of Venice while the sea north of the province of Venice is controlled by the Soprintendenza Archeologia, Belle Arti e Paesaggio per l'Area Metropolitana di Venezia e le Province di Belluno, Padova e Treviso.

The museum of Caorle (Museo di Archeologia del Mare) is now managed by the Polo Museale del Veneto.

1.b. The submerged sites of the region

Lagoon of Venice

Early Medieval boat of the Canale Passaora, near Sant'Erasmus island, discovered in 2004. It is a small boat sunk or abandoned in the channel, of which only a few elements of the bottom are preserved. The boat is still *in situ* (Medas, 2009).

Galea and Rascona of S. Marco in Boccalama, in the southern lagoon. They are a galley and a flat-bottom boat for riverine navigation reused at the beginning of the 14^o century as waterfronts in the, now submerged, island of San Marco in Boccalama which was a monastery. The galley is, of course, one of the most important wrecks in the world since it is the only Medieval galley we know; the *rascona* is a precious testimony of the navigation from the rivers to the lagoon. The level of conservation of the hulls is very high (D'Agostino, 1998; A.a.V.v., 2003; Beltrame, 2003; D'Agostino and Medas, 2003).

Torrione San Felice. It is a base of a big tower of the Roman period, made in *sesquipedali* bricks, in the Canal San Felice, northern lagoon. It is submerged and partially silted in the mud (D'Agostino and Medas, 2005; D'Agostino and Medas, 2010).

A Roman fragmented pier and a cistern near Ca' Ballarin, northern lagoon. The cistern is a very well-preserved structure made with *sesquipedali* bricks to collect water which could work as the Venetian cisterns of later period. The structures are still *in situ* although the cistern was restored after it collapsed (D'Agostino and Medas, 2005; D'Agostino and Medas, 2010).

Sea of Venice

Along the shores of the Ospedale al Mare and the Alberoni beach, in the Lido, a lot of fragments of sewn boats have been found and recovered in different periods. They are evidence of at least two ships built with a technique used in the Roman and Early Medieval periods. The Alberoni

finds are dated, by C14, in the 1-2^o century AD (Beltrame, 1996; Beltrame, 2001; Beltrame, 2002; Capulli and Willis, Asta, 2014; Willis and Capulli, 2018).

Off the coast the following wrecks are present:

Wreck of the “bricks”. It is a coherent cargo of bricks of presumed late Medieval period lying on a sandy bottom at 18 meters of depth at 6 miles off the Lido. The site has been only preliminary investigated (D’Agostino, 1998).

“Glass wreck”. It is a scattered wreck, lying close to the shore of Alberoni, composed by many iron tools, two iron swivel guns, iron anchors (Molino et al., 1986; D’Agostino, 1998; D’Agostino, 2008). In the same sites, two small bronze statues and a possible military sign of presumed Roman period have been recovered. The blocks of raw glass and the blocks of raw iron found together could be also Roman (Beltrame, pers. inf.) (fig. 3).



**Fig. 3. Possible military sign of presumed Roman period from the “Glass wreck”
(photo: Giorgio Merighi)**

Hellmuth shipwreck. The ship of a 19th century brig sunk due to bad weather on the 19th November of 1860 trying to entering in the port of Venice and lies now in shallow water close the southern pier of Lido and the shore of San Nicoletto (Fozzati, 2002). Its big stern rudder was recovered and exposed in the museum of Caorle.

Croce Rossa wreck. Called also *Guns Wreck*, lies in the sea bottom half a nautical mile from the shore of Pellestrina, outside the inlet/harbour canal of Malamocco. The wreck is about 40 meters long, but it reaches more than 50 meters with the scattered elements. Next to the hull also the rudder blade is preserved. Many finds have been discovered in the bottom of the hull, mostly on-board equipment, rigging, weapons and munitions, as well as part of the ballast. Archive documents allow identifying the wreck with the *Croce Rossa* first-rank ship, launched in the Venice Arsenal in 1698 and sunken outside Malamocco inlet in 1715. As mentioned above, after the excavation, the wreck was covered with a protective system made by sand, geotextile and small stones (D'Agostino et al., 2010; D'Agostino et al., 2014).

“Ceppe wreck”. This is a 19th century wreck found close to the small pier of *Le Ceppe* in scattered conditions. Its excavation allowed the recovery of many wooden elements of the hull, of the wooden stock of an anchor, of many copper alloys nails and bolts and of various elements of the rigging (D'Agostino, 1998; Beltrame, 2007; Beltrame, 2008; Beltrame, 2014).

“Rocchetta 1 wreck”. It was recovered in 2007, on a sandy bottom between 12.3 and 16.6 meters of depth; the conserved hull is around 30 m long and the structure of the hull could be referred the ship to a second-class warship, chronologically dated to the mid-19th century (Capulli, 2010; Capulli, 2014).

“Molo Sud or San Piero wreck”. The almost entire hull of a possible brig of the '60s of the 19th century was discovered during the dismantling of the pier of San Piero. The hull was heavily damaged by a bucket during the dismantling of the pier. The ship was excavated underwater and then recovered in one piece. The recovery allowed photogrammetrical documentation of the hull

and 3D documentation, by FARO arm, of the scattered parts. The hull was buried in front of San Piero beach while the single parts of the hull were treated and stored (Beltrame et al., 2010).

“Bacàn 1 and 2 wrecks”. The wrecks lie in the inlet/harbour canal of Lido, are dated back to the 14-15^o century and are probably referable to the *marani* family, cargo boats documented in the late Middle Ages in the northern Adriatic, particularly along the routes that connected Dalmatia and Istria with Venice. Both were discovered thanks to their big loads of stones (slabs in the Bacàn 1 and square blocks in the Bacàn 2). The hull of the Bacàn 1 is quite well preserved (only the central part of the bottom, without the ends), while that of Bacàn 2 is very fragmentary and poorly preserved. The wrecks have been buried and protected *in situ* with sand, geotextile and iron grid. (Medas, 2013; Lazzarini, 2015).

“Tubes wreck”. The wreck lies in front of the beach of San Piero in Volta, close the entrance of Malamoco, and could be dated to the 18^o-19^o century. The wooden hull is preserved for 20 m of length and 4/5 m of width and presents a strong and tough structure to easily transport the heavy cargo composed by metal tubes of three different types. The most numerous are represented by tubes with a diameter of 80 cm and a length of 2.5 meters.

Sea north of Venice

Caorle 1 shipwreck. 12 miles off Caorle (Venezia), lies a Roman cargo of amphoras Lamboglia 2 dated at the end of the 2^o century BC. The cargo is completely covered and protected by a thick concretion that has been pierced by looters (Fozzati, 1995; Capulli, 2007; Capulli, 2017).

“Cannoniera” shipwreck. In front of Eraclea, two modern shipwrecks have been identified and dated at the 19^o century. One is the so-called “cannoniera” of Eraclea (Venezia). The hull of a big vessel, conserved for about 30 meters, protected with copper sheathing and built with copper alloy bolts, lies few hundred meters from the shore. The sheathing would date it in a period between 1785 and the half of the 19^o century, but the dating could be specified by the study of a hilt of sword recovered (Beltrame, pers. inf; D'Agostino, 2007).

The *Mercurio* is a brig of the Regno Italico, sunk in 1812, 5 miles off Punta Tagliamento, when it was escorting a French vessel. The powder magazine of the ship, which left Venice, exploded after it was shot by an English brig. The explosion caused the cut of the stern which has been discovered about 60 meters from the main part of the ship. The investigation of the site has allowed the documentation of almost the entire surface and the recovery of hundreds of objects which are exposed in the museum of Caorle. The site is partially visible underwater, but the area is restricted (Beltrame, 2019 and references) (fig. 4).



Fig. 4. The hull of the brig *Mercurio* during the excavation in 2010 (photo: Stefano Caressa-Università Ca' Foscari Venezia).

Many anchors from the Greek to the Modern period have been recovered in the sea off the Veneto region.

Eight anchors Admiralty type dated back to the end of 19^o and the first half of 19^o Century, from the inlets/harbour canals between the sea and lagoon (Medas, 2008).

An impression of an iron anchor of Roman age from Alberoni (Beltrame, 1993).

Eleven “Byzantine” iron anchors (10 T shape and 1 Y shape) from Venice Lagoon (isola delle Saline) and open sea (Cavallino, Lido, Chioggia, Caorle) (Beltrame, 1993; Medas, 2007; D'Agostino and Medas, 2007; Medas and Turchetto, 2012; Capulli, 2014; Medas and Turchetto, 2015).

A pre-Roman (Greek?) stone stock of wooden anchor from the sea (Beltrame and Lazzarini, 2006).

24 lead stocks of wooden anchors of Roman age, from Malamocco, Punta Sabbioni, Cavallino, Jesolo, Caorle (Beltrame, 1993).

1.c. Museums and recent exhibitions

Archaeological finds from the sea are exposed not only at the Museo di Archeologia del Mare of Caorle but also at the Naval Museum of Venice and at the Museo Civico della Laguna sud of Chioggia. In the Naval Museum, some bronze swivel guns of Venetian production, a stone stock of a wooden anchor of possible pre-Roman period and some lead stocks of wooden anchors of Roman period are exposed. In the Museum of Chioggia, is exhibited the collection brought from the Club Subacqueo San Marco of Venice. Club Subacqueo San Marco, during its long activity of research in the '80s and beginning of the '90s, recovered some amphoras, some lead stocks of anchors, a mould of iron anchor, a small round grinding millstone, a clay mortarium and a metal grill of Roman age. These objects come mainly from the sea off Alberoni beach, but some amphoras come from sites in the northern part of the lagoon.

Most of the finds recovered during the excavations of the shipwrecks, except those of the *Mercurio*, are stored in a building (*tesone*) of the Lazzareto Vecchio but are not visible. Some metal tools and the iron anchors recovered from the so-called “Glass Wreck” of Malamocco are exposed in a temporary exposition in a second building (*tesone*) of the Lazzareto Vecchio. The small bronze statues of Roman period from this wreck are exposed in the National Archaeological Museum of Venice.

Fragments of planking of two Roman ships built employing the sewing technique have been stored in the National Archaeological Museum of Portogruaro and in other stores of the Soprintendenze and of the Polo Museale del Veneto. Iron anchors and iron cannons of the 19^o century from the port of Malamocco are in the Arsenal. Iron cannons and anchors and some parts of wooden wrecks, coming from excavations and survey made by Consorzio Venezia Nuova in the harbour of Malamocco during the MOSE project, have been stored, after conservation treatment, in the Centro Sperimentale per Modelli Idraulici of Voltabarozzo (Padova).

In the library of the City of Cavallino Treporti, an exhibition about the archaeological sites of the Roman age of the northern area of the lagoon has been recently organized. The exposition of amphoras and other objects has allowed proposing an interpretation of some of the most important sites, such as a Roman villa with painting, a Late Roman cistern and many banks of piles and amphoras which still have no convincing interpretation.

1.d. Brief list of the GIS/portal/websites/social networks devoted to the UCH (if any) and considerations about the availability of the information;

Web pages and online news about UCH in Veneto Region are exiguous. In particular, the information came from various Cultural Associations and diving; these are active in the region with different courses and topics on underwater archaeology, but not all the information on the underwater mapped sites are shared with the public. Here a list of pages that the public could easily reach and consult.

GIS/portal

On the official page of the MiBACT Ministero per i beni e le attività culturali e per il turismo, in the session “Ricerca Archivi e Pratiche per la tutela Operativa Regionale” there is an interactive map of the archaeological sites of Veneto region (with those of Lombardia and of Friuli Venezia Giulia) organized on different chronological layers, from prehistoric to contemporary sites. The submerged sites are identified with a coloured point and a sheet with some generic information but without any images or scientific references.

- <https://www.raptor.beniculturali.it/mappa.php#>

Website

Regional cultural associations have built them personal web pages on various topics about UCH; depending on the typology of the association, it is possible to found different information about submerged sites or courses or regional or international news.

- www.reitia.it Reitia ACD is an association that operates in the fields of protection and valorisation of UCH; it collaborates with Ministry, Institution and Universities on research projects, surveys, documentation and monitoring of submerged sites. It has realized a map of fluvial archaeological sites, but the data are not open; on the web page, it is possible to

obtain some information about the status quo of underwater archaeology in Italy, about documenting techniques and a list of references.

- www.archeosub.it ArcheoSub was a web site on underwater archaeology in Italy, with a particular interest in the Adriatic Sea and Venezia. It was possible to find different information, news and link about underwater sites and legislation; the webpage is still open but it is not updated.
- [archeologiasubacquea.it](http://www.archeologiasubacquea.it) is an overview of the principal ancient and contemporary underwater sites in the lagoon and the sea of Venice, with information and news about the discoveries and about conference and project on these topics. It is not related only to the region since it has an international overview. This is the new version of the web site <http://win.argovenezia.it/FONDALI-2.htm>. Argo – Gruppo Ricerche Subacquee.

Social network

- Maritime Archaeology - Ca' Foscari University, Venice, Italy
<https://www.facebook.com/groups/253214581722268/>
- Reitia ACD <https://www.facebook.com/groups/reitia/>

1.e. Schematic indications regarding the regional UCH

- *management*

The underwater cultural heritage of the lagoon and of the sea of Venice is under the management of the Soprintendenza Archeologia, belle arti e paesaggio per il Comune di Venezia e Laguna and the UCH of the sea in the north area of the province of Venice (Jesolo, Eraclea, Caorle) is controlled by the Soprintendenza Archeologia, Belle Arti e Paesaggio per l'Area Metropolitana di Venezia e le Province di Belluno, Padova e Treviso.

Museums that have permanent or temporary expositions about Underwater Cultural Heritage are under the management of Polo Museale of Veneto.

- *protection/conservation*

The Soprintendenza attempts, when it is possible, to excavate, document and recover the cargo and the hull of the shipwrecks, but has applied different methods of protection and conservation. Usually, wrecks have been buried and protected *in situ* with geotextile, sandbags, sand, small stones and sometimes iron grid or sheet barriers around the site (wrecks of San Marco in Boccalama, Bacan 1 and 2, Caorle 1, *Croce Rossa*). Sometimes the wreck has been excavated, documented and buried in a different position close beneath the seabed of a protected area near the newly built reef (Molo Sud and Rocchetta 1).

Usually, the area of the excavation and reburial has been prohibited to navigation and, in particular, to fishing activities with dragging nets (Mercure brig).

The cargo of the shipwrecks has been always recovered and restored; when it possible it has been exposed in museums, but usually it is conserved in the storage rooms of the Soprintendenza.

Some of the shipwrecks, as Eraclea and Jesolo, have been only preliminary investigated and are not protected.

- ***real accessibility***

There is not any kind of regular accessibility of the shipwrecks

- ***legislation/regulations***

- C.P.C.M. 3763/6 del 20.04.1982 o Circolare Spadolini
- Legge quadro 6 dicembre 1991 sulle Aree Marine protette
- DPR 554 del 1999 o regolamento della Legge Merloni
- Codice dei Beni Culturali DL 42 del 22/01/2004:

Art. 10, comma 4, i) Le navi e i galleggianti aventi interesse artistico, storico od etnoantropologico

- Convenzione Unesco 2001. Convention of the protection of the Underwater Cultural Heritage.
- Faro Convention 2005

- ***valorisation (in situ and/or through VR/AR)***

Artefacts recovered during investigations on the *Mercurio* brig carried out by the Università Ca' Foscari are now exposed in the Museum of the Sea in Caorle where multimedia stations have been installed. The project was designed to offer the ability to the general public to virtually visit the underwater site. One of the objectives of this project is to implement legacy data and analogic documentation into a VR application and to create an efficient and realistic VR application focused on a virtual tour of the shipwreck. The project aimed to create a head-mounted display of the underwater site, creating an exhibit through a permanent VR station, in conjunction with other multimedia application and displays, such as a touch screen with the GIS of the shipwreck and touchscreen with the reconstruction of the hull of the brig (Secci et al., 2019) (fig. 5-6).

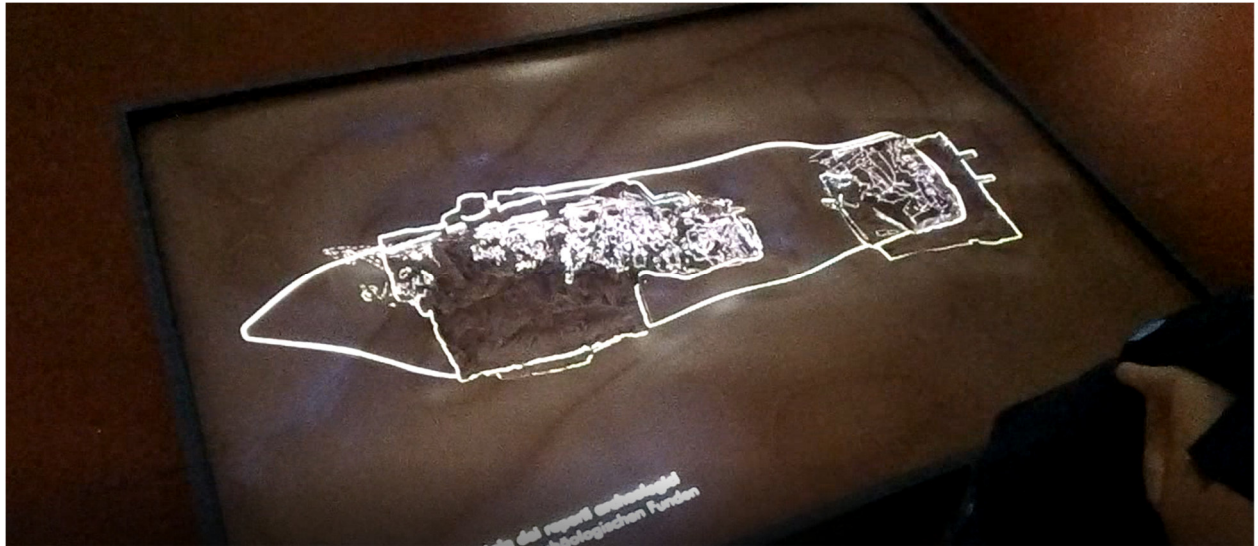


Fig. 5. Virtual excavation of the brig Mercurio on the installation at the Museo Nazionale di Archeologia del Mare of Caorle (Elaboration: M. Secci, C. Barbiani).



Fig. 6. VR of the brig Mercurio on the installation at the Museo Nazionale di Archeologia del Mare of Caorle (Elaboration: S. Manfio, M. Secci).

2. Data collection

- number and compiling level of the questionnaire

Only 9 questionnaires out of 38 have been compiled.

- categories of replying stakeholders

3 different categories:

DIVING CLUBS and DIVING ASSOCIATIONS (Gruppo Sommozzatori di Caorle, Delta Sub Adria, Stella Diving Centre Union Lido, Fipsas, Asd Rari Nantes Sommozzatori Venezia)

ASSOCIATIONS (Reitia, Istiaen, Argo – Gruppo Ricerche Subacquee)

PRIVATE COMPANIES (ArcheoTecnica)

1. Underwater Cultural Heritage significance assessment

Stakeholders agree on the high value and historical, archaeological significance of the underwater cultural heritage.

2. UCH status of knowledge

Only some of the stakeholders, in particular association and private companies that work on this topic, know the technological tools employed in underwater archaeology.

The known tools are Site Recorder, Photoscan, GIS, WebGIS, catalogs, maps, Archaeological Map of the Venice Lagoon, Ernesto Canal - Archeology of the Venice Lagoon, Multibeam, Side Scan Sonar, Magnetometers, ROV, informatics tools and archival data.

A diving club (Sommozzatori di Caorle) indicates its website as a tool for the consultation of technological instruments, but there is no information on the website; perhaps, it is a misunderstanding in the interpretation of the question. The same occurred about the mapping of the sites: they affirm to have realized a map, but it is not clear in what ways and if this information

and maps are open data. Reitia, with Dafne project, has realized a mapping, especially of the rivers, but the maps are not open data and an online map or a schematic catalogue of the sites is not viewable.

Other mappings are realized by Archaeological Superintendence of Veneto, by the Interregional Provveditorato for Public Works of the Triveneto (ec Magistrato alle Acque di Venezia (in the past years), by Venezia Nuova Consortium (in the past years) as part of the Venice Lagoon safeguard project and ideally by the Archeomar project, but this project was not realized for Veneto and the map on the underwater archaeological site is not visible neither for the regions under investigation.

All data can be consulted by directly contacting the mapping executors.

3. UCH in situ valorization and accessibility

Stakeholders agree with the first rule of the Unesco Convention, provided that the *in situ* preservation could guarantee the effective protection and conservation of the underwater site.

a. Archaeological parks, Blue trails e AMP

There are no Archaeological parks in the region.

AMP are Marine Oasi of the territory of Caorle, ZTB Tegnue di Chioggia, Tegnue from Lido di Venezia, in the Cavallino area, diving clubs have asked for the regulation of the seabed of Jesolo but there is still no legislation. The marine areas of the Veneto are not, however, reported on the website www.naturaitalia.it, where there is the list and the map of all the AMP in Italy.

Blue trails are Tegnue di Caorle and Falconera, Tegnue from Lido di Venezia, Tegnue di Chioggia. In the ZTB area of Chioggia there is a trail on eleven buoys with a path designed on the ring bottom (Delta Sub Adria). One diving club (Stella diving Center Union Lido) offers six different blue trails but does not give any specifications about the name or the position of the sites.

We believe that all the individuated sites do not represent any archaeological heritage.

a. Diving / snorkelling

Most of the stakeholders (7 out of 9) affirm that the available underwater sites are accessible by diving.

b. Web sites

The range goes from 2 (inadequate) to 5 (optimal). Three answers, value 2; three answers, value 3; one answer, value 4; one answer, value 5. In conclusion, we could assert, on the base of these values and of the other answers of the questionnaire, that valorisation and promotion of UCH through website information is inadequate.

c. Diving

There is no knowledge on the subject, neither by diving. The knowledge of underwater paths with cages, tablet or panels in Veneto are really poor due to the absence of these, but there is more knowledge on the areas of Italy with blue trails.

Due to the absence of archaeological sites in Veneto, the answers of stakeholders about specific permission or license to dive and dive with people with disabilities are referred to general underwater sites, not necessarily archaeological underwater sites.

4. UCH Virtual Reality /Augmented Reality valorisation

Stakeholders consider digital technology attractive for the public and important for the valorisation of cultural heritage, but knowledge on VR/AR is really poor. Stakeholders know other projects in Italy, such as Musas, Archeosub, Thesaurus, Visas.

5. UCH Museum and exhibition valorisation

Stakeholders have some information about Museo Archeologico del Mare di Caorle (only two stakeholders) and Museo dei Grandi Fiumi di Rovigo (only one stakeholder). We could consider that the valorisation and the dissemination of information about VR/AR in underwater archaeology

did not reach the public. The SeaWorld museum in Jesolo has a reconstruction of the Tegnue, but it is not an archaeological attractive.

Some exhibition has been realized in the last ten years but only with few archaeological objects from the sea.

It is quite evident that the knowledge of the Museum of Caorle is too poor and that it would be necessary to make a marketing plan to disseminate it.

6. UCH protection

a. Authority / body

The authorities responsible for UCH protection are Soprintendenza and Nucleo Tutela Patrimonio dei Carabinieri.

b. Measures

The measures in place for the protection known by stakeholders are the prohibition to navigation and fishing, the controlling from Soprintendenza, the cataloguing and the protection.

c. Which sites

One stakeholder (ArcheoTecnica) make a list of some of the wrecks excavated in the Venice lagoon that are protected: Relitti di San Marco in Boccalama - Relitto del Molo Sud - Relitto della Rocchetta - Relitti del Bacan 1 e 2 - Relitto dei Cannoni – Roman structure Ca' Ballarin - Sant'Erasmo shipwreck.

7. UCH vulnerability assessment

Stakeholders have the consciousness that underwater research and excavations could damage cultural heritage and its ecosystem if these are not realized following the correct evaluation and method. The underwater archaeological heritage could be also damaged by the tourist access, if the tourist himself is not specially trained or if the access is not managed suitably.

8. UCH local involvement

Stakeholders have identified the local actor to be involved, as institution, university, museums, research centres and diving. Furthermore, one stakeholder has specified that the involvement could be organized in two level:

- institution, university, museums and research centres could provide the information, the regimentation and the guidance for a different kind of valorisation and dissemination of the UCH
- diving that could provide the physical and logistic structure.

Stakeholders have suggested the following web sites: Gruppo Sommozzatori Caorle (even if in the web pages there is not sufficient information about UCH), facebook page of Ca' Foscari University - Maritime Archaeology, archeologiasubacquea.it and its linked social pages.

For stakeholders, the best communication channels could be periodic news in the local and regional press, television documentaries, exhibitions, conferences, dedicated courses and lessons, meetings at associations, social networks, videos, internet.

9. UCH fundraising

The fundraising has to be organized by the municipality for knowledge and awareness activities on the subject through diving and AMP or by private commercial fashion brand, as Diesel that has financed many restorations in the city of Venice. TV shows like Ondablu could be the fundraising channel to promote underwater archaeology with great success.

10. UCH management

The underwater cultural heritage has been managed and regulated with legislation by authorities and public bodies as MiBACT, Ministero per i Beni Culturali and Archaeological Superintendence.

One stakeholder has specified preventive archaeology, survey, excavation, study and protection and conservation as best practises of management of UCH. Only if the management is conducted with the best practises of valorisation, the UCH could be really compatible with the public access, referring to cases bad conducted.

11. Underwater tourism context and sustainability

Alternative tourism could be very appreciated by divers and public, that loved to visit the archaeological sites with the guide of archaeologists or people trained ad-hoc and loved to participate in the campaigns with the necessary preparation required by the excavation and documentation.

3. Heritage community awareness

From the answers of the stakeholders, it seems possible to say that they have a good consciousness of the regional underwater situation since nearly all of them are familiar with the few sites, MPA or blue trails available in Veneto region, but none of them have archaeological relevance; on the contrary, only some of the stakeholders, in particular associations and private companies that work on this topic, have a thorough knowledge of the technological tools employed in underwater archaeology (Site Recorder, Photoscan, GIS, WebGIS, catalogs, maps, Multibeam, Side Scan Sonar, Magnetometers, ROV).

Stakeholders are conscious that the authority responsible for the protection of the UCH is the Soprintendenza, also in case of discovery of archaeological artefacts, but it is not easy to evaluate the effective knowledge of the stakeholders on legislative aspects and on measures that could be adopted for the protection of a wreck since diving clubs do not need to deal with archaeological legislations and regulations for the absence of underwater archaeological parks or wrecks that can be visited. Stakeholders have the consciousness that underwater research and excavations if are not realized following correct evaluation and method, could damage cultural heritage and its ecosystem and the underwater archaeological heritage could be also damaged by the tourist access, if the tourist himself is not specially trained or if the access is not managed suitably.

Stakeholders possess some information about the Museo Archeologico del Mare di Caorle (only two of stakeholders) and Museo dei Grandi Fiumi di Rovigo (only one of stakeholder). Stakeholders consider digital technology attractive for the public and important for valorisation of cultural heritage, but their knowledge on VR/AR is really poor. They know other projects in Italy, as Musas, Archeosub, Thesaurus, Visas. We could consider that valorisation and dissemination of information about VR/AR in underwater archaeology did not reach the public and that it is clear that it would be necessary to make a marketing plan to disseminate the unique digital exhibition in Veneto region. This entail that the stakeholders do not feel themselves directly involved in the underwater archaeological heritage, although an alternative tourism could be very appreciated by

divers and public, who love to visit the archaeological sites with the guide of archaeologists or people trained ad-hoc and would love to participate in the archaeological investigations with the necessary preparation required by the excavation and documentation.

Concluding, analysing the answers of the stakeholders, we could summarise that the UCH is considered important for its high value and historical and archaeological significance, but institution have so much to work to better promote and valorise it better involving the public.

References

- A.a.V.v., 2003, *La Galea ritrovata. Origine delle cose di Venezia*, Marsilio, Venezia.
- Beltrame C., 1993, Ancore antiche dai litorali di Venezia e Caorle, *Rivista di Archeologia*, XVII, pp. 42-45.
- Beltrame C., 1996, La *sutilis navis* del Lido di Venezia. Nuova testimonianza dell'antica tecnica cantieristica "a cucitura" nell'Alto Adriatico, in Ciciliot F. (ed), *Navalia. Archeologia e storia*, Savona, The IntPropeller Club, pp. 31-53.
- Beltrame C., 2001, Imbarcazioni lungo il litorale alto-adriatico occidentale, in età romana. Sistema idroviario, tecniche costruttive e tipi navali, in Zaccaria C. (ed.), *Antichità alto-adriatiche XLVI, Strutture portuali e rotte marittime nell'Adriatico di età romana*, Trieste-Roma, Editreg, pp. 431-449.
- Beltrame C., 2002, Le *sutiles naves* romane del litorale alto-adriatico. Nuove testimonianze e considerazioni tecnologiche, *Archeologia subacquea. Studi, ricerche e documenti*, III, pp. 353-379.
- Beltrame C., 2003, Progetto di massima per la documentazione e l'analisi di dettaglio degli elementi lignei degli scafi di San Marco in Boccalama, in *La galea di San Marco in Boccalama. Valutazioni scientifiche per un progetto di recupero*, Venezia, Consorzio Venezia Ricerche, pp. 77-82.
- Beltrame C., 2007, Il relitto delle Ceppe di Malamocco, *L'archeologo Subacqueo*, Anno XIII, 3, p. 6.

Beltrame C., 2008, Il relitto del XIX secolo della diga delle Ceppe, nella bocca di porto di Malamocco, in L. Fozzati, C. Pizzinato (eds), *Malamocco. Studi di archeologia lagunare e navale*, Venezia, Marsilio, pp. 137-143.

Beltrame C., 2014, Il relitto delle Ceppe. Un naufragio del XIX secolo nella bocca di porto di Malamocco di Venezia, in Leone D., Turchiano M., Volpe G. (eds.), *Atti del III Convegno Nazionale di Archeologia Subacquea*, Manfredonia, 2007, Bari, Edipuglia, pp. 71–80.

Beltrame C., 2014, Introduzione, in Beltrame, C. (ed.), *Archaeology of Post Medieval Shipwrecks (Archeologia Postmedievale, 18)*, Florence, All’Insegna del Giglio, pp. 13-16.

Beltrame C., 2019, *The Mercurio. Brig of the Regno Italico Sunk During the Battle of Grado (1812)*, Turnhout, Brepols publisher.

Beltrame C., Galletta G., Medas S., Socal A., Turchetto E., Zanetti P., 2010, Il relitto del Molo Sud presso il porto di Malamocco (Venezia), in S. Medas, M. D’Agostino, G. Caniato (eds), *Navis 4. Archeologia, storia, etnologia navale, Atti del I convegno nazionale, Cesenatico 2008*, Bari, Edipuglia, pp. 75-82.

Beltrame C., Lazzarini L., 2006, A Presumed Greek Stone Anchor Stock Recovered off Venice, Italy, *International Journal of Nautical Archaeology*, 35.1, pp. 137-140.

Capulli M., 2007, Il relitto Caorle 1, in L. Fozzati (ed.), *Caorle archeologica. Tra mare, fiume e terra*, Venezia, Marsilio, pp. 125-131.

Capulli M. 2010, Relitto della Rocchetta 1 (Venezia). Prime considerazioni di carattere tecnologico, in Medas S., D’Agostino M., Caniato G (eds.), *Navis 4. Archeologia, storia, etnologia navale, Atti del I convegno nazionale, Cesenatico 2008*, Bari, Edipuglia, pp. 71-74.

Capulli M., 2014, Il relitto della Rocchetta, bocca di porto di Malamocco (Venezia): rapporto preliminare, Leone D., Turchiano M., Volpe G. (eds.), *Atti del III Convegno Nazionale di Archeologia Subacquea*, Manfredonia, 2007, Bari, Edipuglia, pp. 89–93.

M. Capulli, 2014, Ancore “bizantine” dal mare di Caorle, in Asta, A., Caniato, G., Gnola, D. and S. Medas (eds), *Navis 5. Archeologia, storia, etnologia navale, Atti del II convegno nazionale, Cesenatico 2012*, Padova, pp. 357-360.

Capulli M., 2017, Il relitto Caorle 1: problemi di tutela e prospettive future, in Auriemma R., Fozzati L. (eds.), *Relitti: che fare? Archeologia subacquea del mare Adriatico e del mare Ionio. Ricerca, tutela e valorizzazione dei relitti*, Atti del convegno di Grado, 4-5 maggio 2010, Roma, Aracne editrice, pp. 51-56.

Capulli M., Galletta G., Martin R., Medas S., Pellegrini A., Socal A., Turchetto E., Zanetti P., 2017, Laguna di Venezia, bocca di porto di Malamocco: attività di protezione dei relitti “del Molo Sud” e “Faro Rocchetta 1”, in Auriemma R., Fozzati L. (eds.), *Relitti: che fare? Archeologia subacquea del mare Adriatico e del mare Ionio. Ricerca, tutela e valorizzazione dei relitti*, Atti del convegno di Grado, 4-5 maggio 2010, Roma, Aracne editrice, pp. 93-103.

Capulli M., Willis S., Asta A., 2014, Il progetto sutiles nel quadro delle attività di tutela e conoscenza delle tecniche di costruzione navale antica. Il caso del Veneto, *NAVe. Notizie di Archeologia del Veneto*, 3, pp. 215-218.

D’Agostino M. 1998, Relitti di età post-classica nell’alto Adriatico italiano. Relazione preliminare, *Archeologia Medievale*, 25, pp. 91-102.

D’Agostino, M., 2007, Il relitto della cd. cannoniera di Eraclea, in Fozzati L. (a cura di), *Caorle archeologica. Tra mare, fiume e terra*, Venezia, Marsilio, pp. 133-136.

D'Agostino M., 2008, Il Relitto del Vetro di Venezia. Alcune considerazioni per una rilettura cronologica, in L. Fozzati, C. Pizzinato (eds), *Malamocco. Studi di archeologia lagunare e navale*, Venezia, Marsilio, pp. 145-154.

D'Agostino M., Galletta G., Medas S., 2014, Il relitto "dei cannoni" alla bocca di porto di Malamocco, Venezia, in Leone D., Turchiano M., Volpe G. (eds.), *Atti del III Convegno Nazionale di Archeologia Subacquea*, Manfredonia, 2007, Bari, Edipuglia, pp. 59-70.

D'Agostino M., Galletta G., Medas S., 2010, Il relitto "dei cannoni" di Malamocco, Venezia, in S. Medas, M. D'Agostino, G. Caniato (eds), *Navis 4. Archeologia, storia, etnologia navale, Atti del I convegno nazionale, Cesenatico 2008*, Bari, pp. 62-70.

D'Agostino M., Medas S., 2003, Laguna di Venezia. Lo scavo e il rilievo dei relitti di San Marco in Boccalama. Notizia preliminare, in Peduto P, Fiorello R. (eds.), *Atti del III Congresso di Archeologia Medievale*, Castello di Salerno, 2-5 ottobre 2003, Firenze, All'Insegna del Giglio, pp. 224-227.

D'Agostino M, Medas S., 2005, La navigazione nella laguna di Venezia in epoca romana: nuove evidenze dall'archeologia subacquea, *Journal of Ancient Topography*, XV, pp. 37-54.

D'Agostino M., Medas S., 2007, Ancore bizantine dal Golfo di Venezia, *Bizantinistica. Rivista di studi bizantini e slavi*, II, 9, pp. 101-121.

D'Agostino M, Medas S., 2010, Roman navigation in Venice Lagoon: the results of underwater research, *The international Journal of Nautical Archaeology*, 39.2, pp. 286-294.

Fozzati L., 1995, Il relitto delle alghe di Caorle, relazione preliminare 1992-1994, *Quaderni di archeologia del veneto*, XI, pp. 48-52.

Fozzati L., 2002, Il timone di San Nicoletto e il naufragio del XIX secolo, *Laguna Mare*, Anno II, nr. 3, pp. 26-27.

Lazzarini L., 2015, Natura e origine della pietra del carico Bacàn I naufragato nel XV secolo alla bocca del Lido di Venezia, *Marmora, An International Journal for Archaeology, History and Archaeometry of Marbles and Stones*, 9, Pisa, Roma, Fabrizio Serra editore MMXV, pp. 131-140.

Medas S., 2007, Un'ancora <<bizantina>> dal mare di Caorle: problemi di cronologia delle ancore di ferro a T, in L. Fozzati (ed.), *Caorle archeologica. Tra mare, fiume e terra*, Venezia, Marsilio, pp. 150–157.

Medas S., 2008, Ancore dalla bocca di porto di Malamocco, in L. Fozzati, C. Pizzinato (eds), *Malamocco. Studi di archeologia lagunare e navale*, Venezia, Marsilio, pp. 154-163.

Medas S., 2009, Relitto altomedievale di barca a fondo piatto rinvenuto nel canale Passaora, isola di Sant'Erasmus, laguna nord di Venezia, *Archeologia Veneta*, XXXII, Società archeologica Veneta - Onlus, pp. 237-247.

Medas S., 2013, Due relitti con carichi lapidei rinvenuti al Bacan (bocca di Porto di Lido, laguna di Venezia), *Marmora, an international journal for archaeology, history and archaeometry of marbles and stones*, 8, 2013, Pisa, Roma, Fabrizio Serra editore MMXV, 115-125.

Medas s., Turchetto E., 2012, Nuovo ritrovamento di un'ancora "bizantina" proveniente dal mare di Venezia, *Bizantinistica. Rivista di studi bizantini e slavi*, II, XIV, pp. 53-60.

Medas S., Turchetto E., 2015, Un'ancora "bizantina" dimenticata, *Archeologia Marittima Mediterranea, An international journal on underwater archaeology*, 12, pp. 201-206.

Molino A., Molino P., Socal A., Turchetto E., Zanetti P., 1986, Il relitto del Vetro. Relazione preliminare, *Archeologia subacquea* 3, supplemento al n. 37-38, pp. 179-193.

Secci M, Beltrame C., Manfio S., Guerra F., 2019, Virtual reality in maritime archaeology legacy data for a virtual diving on the shipwreck of the Mercurio (1812), *Journal of Cultural Heritage*, 40, Nov-Dec, 169-176.

Willis S., Capulli M., 2018, The sutiles project: an investigation of roman-era laced vessel of the upper adriatic, the first two years of research, in Litwin J., Ossowsky W. (eds.), *Baltic and beyond. Change and continuity in shipbuilding*. Atti del 14th International Symposium on Boat and Ship Archaeology, 21-25 settembre 2015, Gdansk, Polonia, pp. 147-150.

Willis S., Capulli M., 2018, A report on the late 1st–2nd-century-AD Venice Lido III Sewn Timber Assemblage, *The International Journal of Nautical Archaeology*, 47.2, pp. 343-356.

D 3.2.2

REGIONAL STATUS QUO ANALYSIS

Split-Dalmatia County

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1. INTRODUCTION

The geographic location and indented nature of the eastern Adriatic coast gave rise to numerous busy naval routes and facilitated the development trade and sailing in the past. This was the basis for the founding of numerous settlements and cities along the eastern Adriatic coast which became a trade hub for several major naval routes. These and other historic events left their mark on the sea. That is why over 200 documented underwater archaeological sites, from isolated finds of small artifacts to entire shipwrecks with cargo holds laden with amphorae and wreckages of planes and ships from World War One and World War Two, lie strewn across the seafloor of Split-Dalmatia County. The Ministry of Culture through the Directorate for the Protection of Cultural Heritage, the Conservation Department in Split and the Conservation Department in Trogir oversees administrative and other affairs concerning the surveying, studying, monitoring, recording, documenting and promoting of underwater cultural heritage. The Ministry also oversees the financing of programs aimed at protecting cultural heritage as well as the establishment and monitoring of institutions tasked with the protection of cultural heritage. Within the Republic of Croatia, cultural heritage, both on land and underwater, is protected by the Act on the Protection and Preservation of Cultural Property and the Ordinance on Archaeological Excavations, and all protected cultural goods are inscribed in the Register of Cultural Goods of the Republic of Croatia. Within Split-Dalmatia County, 58 underwater archaeological sites (53 registered, 5 preemptively protected) have been legally protected by the Ministry of Culture and they can be divided as follows:

- 41 individually protected shipwrecks or wreckages (43 different shipwrecks grouped into 41 protected sites). 25 of these shipwrecks date back to Antiquity, 5 to the post-medieval period and 11 to the modern age (including the wrecks of 3 WWII planes).
- 2 individually protected underwater archaeological zones (the zone around the islands of Vis, Biševo, Svetac and Brusnik, and the zone around the island of Palagruža) which encompass areas with a high concentration of archaeological sites and finds dating to different time periods.

- 14 individually protected remains of ports, port facilities, harbors and anchorages dating back to prehistory and antiquity.

Croatia is a signatory of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage, which represents the first multilateral international agreement which systematically and comprehensively deals with the protection of underwater cultural property. The Republic of Croatia was the third country to ratify the Convention, indicating thus the importance it places to the protection of the underwater cultural heritage. Slovenia and Italy are also signatories of the convention, which obliges them to cooperate with other signatories (including Croatia) in strengthening the protection and preservation of the underwater cultural heritage.

The main aims in the context of protecting underwater cultural property, both on a national and European level are:

- Preventing the plundering, looting and destroying of underwater cultural property.
- Overseeing the areas where underwater cultural property is present and conducting surveys of the seabed for the purpose of locating and protecting new sites.
- Preventing unauthorized trade in cultural property extracted from the sea, which is implemented in cooperation with the Ministry of Culture and the Ministry of the Interior.
- Conducting underwater archaeological surveys with the aim of finding new scientific discoveries related to underwater cultural property. They are conducted by specialized public administrative bodies (the Croatian Conservation Institute, the International Center for Underwater Archaeology in Zadar, the University of Zadar, the Archaeological Museum in Zadar, the Arts Academy in Split) and specialized private companies in

cooperation with the competent Conservation Departments of the Ministry of Culture. They are financed by the Ministry of Culture or as part of infrastructure projects.

- Conservation and *in situ* presentation of underwater archaeological sites with the aim of preserving them in the long term and developing cultural tourism.
- *In situ* presentation is the basic method of preserving underwater cultural heritage and is as such one of the main directives of the UNESCO Convention on the Protection of the Underwater Cultural Heritage. If such a presentation is not possible, either due to the level of devastation of the site or the risk of future devastation, a secondary presentation is organized in museums or galleries. All these actions are conducted by specialized public administrative bodies and private companies in cooperation with the Ministry of Culture.

2. HISTORY OF THE SURVEYING OF UNDERWATER HERITAGE IN SPLIT-DALMATIA COUNTY

The first written records of underwater archaeological sites in Croatia date back to Alberto Fortis' travelogue from the second half of the 18th century which mentions large receptacles in Sućuraj on the island of Hvar. In the mid-19th century, Mijat Sabljar noted a number of underwater archaeological sites, with his drawing of sarcophagi built into the waterfront of the peninsula of Vranjic being of particular interest. This was also the site of what can be considered the first underwater archeological survey in Croatia, when Frane Bulić hired divers to examine the seafloor around Vranjic in 1898. In the period between the world wars, only sporadic underwater finds were documented, mostly related to the activity of sponge harvesters from Krapanj and coral divers from Zlarin. The majority of these finds consisted of amphorae and lead anchor stocks, which are today kept in museums and monasteries. Archaeologists and museums had little interest in underwater sites at that time, resulting in the loss of topographic data on certain archaeological sites which had since been completely plundered. There were also no laws on the protection of cultural monuments. It was only after WWII, with the advent of scuba diving, that the interest for underwater archaeological sites started to increase. Advancements in diving equipment, however, meant that underwater sites became accessible to local and international divers and collectors who would systematically plunder them, extracting amphorae and lead anchor stocks with the intention of selling them later. This period saw numerous archaeological sites destroyed, while many more had the upper layers of sunken cargo thoroughly looted. These events prompted the archaeologist and conservators of the era to consider the urgent need of protecting underwater heritage, both legally and physically. The first surveys of the seabed in Split-Dalmatia County began in the period from 1960 to 1969 under the auspices of the Archaeological Museum in Split. It is also important to note the activities of M. Nikolancije and M. Suić during this same period, both of who raised important questions with their writing about the system of protecting underwater heritage and the need for the founding of centers dedicated to underwater archaeological research. The problem of protecting underwater archaeological sites prompted the State Institute for the Protection of Cultural Monuments to organize a conference in Šibenik in 1969 with the aim of finding a long-term solution for the salvation of underwater heritage. This resulted in underwater sites gaining legal protection on the basis of the Act on the Protection and Preservation of Cultural Property. Likewise, it was agreed that funds should be allocated on a yearly basis for the systematic surveying, inspecting, and conserving of underwater sites. The State Institute created a network with regional institutes for

the protection of cultural monuments, museums, port authorities, judicial authorities, and diving centers. The conference in Šibenik and the initiatives born out of it constitute the beginning of organized protection and investigation of underwater sites in Croatia. During the 1970s, the Archaeological Museum in Split, under the direction of Nenad Cambi, and in collaboration with the local diving club “Mornar”, conducted systematic surveys of the seabed in Split-Dalmatia County. The areas surveyed include the port of Vis, the islet of Host, the region of Čiovo, the bay of Špinut in Split, the western side of the island of Šolta, the cape of Marjan, and the region between Velika and Mala Luka in Omiš. Many new underwater archaeological sites were discovered and the status of those already known was documented. The surveying of the seabed around Hvar, which was organized in 1974 by M. Nikolinci and the Center for the Protection of Cultural Heritage in Hvar, was also of great importance. Previously known sites that had suffered extensive looting from local and foreign divers were surveyed: Vela and Mala Garška, Pelegrin Bay, the islets of Gališnik, Gojica, Borovac and Travna, capes Ražanj, Močiguzica and Izmetišće, as well as Pišćena Bay on Pakleni islands. During the 1970s, the following underwater sites in central Dalmatia were investigated: the ancient shipwrecks in Vela Svitnja Bay on Vis, near the church of Our Lady of Prizidnica on the island of Čiovo, in Mlin Shallows between Čiovo and Šolta, and near Cape Čelina east of Omiš. The ancient port in the bay of Šoinut in Split was also surveyed. Five more ancient shipwrecks in Split-Dalmatia County were investigated during the late 1970s and 1980s, all of them around Hvar: Stari Stani and Izmetišće on the islet of Sveti Klement, Veli Porat near the island of Šćedro, and the bays of Duboka and Petrov Bok. Due to the war in Croatia, no major surveys were conducted during the 1990s. Excavations around the port of Vis commenced in 1992, with the remains of the waterfront of ancient Issa being discovered, as well as several perforated *dolia* built into the ancient waterfront. Seeing as the port of Vis contains numerous underwater sites, surveys of this area have continued to the present day. Some of the most recently discovered underwater sites include a shipwreck containing unfinished sarcophagi and rough stone blocks found in 2008 in front of Sutivan, and the remains of a smaller ship which had been transporting stone blocks, most probably for the construction of Diocletian’s Palace in Split, located in 2010 in front of Splitska Bay on Brač. Along with the previously known site at Resnik, a number of new discoveries in the Bay of Kaštela pointed out the significant archaeological potential of this shallow coastal belt. Excavations at Resnik began in 1988 and yielded the remains of a Greek and Roman port. In 2002, on a site called Trstenik in Kaštel Sućurac, an intact perforated *dolium* was discovered, along with an ancient shipwreck and wooden pool structure originally intended for industrial use. During the reconstruction of the waterfront in Vranjic in 2005 and 2006, remains of a prehistoric settlement were unearthed, as

well as the old waterfront, dating back to Late Antiquity, which had been built using ancient sarcophagi and fragments of stone sculptures. Located among the remains of the prehistoric settlement, which dates back to the late Bronze and early Iron Age, was a drywall, fragments of a daub and pieces of earthenware pottery. In August of 2002, finds dating to Antiquity and prehistoric times were uncovered in the harbor of Baške Vode. Another significant step in the development and preservation of underwater heritage came with the founding of the International Center for Underwater Archaeology in Zadar in 2007, then part of the Croatian Conservation Institute. The Center soon went on to become an independent public institution, in accordance with the international treaty signed between UNESCO and the Republic of Croatia in 2009, and was recognized as a Category II Center by UNESCO. Its activities are focused on the protection, preservation, and studying of underwater cultural heritage within the Republic of Croatia, the development of international scientific cooperation and education in the field of underwater archaeology, the exposition and popularization of underwater heritage to the general public, and the promotion of UNESCO's Convention on the Protection of the Underwater Cultural Heritage. In 2010, new systematic surveys of the Split-Dalmatia County began with the cooperation of the Ministry of Culture, the Conservation Department in Split, and the Department for Underwater Archaeology of the Croatian Conservation Institute. They resulted in the discovery of new underwater archaeological sites, the most important being the well-preserved ancient shipwreck near Šćedro, the shipwreck in Duba Bay, the medieval shipwreck on Pakleni islands, and the site on Cape Pelegrin near Hvar. Previously known underwater archaeological sites were also surveyed in order to document their status. The discovery of shipwrecks dating to the Battle of Vis in 1866, however, constitute without doubt the most significant underwater finds of the last decade. Three ships were located, the *Re d'Italia*, the *Radetzky* and the *Palestro*, with their wrecks lying at a depth of 90 to 120 meters. Along with the Conservation Department in Split, which has been continually protecting and monitoring the underwater heritage of Split-Dalmatia County, credit must also be given to the Central Coordinating Committee for the Supervision and Protection of the Maritime Rights and Interests of the Republic of Croatia. The Committee, formed by the Governments of the Republic of Croatia, represents the synergistic activities of all state institutions tasked with overseeing and controlling Croatian territorial waters with the aim of protecting and preserving them. This has given underwater archaeologist and conservators tasked with protecting underwater sites significant tools and resources for their activities and their continued development. From 2008, the Committee functions as part of the Croatian Coast Guard and its main task is to ensure the cooperation of all government entities and institutions in order to ensure the protection and

preservation of underwater cultural heritage. The Ministry of Culture, the Conservation Department in Split in cooperation with the relevant ministries and the Department for Underwater Archaeology of the Croatian Conservation Institute have, via the Central Coordinating Committee for the Supervision and Protection of the Maritime Rights and Interests of the Republic of Croatia, been monitoring, supervising and ascertaining the state of underwater archaeological sites as well as surveying new areas with the aim of uncovering new and preserving already known underwater archaeological heritage.



Image 1: Amphorae on site near the island of Šćedro

3. OVERVIEW OF THE MOST SIGNIFICANT UNDERWATER SITES

3.1 THE MARITIME ZONE AROUND SPLIT AND THE BAY OF KAŠTELA

1. The port of Salona and the Vranjic peninsula

The port of Salona is first mentioned in historical sources by Strabo (Strabo VII, 5,5) who calls it “the port of the Dalmatae.” Scientific literature places the port in the wide and marshy delta of the river Jadro, on the southern side of the settlement which stretched along the river’s northern coast, from the intersection in Solin to where the Jadro entered the sea. That area is today covered by thick deposits from the river Jadro. At the turn of the 19th century, while investigating a wall in the southern part of the city, Frane Bulić discovered a large iron ring for mooring ships, indicating the area the ancient harbor would have occupied (Vrsalović, 1979). This hypothesis is given further credence by the results of excavations conducted by F. Oreb and B. Kirigin during the construction of large underground fuel reservoirs by INA-Petronafta in the area of Vranjičko blato. The remains of the port structure were discovered north of the road going from Vranjic to Solin, south of the current course of the river Jadro, near the present-day mouth of the river and exactly opposite the amphitheater of ancient Salona. These excavations also unearthed a massive wall going from north to south, 27.2 meters long, which turns west at a right angle for another 15.52 meters. The wall then turns south at a right angle and continues for another 4.5 meters before all traces of it are lost. Six large blocks approximately arranged in a square, potentially the pavements, were discovered within this structure. Seeing as the area was also a marshy floodplain in ancient times, only at a lower sea level than today, the builders of this structure first placed wooden pylons made of Aleppo or stone pine, 15 centimeters in diameter, then covered the terrain with stones before pouring a layer of mortar composed of smaller rocks and ground bricks over it. Large stone blocks, roughly rectangular in shape with an even outer rim and an uneven inner one, would then have been laid down on top of everything (F. Oreb – B. Kirigin, 1980). Along with the actual structure, numerous fragments of Roman pottery, frescoes, bricks and roof tiles, placed between the pylons to strengthen the structure’s integrity, were also discovered. A stone fragment of a Roman inscription and part of an altar were also found. The amphora and high-end pottery fragments date back to the 1st century. Based on this and on the techniques used in its construction, the structure was most likely built towards the end of the 1st century. Seeing as the excavation had to be completed within a limited time frame due to the ingress of water at the wall level, it was not possible to accurately determine the original function

of the newly-discovered structure. It can be assumed, however, that it served as a storage area or as a place to build and repair ships, since it was located outside the inner area of Salona and due to Vitruvius mentioning that shipyards had to be built facing north, as is the case with this structure. Whatever its purpose, the structure was part of the ancient port of Salona, which is known to have been used as an anchorage by the Dalmatae since the late 3rd century BCE. Since Salona was a major Greco-Illyrian naval and trade hub at the time, it is logical to assume that its port continued to grow as the city expanded, particularly when it became the center of Roman Dalmatia.

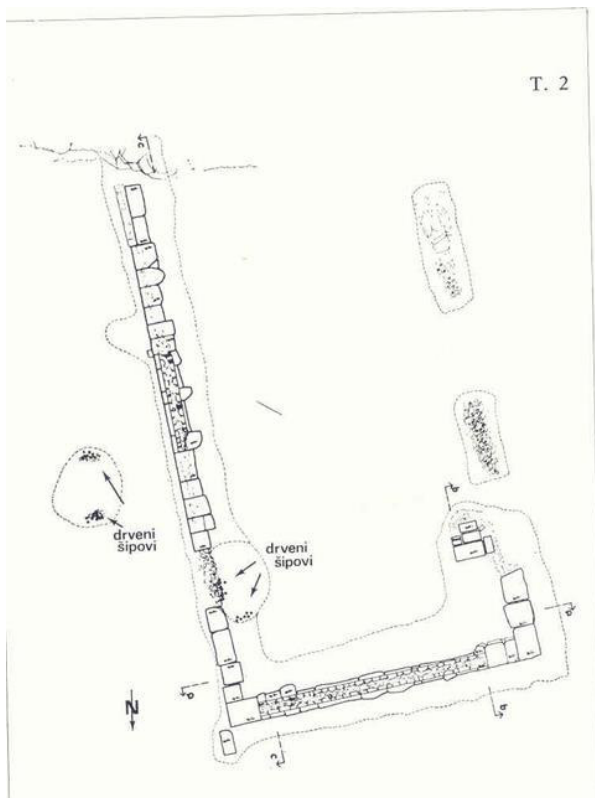


Image 2: Layout of the port structure

It is also important to mention the more recent surveys done along the southern and western waterfront of Vranjic in 2005 and 2006, during its reconstruction and expansion. They confirmed the existence of a Bronze and Iron Age settlement built on the very coast. Located above the prehistoric finds are numerous remains of wooden pylons used in the construction of the ancient port. At the turn of the 20th century, Frane Bulić documented three sunken sarcophagi on west coast of Vranjic. The most striking finds from recent surveys include sarcophagi, sarcophagus lids and fragments of stone and marble sculptures used for the building of the coastal structure between the 4th and 7th centuries. The stone fragments were excavated and are currently on display around Vranjic, while the more valuable fragments, such as the marble capitals or the marble sculpture of a woman are undergoing conservation.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.

Seeing as the remains of the port of Salona have not yet been found, most likely being located beneath a deep layer of mud and silt deposited there over the centuries by the river Jadro, it is necessary to conduct an archaeological survey aimed at ascertaining its exact location.



Image: 3 Sarcophagus discovered in Vranjic.

2. Split – bay of Špinut

The archaeological site is located in the bay of Špinut, on the north side of the Marjan peninsula in Split. It contains the remains of a complex ancient coastal structure dating from the 2nd century BCE to the 4th century CE which had been constructed using repurposed amphorae, heaps of rock, and wooden pylons, beams, planks, stakes and branches. The accidental find of stone masonry on land confirms that these ancient remains are also present along the actual shore of the bay of Špinut. The unearthed remains are presumed to have been a part of a coastal industrial complex containing port and other industrial facilities. Depth: 1-5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted

The site will be presented in situ upon the completion of archeological surveying.

3. Trstenik – Kaštel Sućurac

The underwater archaeological site of Trstenik has been under excavation since 2002, when a cache of Dressel 20 type amphorae was discovered along with the rim of a large, ceramic dolium which is, to this day, the only known example of a fully preserved perforated dolium in the Mediterranean (on show in the Croatian Maritime Museum in Split). Subsequent excavations led to the unearthing of a wooden pool structure filled with seawater and originally intended for industrial use, a cache of 40 globular amphorae surrounded by 91 wooden pylons, and the remains of a ship's wooden hull, about 12 meters in length. The sites dates back to the period of the 1st century BCE to the 3rd century CE. Depth: 1-5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted

The site will be presented in situ upon the completion of archeological surveying.

4. Kaštel Štafilic – ancient Sikuli

The ancient settlement of Sikuli is located by the stream Resnik, near Trogir. Pliny the Elder describes it as a Roman settlement founded by veterans sent there by the emperor Claudius and

it is also featured on the Tabula Peutingeriana. In the 1980s, divers discovered fragments of ceramic vessels while subsequent underwater archaeological excavations unearthed the remains of a wharf from the 2nd and 1st centuries BCE as well as several embossed cups and kraters. The excavations that have been conducted almost continuously since 1991 by the Museum of the Town of Kaštela led to the discovery of the accompanying settlement from the 2nd and 1st centuries BCE as well as the remains of the later phases of the settlement and the wharf from the 1st to 5th centuries CE. Depth: 1-5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted

The site will be presented in situ upon the completion of archeological surveying.

5. Kaštel Sućurac – Barbarinac

The islet of Barbarinac is located east of Kaštel Sućurac, some 200 meters from the shore. It lies along an east-west axis with numerous smaller reefs and shoals in the immediate vicinity. The remains of underwater structures probably dating to classical antiquity are visible in aerial shots of the area. The remains of sunken structures are also visible along the coast of the mainland (Tišić) and it is possible that the island and the mainland were connected by bridge in antiquity. Numerous moveable archaeological finds were recovered from the seabed and some are kept in the Museum of the town of Kaštela in the archbishop's castello in Kaštel Sućurac. The islet was the location of the castello (tower) Kuparić which was first mentioned in 1525 while it also hosted the church of Saint Martin in an earlier period. The islet was inhabited by villagers from Smoljevac. Unlike most other forts in the area of Kaštela, the tower and surrounding settlement did not survive Ottoman incursions. The underwater area around Barbarinac has not undergone systematic archaeological research with only small-scale survey having been conducted, but it is nevertheless a very interesting and complex site. Depth: 1-6 meters.

Only freediving and snorkeling allowed, scuba diving not permitted.

The site has been preemptively protected as an archeological zone under the designation P-5502.



Image 4: Archaeological site Barbarinac

6. Trogir – Pantan and Kopilica

Structural remains of ancient and most likely medieval salterns can be seen on the seabed of the western edge of the bay of Kaštela, along its northern edge, near the marshland of Pantan. Until recently, remains of salterns were also visible near Kopilica, to the west. The remains of a wooden construction of planks and pylons dating to late antiquity was surveyed here in 2007. Aerial shots show that these structures form closed square or rectangular pools which lost their original function as salt works following a rise of sea levels. Aerial shots also show the remains of a stone causeway, a sunken section of a Roman road leading from Salona to Tragurium. Further inland, an abundant spring and a water mill can be found, the latter being a protected cultural property. Depth: 1-3 meters.

Only freediving and snorkeling allowed, scuba diving not permitted.



Image 5: Aerial shot of Pantan archeological site

Trogir – Divulje (Tarce)

Numerous archaeological finds have been registered in the area of Divulje, indicating that the region was densely settled in Roman times. Part of a Roman villa was surveyed in 2008 while a survey of the seabed near Cape Tarce in 2005 yielded the remains of wooden pylons, ancient building material, and amphora fragments. This area had previously been known to have had Roman amphorae extracted from it. Seeing as the site is part of a military base, its tourist potential is limited. Depth: 1 – 4 meters.

Diving is not allowed.

The site is not protected as a cultural property.

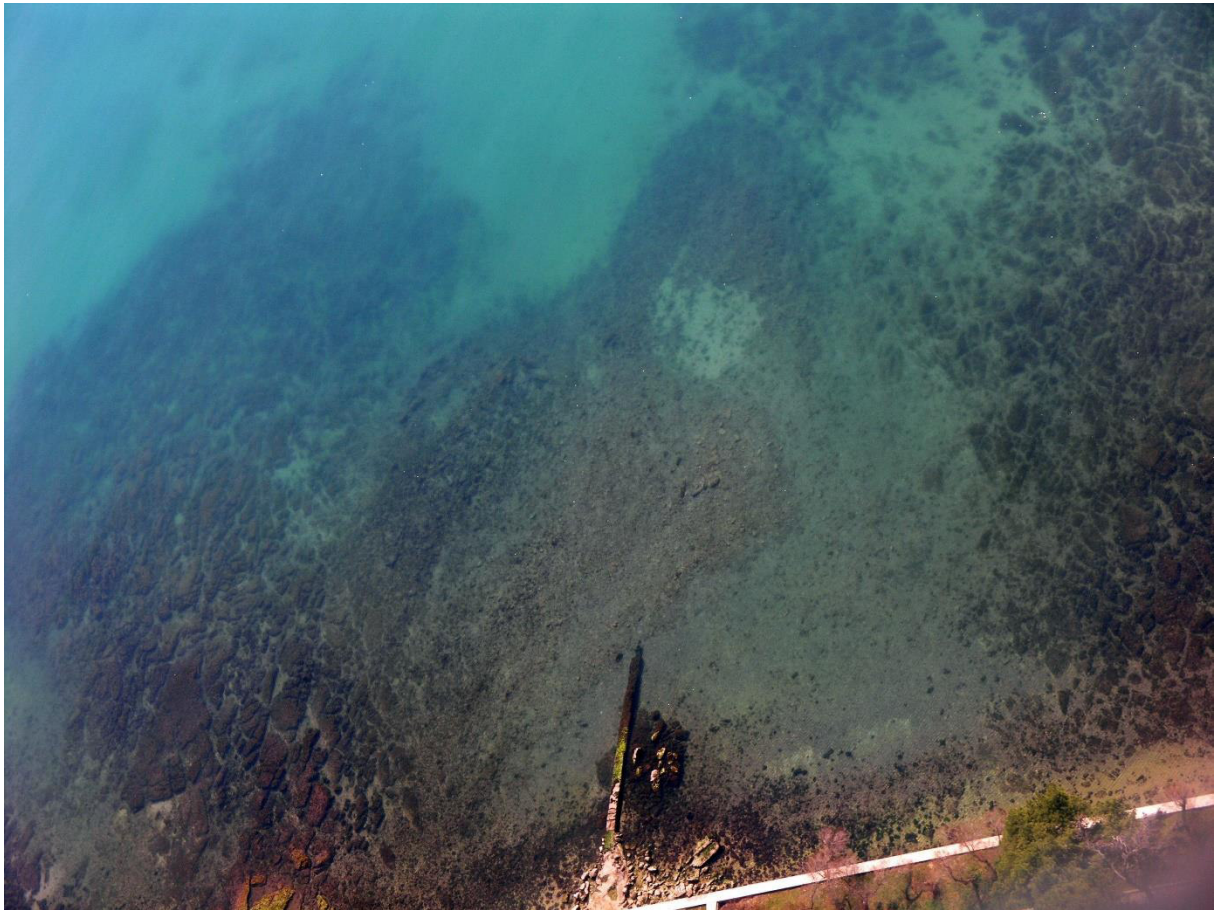


Image 6: Archaeological site Divulje

8. The island of Čiovo – Our Lady of Prizidnica

The remains of a shipwreck dating back to the 1st century BCE can be found east of the church of Our Lady of Prizidnica, some 400 meters from the shore. The first archaeological surveys were conducted by the Institute for the Protection of Cultural Monuments in Split in 1968 which led to the unearthing of 92 Lamboglia 2 type amphorae, a part of a gladiator's helm and several fragments of Greek relief and terra sigillata pottery. The site was plundered several times

following these surveys and numerous amphorae were stolen. Because of this the Archaeological Museum in Split decided to conduct new surveys in 1974 and 1975. These yielded fragments of a shipwreck, more precisely a part of the keel, nine wooden frames reinforced with bronze rods, and the remains of lead plating which protected the ship's outer hull from wormholes. Depth: 22 – 30 meters.

Recorded as cultural property.

Due to having been systematically plundered, only the wooden parts of the ship buried under the sand have survived while the amphorae are stored in the Archeological Museum in Split.

9. Stobreč

In the 3rd century BCE, Greek settlers from Issa founded Epetion atop a previous Illyrian settlement in the area of modern-day Stobreč. The remains of a wooden structure, most probably an ancient dock, have been discovered in the shallow bay to the east of the settlement. Surveys have also unearthed numerous fragments of large earthenware vessels (dolija) and other pottery which can be dated to a period from the 3rd century BCE to the 4th century CE. Depth: 1 – 5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.

10. Omiš – Cape Čelina

The site of an ancient shipwreck with a cargo of amphorae was discovered in 1970 some 150 meters southwest of Cape Čelina. Archaeological surveys unearthed Lamboglia 2 type amphorae dating back to the 2nd and 1st centuries BCE. The remains of the ship's frame were not discovered as they had decayed after the ship sank to the rocky seabed. The immense importance of the site lies in the fact that the majority of amphorae had seals on them, two of which, ABING and KANI, had not been previously recorded in scientific literature. Nenad Cambi believes that they could be the seals of local amphora manufacturers. Unfortunately, the site has been systematically looted and has not survived to the present day. Depth: 24 – 28 meters.

Recorded cultural property.

The site has been ravaged by systematic looting.

11. Baška Voda

The archaeological site in Baška Voda is located in the harbor of Baška Voda, between the old quay and the eastern breakwater. In August 2002, the remains of amphorae and other earthenware material, dating back to a period between the 2nd and 6th centuries, were located at a depth of 4 – 5 meters. Most of the finds are concentrated in an area of about 20 m². In September 2002, four more prehistoric rocks were unearthed, 20 cm long, and the remains of a thus-far unidentified wooden structure were also located. The find in question consists of two wooden beams 150 and 340 cm long and 40 cm wide. Located some 50 meters to the northwest, at a site called Gradina, are the remains of an ancient settlement, so it can be assumed that the underwater archaeological site used to be its harbor. That makes the underwater site in Baška Luka one of the rare harbors in the southern Adriatic that had been continuously in use from prehistory to Late Antiquity. Depth: 4 – 5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.

3.2 THE MARITIME ZONE AROUND THE ISLAND OF BRAČ

12. Vičja luka

Vičja luka is both an underwater and a terrestrial archaeological site located towards the middle of the west coast of the island of Brač. It is a deep bay that branches into two smaller ones: the bay of Bobovišća with the accompanying eponymous settlement, and the bay of Vičja luka. These two ports offer safe harbor to ships traversing the Split Gates. An archaeological survey of the seabed resulted in numerous fragments of prehistoric pottery being found while the abundant votive offerings in grave sites discovered on land serve as testament to the trade links between the local populace and Greek sailors who used Vičja luka as a harbor and safe anchorage. It is possible that the bay served as a kind of trading post for the bartering of goods. Depth: 1 – 8 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.



Image 7: View of the archaeological site in Vičja luka

13. Sutivan

Located near the town of Sutivan on the island of Brač at a depth of 31 and 35 meters are the remains of a shipwreck with several sarcophagi and other stone objects probably originating from the nearby quarries on Brač. Twenty objects are visible on the seabed, seven of which are sarcophagi, two are sarcophagus lids, nine are stone blocks, one is a cylindrical column, and one is a visibly perforated stone vessel. The site is 6.6 meters long and 4.1 meters wide without taking into account the stone vessel which is located 2 meters away from the other objects. The shipwreck dates back to the Late Antique period. The layer of sand beneath and around these

objects most likely hides the remains of pottery from the ship's kitchen as well as the remains of the ship's wooden hull that could more precisely date this unique archaeological site in the Adriatic. Depth: 32 meters.

Protected cultural property of the Republic of Croatia.

The shipwreck and the sarcophagi are presented in situ; diving is only permitted through licensed diving centers.



Image 8: Ancient shipwreck near Sutivan

Splitska Bay

The bay of Splitska on the island of Brač served as a port for transporting stone to Split while Diocletian's palace was being constructed. The stone quarries of Rasohe, Stražišće and Plate are located further inland. Several underwater rescue excavations were undertaken in the port of Splitska over the last 15 years leading to the discovery and documenting of the remains of walls which formed the foundation of a wharfage and other port facilities dating back to antiquity. A roof-shaped sarcophagus lid with acroteria at the corners was also discovered on the seabed. In 2011, the remains of a shipwreck carrying six stone blocks were unearthed in front of the bay. Depth: 1-5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.



Image 9: Archaeological finds in Splitska Bay

3.3 THE MARITIME ZONE AROUND THE ISLAND OF ŠOLTA

15. Piškera Bay

The remains of retaining walls belonging to an ancient fishpond were discovered at the end of Piškera Bay, near Nečujam on the island of Šolta. The stone embankment is 64 x 3 x 1.5 meters in size with a 3-meter wide opening in its center. This opening would have originally been covered by a barrier, but its remains have not survived to the present day. The embankment closes off the end of the 3-meter deep bay which was used for fish farming. It lies at a depth of 2 to 3.5 meters and was constructed using rough stone blocks. It is quite likely that a part of it originally

extended above the water level. The bottom of the pond contains scattered remains of Roman pottery and the planned archaeological investigations will shed more light into the age, nature and importance of this site. If folk tales are to be believed, the fishpond used to belong to the emperor Diocletian. Depth: 3-5 meters.

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted.

The site will be presented in situ and info-boards will be set up following the completions of archaeological surveys.

16. Mlin Shallows

The first surveys of the underwater archaeological site near Mlin Shallows were conducted in 1974 and 1975, but as the location had been looted and plundered since then, new surveys were done in 2006 and 2012. The seabed of the shallows is the site of a registered and plundered ancient shipwreck which has, on account of its cargo of Rhodian and Knidian amphorae, been dated to a period between the 1st and 2nd century. The amphorae, forming the majority of the surviving cargo, lie strewn along the stepped slope of an underwater reef at a depth of 18 to 40 meters. The remains of the ship's wooden frame were also discovered in a small underwater trench. Along with this discovery, which indicates that further finds might be present in the deeper levels of the sandy seabed, material which cannot be dated to the same shipwreck has also been recorded, meaning that several different wrecks might be located at this site.

Protected cultural property of the Republic of Croatia.

In order to protect the archaeological finds, diving is currently not permitted. Following the completion of the survey, the site will be presented in situ and will be open to visitors through licensed diving centers.

3.4 THE MARITIME ZONE AROUND THE ISLAND OF HVAR

17. Perna Bay near Sućuraj

The first written record of an underwater archaeological site near Hvar was made by the Italian naturalist Alberto Fortis in 1774 when he mentioned Roman amphorae lying on the seabed near Sućuraj. This was also the first record of an underwater archaeological site in Croatia in general. It has, however, also been extensively damaged over the years. The local community of Sućuraj and the sponge harvesters from Krapanj, with the approval of the appropriate authorities and in the presence of archaeologists, excavated several hundred amphorae from 1967 to 1969 with the intention of selling them. A similar situation occurred in Hvar in 1968 and 1969 when the local hotel company in association with the Pelegrin diving club extracted amphorae from the site in Gojica for use as hotel decoration. Out of 82 amphorae, only around 20 have survived to the present day.

Protected cultural property of the Republic of Croatia.

The site has been extensively damaged and plundered; archaeological surveys aiming to assess the state of the locality are planned.



Image 10: Perna Bay in 1978

18. Paržanj near Pakleni islands

The shipwreck is located on a sandy plateau some 35 meters below sea-level on the north side of the islet of Paržanj, near Pakleni islands. Archaeological surveys have so far discovered amphorae manufactured in Hispania dating back to the 1st century and several types of earthenware mortars. During a routine inspection, divers from the Department for Underwater Archaeology of the Croatian Conservation Institute found evidence that archaeological material had been plundered which led to a new examination of the site in 2013, but no new instances of looting were discovered. The site has not been systematically surveyed and with the sand up to two meters deep in some parts, it is safe to assume that further intact amphorae are present on site and that the ship's wooden frame is fully preserved.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 11: Amphora near Paržanj

19. Cape Pelegrin

A shipwreck containing North African amphorae from the 3rd or 4th century lies on the seabed near Cape Pelegrin. The amphora fragments are located on two different sites, 20-25 and 30-40 meters deep. During a routine check of the state of underwater cultural property in 2013, divers from the Croatian Conservation Institute inspected the site and concluded that further shipwrecks could be present along Cape Pelegrin, which would merit a systematic survey of the area. Its geographic position meant that Cape Pelgerin stood at the crossroads of ancient maritime routes going from the Pelješac Channel and along the southern coast of Hvar. The paths would diverge by the cape, with one going towards Vis, another through the Split Gates towards Salona, and the third towards Pharos – modern-day Stari Grad. Several types of amphorae were discovered, dating back to a period between the 3rd and 7th centuries. The shipwreck reported by local divers has not been located.

Protected cultural property of the Republic of Croatia.

Diving is currently not permitted in order to ensure the security of archaeological finds. Following the completion of surveying, the finds will be presented in situ and will be open to visitors through licensed diving centers.

20. Stari Stani Bay

The site was surveyed in 1987 and 1988 when the ship's wooden structure was documented and dated to the 2nd or 1st century. Over a hundred Lamboglia 2 type amphorae were extracted during these surveys. While on a routine inspection in 2006, divers from the Croatian Conservation Institute noticed traces of illegal excavation and plundering on the site. During a second inspection in 2013, it was noticed that parts of the buried wooden frame were visible due to sea currents and that this site, much like the one in Vrbaska Bay, required immediate preservation of the exposed parts.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

21. Duboka Bay near Vrboska

The archaeological site is located in Duboka Bay, on the north side of Hvar, near Vrboska. It was discovered still intact in 1994. A large number of amphorae were unearthed during surveys, 50

of which were still whole. Apart from amphorae, African red slip ware, crude crockery and several Tripolitanian-type oil lamps were also discovered. Based on these finds, the shipwreck can be dated to the 4th century CE. Parts of the ship's wooden structure were also discovered in the survey: the keel, frame and plating, all in very good condition. The site was buried in sand upon the completion of the survey and the unearthed amphorae were transported to the Museum of Stari Grad and put on public display. Continuing their expert monitoring of the site, divers from the Croatian Ministry of Culture and the Croatian Conservation Institute noted that the sand used to bury the wreck had been scattered by the sea currents, leaving parts of the ship's structure uncovered. Seeing as the remains of wooden plating are extremely sensitive and fragile, they were once again covered, first with geotextile, then with a thicker layer of sand, and finally with reinforced netting which should protect them from further sea currents.

Protected cultural property of the Republic of Croatia.

The shipwreck is covered by a layer of sand; diving is not permitted.



Image 12: Remains of the ship's structure

22. Duba Bay

The site in Duba Bay was located in 2018 following a report to the Conservation Department in Split. A survey of the terrain was conducted in 2019 with the aim of determining the state of the cultural property and ascertaining its value. The shipwreck, dating to the 4th century, is located at a depth of 32 meters and a large quantity of amphora fragments and earthenware plates was discovered on site. Due to the presence of ballast stones, it can be assumed that the ship overturned upon sinking. In order to accurately date the wreckage, four earthenware plates, three vaulting tubes (tubi fittili) and one North African amphora were excavated. The presence of this type of amphora indicates that the ship had most likely been transporting olive oil. The find of tuba fittili, small terracotta tubes of North African provenance, 11-19 cm in length and used in the construction of vaults and other structural elements is also a very interesting find. This site also has signs of plundering having taken place and will need to be protected as soon as possible.

Protected cultural property of the Republic of Croatia.

Diving is currently not permitted in order to ensure the security of archaeological finds. Following the completion of surveying, the finds will be presented in situ and will be open to visitors through licensed diving centers.



Image 13: Archeological site in Duba Bay

23. Ancient shipwreck in Veli Porat Bay near the island of Šćedro

The archaeological site was discovered in 1978 and the first surveys were conducted by Nenad Cambi who established that the find in question was an ancient shipwreck with a cargo of Lamboglia 2 type amphorae, among which a big, lead anchor stock was also located. The site had already been extensively looted at the time of discovery and further plundering would ensue in the following years despite police supervision. A team from the State Conservation Institute inspected the site five years later and found that the large, lead anchor stock was missing. The shipwreck, located at a depth of 20 meters, was again surveyed in 1983 by Amrijan Orlić and Mario Jurišić. While the ship's wooden structure was not located, instances of naval equipment, such as fragments of the ship's pump and an auxiliary iron anchor were discovered. This makes the site unique in the Adriatic as the only one where iron and lead anchors were discovered together. The remaining archeological finds include a millstone, an iron adze used for ship repairs, lead fishing sinkers, as well as numerous earthenware pottery and oil lamps. The ship had been transporting Lamboglia 2 type amphorae and over 90% of them can be assumed to have been looted prior to the commencement of the survey. The ships' port of departure was most likely somewhere in Northern Italy and it was probably destined for Salona or Narona. During the early phase of the Roman Empire, some of the busiest naval trade routes passed through the area between Hvar and Vis, which explains the presence of such a large number of shipwrecks. The Roman villas in Rake on Šćedro and in Soline on Sveti Klement prove that anchorages where ships could be resupplied with food and victuals existed in this section of the shipping routes.

Protected cultural property of the Republic of Croatia.

Diving is currently not permitted; further archaeological surveys are planned.

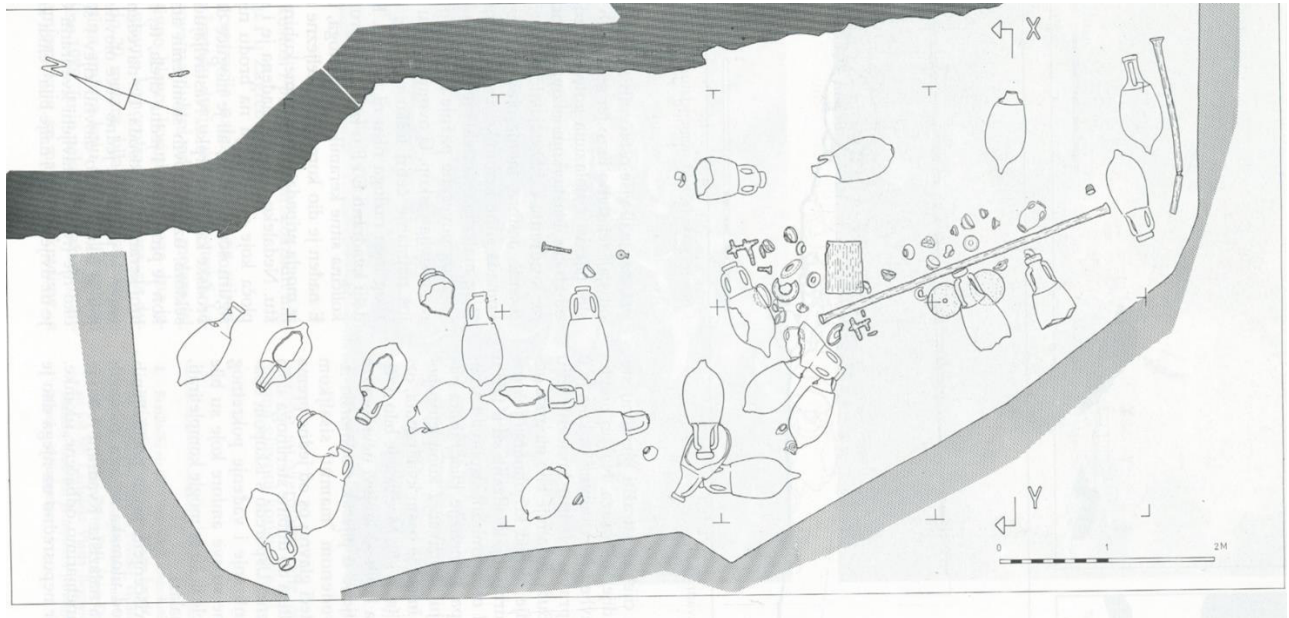


Image 14: The shipwreck in Veli Porat Bay

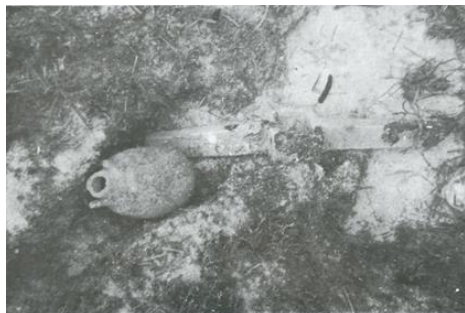


Image 15: Veli Porat in 1978 and 1983

24. Cape Izmetišće on the island of Sveti Klement

The remains of an ancient shipwreck transporting amphorae and other earthenware pottery are located on the northwestern side of Cape Izmetišće. A lead anchor stock was also located on the site before being moved to the Hvar Heritage Museum. The excavated earthenware materials includes numerous fragments of pottery as well as intact vessels with one or two handles, round jugs with trefoil mouths, biconical pots with two handles and lids, and finally plates and pans with openings where handles could be inserted. The Archaeological Museum in Zadar bought 55 intact earthenware vessels off of the Krapanj sponge harvesters, all originating from this site. Thanks to the uncovered earthenware material, the site was dated to the 1st and 2nd century CE. Although mostly looted, there is still a possibility that further archaeological material or parts of the ship structure lie undisturbed in the lower layers of the site, which warrants an archaeological survey to be conducted.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 16: Archeological excavation on Cape Izmetišće

25. The island of Šćedro, Rake Bay

At the end of Rake Bay, on the island of Šćedro, the remains of an ancient pier, wharfage, and several other structures have been discovered. Further, the remains of the bottom part of a pithos, about 1 meter long, are visible on the eastern side of the archaeological site at a depth of 2 meters. Large quantities of fragments belonging to amphorae and other pottery dating back to antiquity have also been found on the seabed along the western coast of the bay. Taken together, these finds make it clear that the site used to be a Roman industrial complex – a villa maritima.
Depth: 1-4 meters

Protected cultural property of the Republic of Croatia.

Only freediving and snorkeling allowed, scuba diving not permitted

The site will be presented in situ upon the completion of archeological surveying.

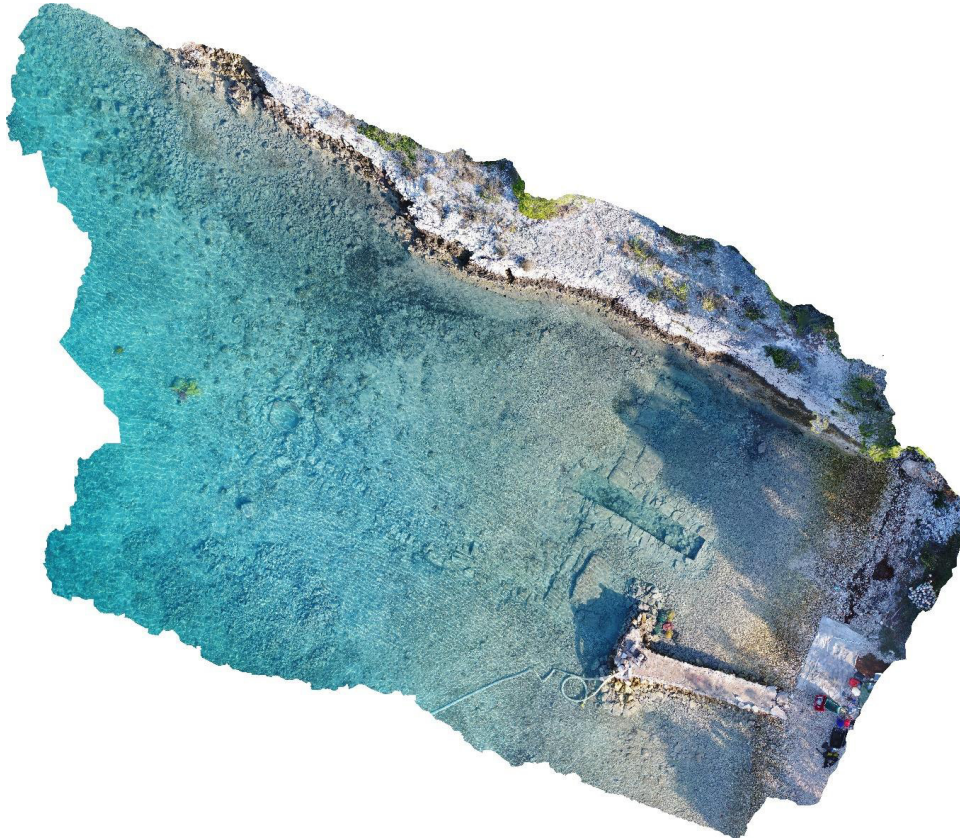


Image 17: Rake Bay

The island of Šćedro – ancient shipwreck

An ancient shipwreck was discovered in November 2017 along the north coast of Šćedro. It was already obvious from the initial survey that the shipwreck was intact and that its cargo consisted of Lamboglia 2 type amphorae dating back to the Roman Republic. The remains of this cargo are spread over the sandy, almost perfectly flat seabed, at a depth of 42 meters. The shipwreck covers an area of 15 x 6 meters in size. Around 120 amphorae can be seen, arranged into three rows. Most of them are still intact with only a small number having been damaged when the ship foundered. Subsequent surveys of the seabed revealed that more amphorae are present in the lower layers of the sand and sediment.

Due to its remarkable level of preservation and because of the cargo it carries, this newfound shipwreck constitutes one of the most significant archaeological sites in Split-Dalmatia County and has therefore been encased in a protective cage to ensure its safety. Depth: 43 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

Due to its shallow depth and exceptional state of preservation, the site has been protected by a cage and presented in situ.



Image 18: Ancient shipwreck near Šćedro

27. Stambedar near Pakleni islands

An inspection of the site was carried out in 2018 and several instances of earthenware pottery were collected. Seeing as signs of plundering were visible on site, it was decided to conduct a

small-scale conservation campaign in 2019, during which an inventory typical of 17th century ships was documented: three large iron anchors, the largest of which was 3.4 meters in length, six iron cannons, fragments of glass cups, several specimens of maiolica earthenware pottery as well as numerous items related to the ship's armaments. Four ceramic items were documented within the archaeological trenches, with an intact plate with an annular foot being of particular interest. The maiolica plate is decorated with a heraldic motif featuring a yellow and ochre marten on the interior. Comparable specimens were discovered during the surveying of Jakša palace in Hvar. It is a classic example of the Castelli workshop in Abruzzo dating to the late 16th and early 17th century. As well as in Hvar, similar examples were discovered in Zadar Split, and Dubrovnik. The aforementioned iron cannons can be divided into two groups. The first contains two cast iron, muzzle-loading cannons, around 2 meters in length and with a 10 cm caliber. The second group includes four highly mobile, breech-loading cannons which would have been mounted on the ship's railing. The mixing of different types of cannons is not unusual for the 16th and 17th century when trade vessels usually carried guns of various materials, calibers and manufacturing techniques. Cast iron cannons did not appear in the Mediterranean until the late 16th century, brought there by English merchants and pirates. Muzzle-loading cannons can be loaded with stronger propellants and since they are made as one single piece, there is no leakage of gunpowder fumes when they are fired. On the other hand, reloading is more complicated and significantly slower than with breech-loading cannons. This type of cannon is made up of two basic parts: the muzzle and the gunpowder chamber. The cannons found on this site also have a yoke and a handle for turning and aiming. The advantage of this type of gun lies in the fact that several gunpowder chambers could be readied before battle, greatly increasing the rate of fire. Gunners would, however, have to make sure the gunpowder chamber adhered to the back of the muzzle. According to archaeological evidence, cannons in the 16th and 17th centuries would have been kept loaded while sailing. A rare find was also discovered on site – a ship's bell made from cast bronze. Such bells are an incredibly rare sight on shipwrecks and only two have been found in Croatia. The first, with the year 1567 engraved on it, was discovered on a late-16th century Venetian wreck in the Sveti Pavao shallows on the island of Mljet. The second is kept in a private collection and was taken from a 17th century shipwreck located in Saladinac Bay on the island of Biševo. We can only guess as to whether the ship lying near Stambedar sank in battle or due to bad weather and navigational error. According to all recovered evidence, the shipwreck,

which is located on a direct line of communication between Hvar and Vis, dates back to the 17th century. Depth: 36 – 40 meters.

Protected cultural property of the Republic of Croatia.

Diving is currently not permitted in order to ensure the security of archaeological finds. Following the completion of surveying, the finds will be presented in situ and will be open to visitors through licensed diving centers.



Image 19: Iron anchor and cannon

28. The steamship *Dubrovnik*

The wreck of the steamship *Dubrovnik* is located in the Neretva Channel, between the Pelješac peninsula and the island of Hvar, at a depth of 55 to 60 meters. The ship is 51 meters long, 7.5 meters wide at its widest point, and lies along a northeast-southwest axis. It was constructed in 1892 in Scotland for the Dubrovnik Steamship Line. On May 9th 1916, at the height of World War I, the ship was sunk by two torpedoes fired by the French submarine *Archimède* (under Italian command). All 38 passengers and crew members perished in the attack. The fact that the

Dubrovnik was a merchant vessel in civilian service only emphasizes the tragic and unjust nature of this act. The ship came to rest upright on the sea floor with its frame and superstructure well preserved and a large number of its onboard inventory still present. Depth: 55-60 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

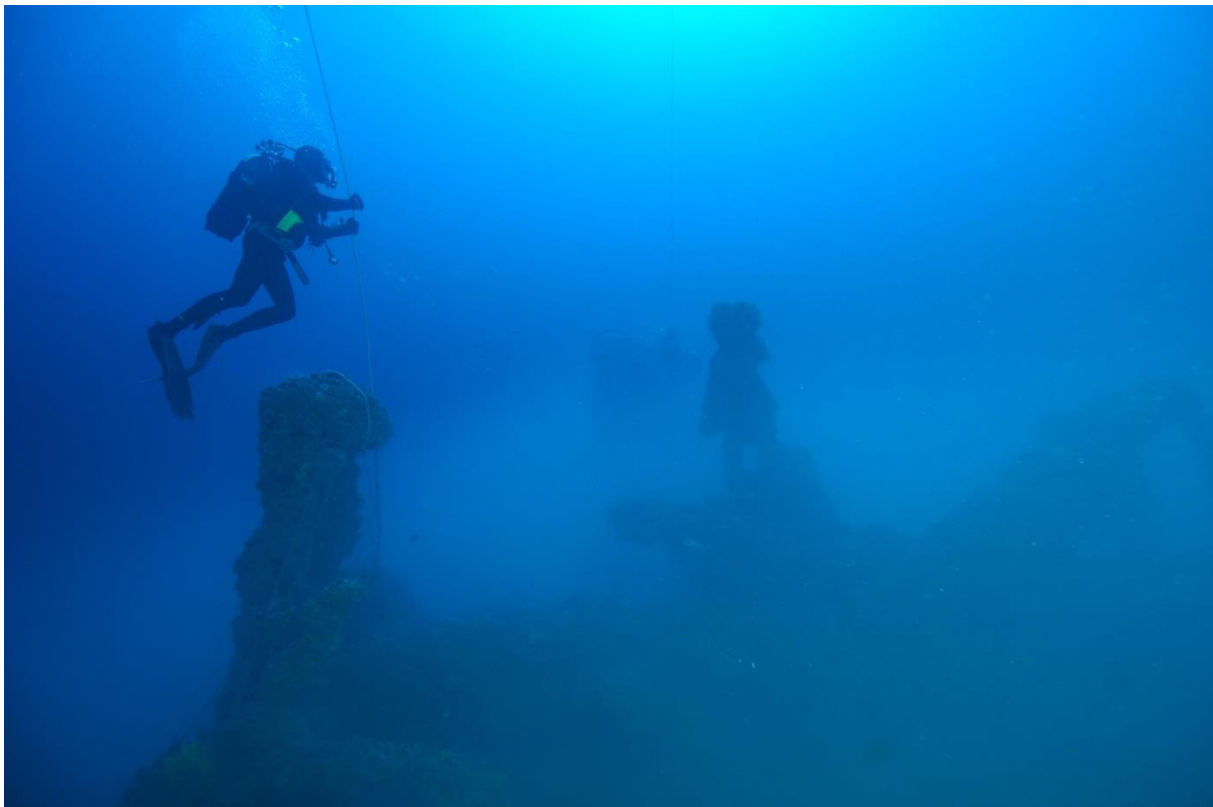


Image 20: The steamship *Dubrovnik* (photo by D. Gorički)

29. The B-24 Liberator (*Le petit fleur*)

The wreckage of the sunken World War II US bomber is located to the west of Sućuraj, between the island of Hvar and the Pelješac peninsula. The plane was 20.5 meters long, had a wingspan of 33.5 meters, weighed 25.5 tons and featured four Pratt & Whitney engines. Its USAAF serial

number was 4-2-51874. It crashed on November 20th 1944 and broke up into two pieces upon hitting the sea surface. Its remains now lie at a depth of 40 meters.

Depth: 40 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 21: The B-24 Liberator (*Le petit fleur*) (photo by: D. Gorički)

3.5 THE MARITIME ZONE AROUND THE ISLANDS OF VIS, PALAGRUŽA AND SVETAC

Due to the large number of underwater sites, the maritime zone around the island of Vis is protected as an underwater archaeological zone extending 300 meters from the coast of Vis and all outlying islands, islets and reefs.

30. The port of Vis

Located within the port of Vis are the remains of a Greco-Roman harbor as well as numerous smaller finds belonging to a broader timeframe. The remains of port facilities from both Greek and Roman periods are present all along the Pirovo peninsula. The oldest harbor in the Adriatic, dating back to the 4th century BCE, was constructed using large blocks of stone which today mark the location of the port from the Roman period. Both harbors are well preserved. Apart from these architectural remains, fragments of amphorae and other Greek and Roman pottery can also be seen on the sea floor as can more modern remains, like the fragments of painted Venetian pottery. A large quantity of ancient roof tiles (tegulae) has been sighted in the bay of Sveti Juraj. Depth: 1-8 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

The islet of Host

Standing watch at the entrance to the port of Vis is the small island of Host with its lighthouse. It was named after an English officer, Sir William Host, who, in a naval battle that took place in its vicinity, defeated a much larger French fleet under Admiral Dubourdieu. Due to its strategic importance, several archaeological sites from various time periods can be found on the surrounding seabed.

Northeast of the islet, at a depth of 30 to 50 meters lies an ancient shipwreck carrying very rare Dressel 35-36 type amphorae whose fragments, as well as some larger parts, can be seen on the sandy sea floor. Another ancient shipwreck, this one with a cargo of Lamboglia 2 amphorae, is located along the island's northwestern coast, at a depth of 20 to 25 meters. Even though the ship's frame and part of its cargo lie covered beneath the sand, the relatively shallow depth of this wreck from the 2nd or 1st century BCE makes it an attractive spot for divers. Depth: 20-50 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

The site has been encased in a protective cage.

32. Vela Svitnja Bay

In 1972, a well-preserved ancient shipwreck transporting earthenware pottery and Greco-Italic amphorae was located to the west of the port of Vis. Archaeological surveys were conducted by the Archaeological Museum in Split in 1972, 1973, and 1974. The remains of the ship, 16.5 meters long and 8 meters wide, lie along a southwest-northeast axis and are located at a depth of 30 to 35 meters. The ship's wooden structure suffered extensive damage from wormholes while lying in the shallow layers of sand and silt, so only five frames survived. During these surveys, 634 amphorae were excavated, all of which are today kept on display in the Issa Archaeological Collection in Vis. The amphorae belong to a variant of the Greco-Italic type which can be classified as being somewhere between the Republicaine III and Lamboglia 2 types. Interestingly, most of the amphorae were covered with disk-shaped ceramic lids indicating that they were full at the time of sinking. Various seals are inscribed on the handles, many of them not recorded in scientific literature. This led Nenad Cambi, the survey director, to conclude that the amphorae had been locally manufactured somewhere along the eastern Adriatic Coast, perhaps even on Vis. These disparate seals also indicate that the ship had been transporting amphorae made by several different manufacturers. The shipwreck dates back to the 2nd and 1st centuries BCE.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

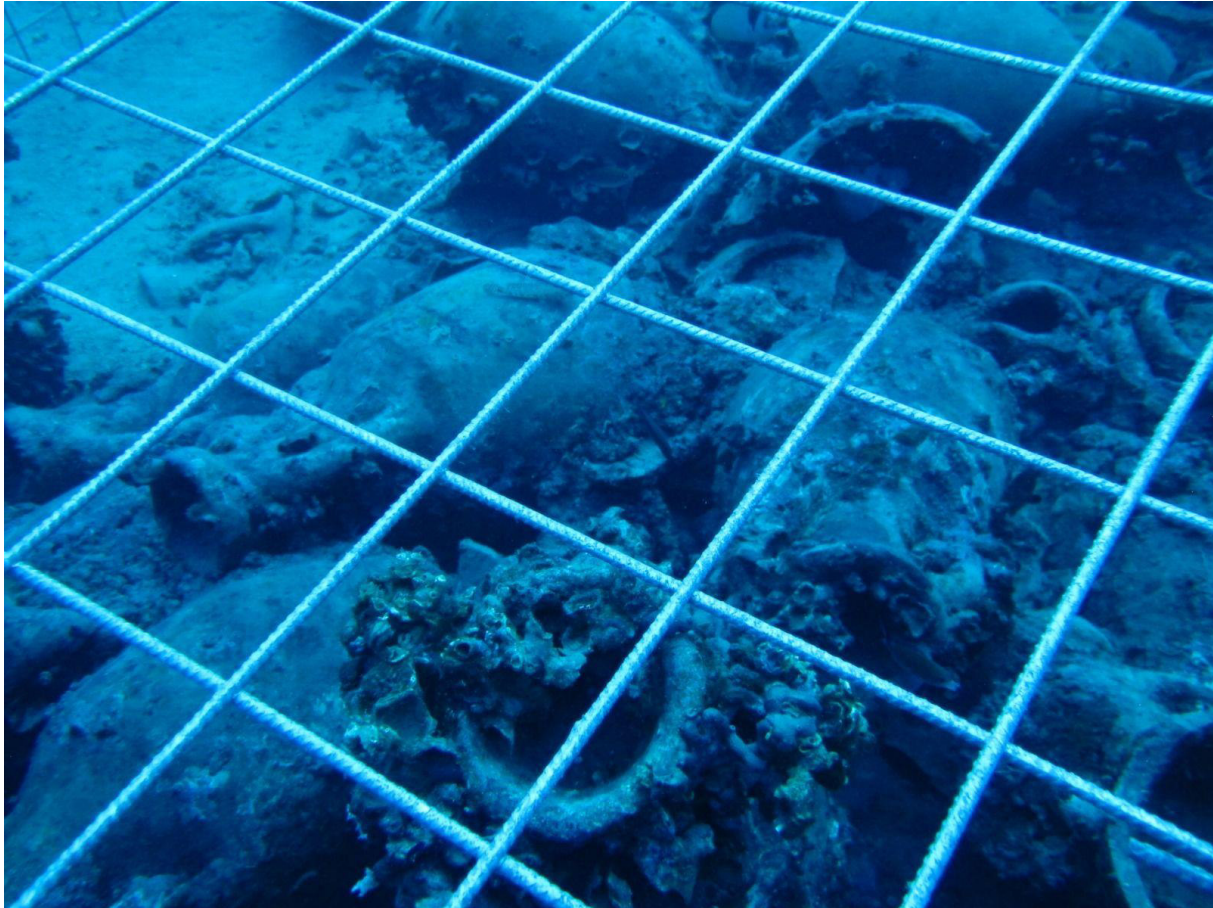


Image 22: Amphorae protected by an iron cage

Cape Stončica

Several discrete sites which do not have the characteristic of closed archaeological sites are located in the area of the cape and bay of Stončica. The sites at the cape are probably the result of shipwrecks and those in the bay the result of regular ship maintenance. This leads to the conclusion that Stončica Bay used to act as a haven and anchorage for ships since the Hellenistic period. Located on the eastern side of the cape, at a depth of 25 meters, are fragments of amphorae belonging to the so-called Istrian type and dating back to the 1st century BCE, while located at the very tip of the cape are amphorae of the Greco-Italic type dating to the turn of the 2nd century BCE. A large cluster of amphora fragments dating to the 1st century BCE, most

of which had already been plundered, were discovered on the western side of the cape. This is also where a lead anchor stock was found, so it can be assumed that the site in question is a shipwreck. Smaller clusters of amphorae and earthenware pottery, all dating back to antiquity, were discovered in several locations in Stončica Bay.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

34. Grebeni

East of Vis, along the coast of the small island of Greben lies the final resting place of a wooden 18th or 19th century sailing ship. Little is known about it as only its cannons remain on the sea floor, arranged exactly as they would have been on the ship's deck. There were 16 cannons in all, 14 are still on location while two bronze ones were transferred to the Archaeological Collection in Vis. Its wooden hull has since rotted away due to exposure to marine organisms. The vessel was most likely a French warship from the early 19th century. Depth: 54 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

35. Bay of Vis

In 2014 and 2015, the remains of a shipwreck were discovered at a depth of 50 meters on the flat, sandy seabed in the channel between the islet of Host and the cape where the fort of Sveti Juraj (Saint George) stands. One bronze cannon, eight iron cannons, several cannonballs and a large amount of ship equipment was sighted on the surface layer of the seabed. The visible finds occupy an area roughly 20 x 8 meters in size and their location indicates that the ship probably came to rest on its keel after sinking. The wreck in question is without doubt that of a Venetian ship which has, due to its position within the bay of Vis, remained intact and avoided damage from fishing tools or other external sources. It can be assumed that the bottom part of the ship along with its inventory is still fully preserved beneath the sand. A bronze canon with the motif of a winged lion, cast in 1696 by the famous Venetian founder and ballistician Sigismondo V.

Alberghetti, was also found on site. This is the first such canon of Venetian provenance found in Croatian waters. Depth: 50 meters

Protected cultural property of the Republic of Croatia.

Diving is currently not permitted in order to ensure the security of archaeological finds. Following the completion of surveying, the finds will be presented in situ and will be open to visitors through licensed diving centers.

36. The *Vassilios*

The Greek merchant ship *Vassilios* sank near Cape Stupišće, not far from the town of Komiža. Originally named Eastern Temple, it was built in 1920 in Osaka and had a GRT of 3673 tons. On March 19th 1939, while transporting coal to Venice, the ship's rudder malfunctioned causing it to hit the coast. Soon after, the ship foundered and sank to the bottom of the sea. It is said that the sailors themselves sank the ship so its owner could file an insurance claim, a common practice at the time. The *Vassilios* was owned by the Greek shipping magnate E. M. Tricoglu Andros, who bought it in 1938. The wreck lies on its port side and its interior can be easily accessed by divers. The ship's mast is still intact and its bow rises to 15 meters below the surface while the stern rests at a depth of 55 meters. The wreck is 104 meters long, 15 meters wide and, due to lying at a depth of 22 to 55 meters, it is ideal both for new as well as experienced divers. Depth: 22-55 meters

Protected cultural property of the Republic of Croatia.

37. The *Brioni*

The steamship *Brioni*, whose wreck now lies near the islet of Ravnik, belonged to the Austrian shipping company Österreichische Lloyd. It was built in 1909 in Monfalcone to transport passengers and goods along the Adriatic coast, but misfortune always seemed to follow it. It was commandeered by the Austro-Hungarian Navy in 1914 to serve as a transport ship and in 1917 it ran aground on the small island of Galun, near Krk. It met its end on the 2nd of February 1930 when severe weather caused it to hit the coast near Cape Jezero on the islet of Ravnik. The *Brioni* was mostly likely transporting tobacco and wine during its final voyage. It was 69 meters long and had a GRT of 1111 tons. When diving towards it, the stern, which still features an intact propeller, is the first part to come into view. The wreck is extremely well preserved and lies on its side at a depth of 40 to 63 meters. Depth: 40-63 meters.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 23: The *Brioni* (photo by: D. Gorički)

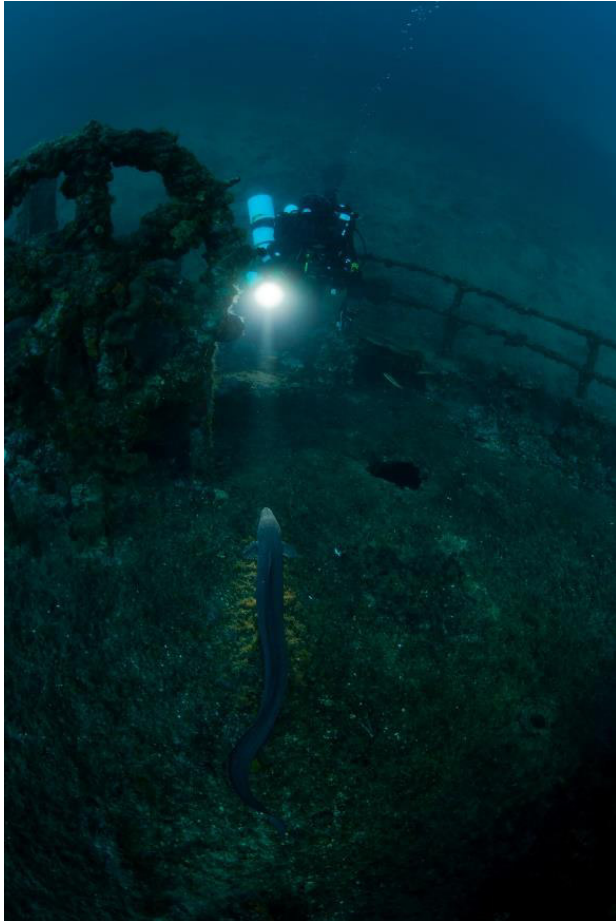


Image 24: The *Teti* (photo by: D. Gorički)

38. The *Teti*

Along the northern coastline of the islet of Mali Barjak, west of the town of Komiža, is the wreck of the *Teti*, which ran aground on the 25th of May 1930 due to a navigational error. Built in the USA in 1883 as a cargo ship, it had two cargo bays and two masts. The engine and the bridge, built out of wood, were located in the central part of the ship. The wreck is 72 meters long, 8 meters wide and it had a GRT of 963 tons. Because it is located at such a shallow depth (10 to 33 meters), it is ideal for novice divers, with the perfectly preserved stern presenting a particular treat. Depth: 10 – 33 meters. Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

39. The B-24 *Lady Luck* – the island of Biševo

Part of the 827th Squadron of the 484th Bombardment Group, the crew of the *Lady Luck* received their orders on the morning of November 19th 1944 and took off from a Moroccan airfield. While approaching its target near Vienna, it was hit by flak. The pilot managed to bring the plane all the way to an emergency airfield on Vis, but the only landing strip had been damaged by an earlier crash landing and was undergoing repairs at the time. The plane crashed into the sea just east of Biševo. The pilot, Lt. Henry T. Miller, was the only survivor out of the 10-man crew. Depth: 86-93 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 25: The B-24 *Lady Luck* (photo by: D. Gorički)

40. The B-24 *Tulsamerican*

The remains of the American World War II bomber B-24 Liberator *Tulsamerican* are located near the island of Vis. The front part of the wreck lies on a sandy plateau at a depth of 41 meters while the tail came to rest at a depth of 55 meters. An underwater survey of the site determined that the aircraft hit the sea while attempting a crash landing and broke up into several larger pieces. It got turned around upon impact and it now lies upside-down on the sandy sea floor. The plane's fuselage, both wings, four engines (one with a propeller still attached), the landing gear, the front part of the dome and the cockpit, which got separated from the fuselage, are visible on the seabed. All the flight instruments in the cockpit are still well preserved. Below the cockpit are the preserved remains of a parachute while the barrel of a Browning M2 machine gun, which also used to be there, had to be removed to prevent it from being looted. A large quantity of

ammunition was also sighted, but no bombs were found. The wings have an insignia painted on them – a white star on a blue roundel with white bars. Since the Chassis Serial Number (42-51430) was also found, it leaves no doubt that the bomber in question is the B-24 Liberator *Tulsamerican*. It was the last of 18.000 planes built in the Douglas Plant in the US city of Tulsa, which is how it got its name. It fought in WWII as part of the 765th Squadron of the 461st Bombardment Group and its last mission saw it flying towards occupied Poland. Depth: 41-55 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 26: The B-24 *Tulsamerican* (photo by: D. Gorički)

41. The B-17 G

The wreck of the B-17 G bomber is located near Cape Polivalo, southeast of the village of Rukavac on the island of Vis, at a depth of 72 meters. This American bomber, serial number 44-6630, had an 11-man crew and flew as part of the 340th Bombardment Group stationed in Italy from where it would take off to bomb targets in Austria. The plane was 22.5 meters long with a wingspan of 31.5 meters and an armament consisting of Browning 12.7 mm machine guns.

It set off on its final mission on November 6th 1944 from the Amendola Air Base in Italy to bomb Vienna, but due to heavy cloud cover over the Austrian capital, the crew was ordered to drop its deadly payload over Maribor. The plane was struck by anti-aircraft fire and it had to continue flying towards Vis, the nearest Allied airfield, with a damaged hydraulics system. The pilot didn't manage to land on the landing strip and so decided instead to land on the sea surface, where the aircraft sank. Although its depth makes it difficult for divers to reach it, the B-17 G is the best preserved example of a WWII airplane with all its flight instruments still intact. Depth: 65-72 meters

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.



Image 27: The B-17 G (photo by: D. Gorički)

42. Palagruža, submarine area – remains of several shipwreck from various time periods

Due to its position in the middle of the Adriatic Sea, Palagruža has always played an important role in transadriatic relations. Material finds on the island and the surrounding area serve as proof that contact between the two sides of the Adriatic was already established in the early Neolithic period and that it continued through the Bronze Age, the period of Greek colonization and into Roman times. Ancient sources mention the island or islands of Diomedes located somewhere the Adriatic, but say nothing as to their exact position. Further examination of these sources leads to the conclusion that “the islands of Diomedes” are in fact Vela and Mala Palagruža as the cult of Diomedes was often associated with important points along maritime trade routes, which these islands were, and the discovery of opulent Greek pottery on the island indicates that a shrine to Diomedes used to stand there once. It is not surprising then that the seabed around Palagruža constitutes a particularly fertile underwater archaeological area containing numerous remains of archaeological material. An onboard ceramic altar from the 5th century BCE, one of

only four recovered in the Adriatic, was excavated from one archaeological site around Palagruža. A survey of another site discovered numerous Dressel 1C type amphorae while two 16th-century bronze cannons were unearthed from a third site and placed on show in front of the Fort of Komiža. The island and the surrounding seabed contain significant archaeological finds belonging to a time period of over 2000 years.

The protected underwater archaeological zone extends 200 meters from Palagruža and all outlying islands, islets and reefs. Depth: 20-40 meters

Diving permitted on some sites through licensed diving centers.

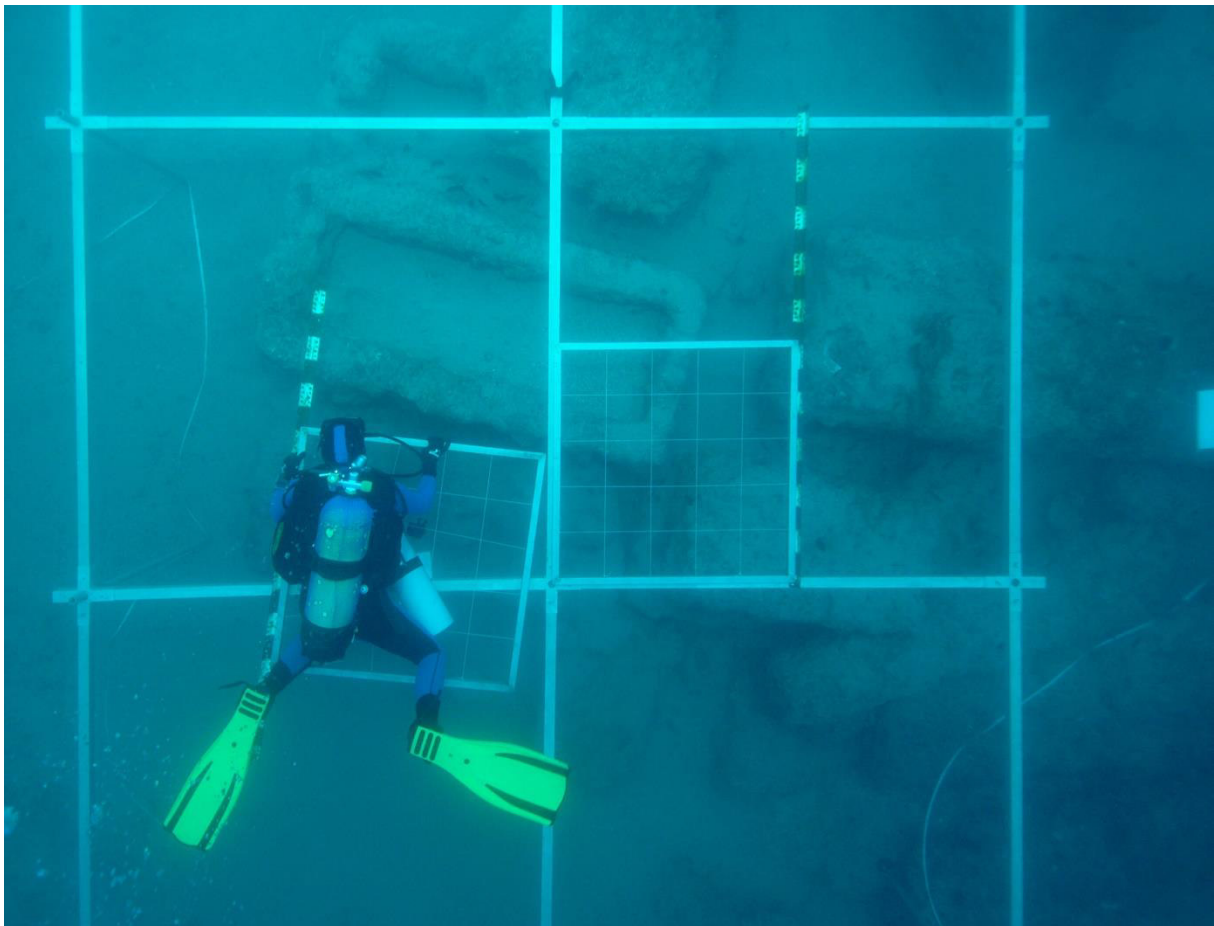


Image 28: Documenting of the archaeological site

Svetac

Fragments of amphorae types Dressel 2-4 and Richborough 527 from the 1st century are scattered around the sandy seabed around the island of Svetac. Fragments of the ship's cargo and equipment, as well as the remains of its wooden frame are buried beneath the sand. Depth: 29-32 meters.

Protected cultural property of the Republic of Croatia.

Diving permitted only through licensed diving centers.

THE BATTLE OF VIS (LISSA)

Ships that participated in the Battle of Vis, the most important naval battle in the history of the Adriatic, and one of the most significant naval engagements in European history in general. It took place on July 20th 1866 in the waters around Vis between the Italian and Austrian fleets.



Image 29: The *Re d'Italia* (photo by: D. Gorički)

44. The *Re d'Italia*

The *Re d'Italia* was the flagship of the Italian fleet during the Battle of Vis. It was built in New York in 1864 and had a wooden hull that was sheathed in 114 mm wrought iron armor. The ship was 84 meters long, it had a beam of 16 meters, a draft of 7 meters, it displaced 5700 tons and was armed with 164 mm and 203 mm guns. The wreck of the *Re d'Italia* was located in 2005 by a joint French-Croatian expedition 120 meters below the sea surface. Due to it being located at such a great depth, a mini submarine was used in exploring the wreckage. Four hundred sailors went down with the ship, making its wreck a veritable underwater tomb. Depth: 120 meters

Protected cultural property of the Republic of Croatia.

45. The *Palestro*

One of the most important ships in the Italian fleet during the battle, the *Palestro* had a wooden hull sheathed in 120 mm wrought iron armor. It was 64 meters long, it had a beam of 13 meters, a draft of 5 meters and a displacement of 2642 tons. The ship was armed with 165 mm and 203 mm guns and its engine produced a top speed of 8 knots.

The wreck, first located in 2014, was confirmed to be that of the *Palestro* in 2015 after a joint operation by the Croatian Ministry of Defense and the Ministry of Culture pursuant to the Central Coordinating Committee for the Supervision and Protection of the Maritime Rights and Interests of the Republic of Croatia. The ship's hull lies on the sea floor split in two pieces and the remains of the mast, the guns and the boiler are also visible. With over 200 souls lost, the wreck of the *Palestro*, much like the *Re d'Italia*, is an underwater tomb. Depth: 115 meters

Protected cultural property of the Republic of Croatia.



Image 30: The *Palestro* (photo by: D. Gorički)

46. The *Radetzky*

The Austrian frigate *Radetzky* was constructed in 1854 in the United Kingdom. It was 58.5 meters long, it had a beam of 12.5 meters and was armed with 41 guns of varying calibers. Supplementing the sails was a propeller powered by a 300 horsepower steam engine. The ship took part in the Battle of Helgoland in 1864 and the Battle of Vis in 1866 after which it participated in several missions in the Adriatic and the Levant. The ship sank on February 20th 1869 after an explosion tore through its ammunition storage area. Out of a crew of 355, made up mostly out of young men from Dalmatia, only 23 survived after being rescued by fishermen. Pursuant to the Central Coordinating Committee for the Supervision and Protection of the Maritime Rights and Interests of the Republic of Croatia, the Croatian Navy, the Croatian Coast Guard and the Ministry of Culture (the Conservation Department in Split) undertook a joint operation of surveying the seabed, during which the remains of the Austrian frigate *Radetzky* were located and identified. The shipwreck lies at a depth of 90 meters and is well preserved. The remains of the hull, the sheath, the guns, the anchors, the boiler and other parts of the ship's structure are all visible on the seabed. Depth: 85-90 meters

The wrecks of these ships are not currently open to divers in order to ensure the protection of moveable artifacts.

Commercial diving on the wrecks of these three ships will be made possible following the completion of archaeological investigations and conservation and restoration works.

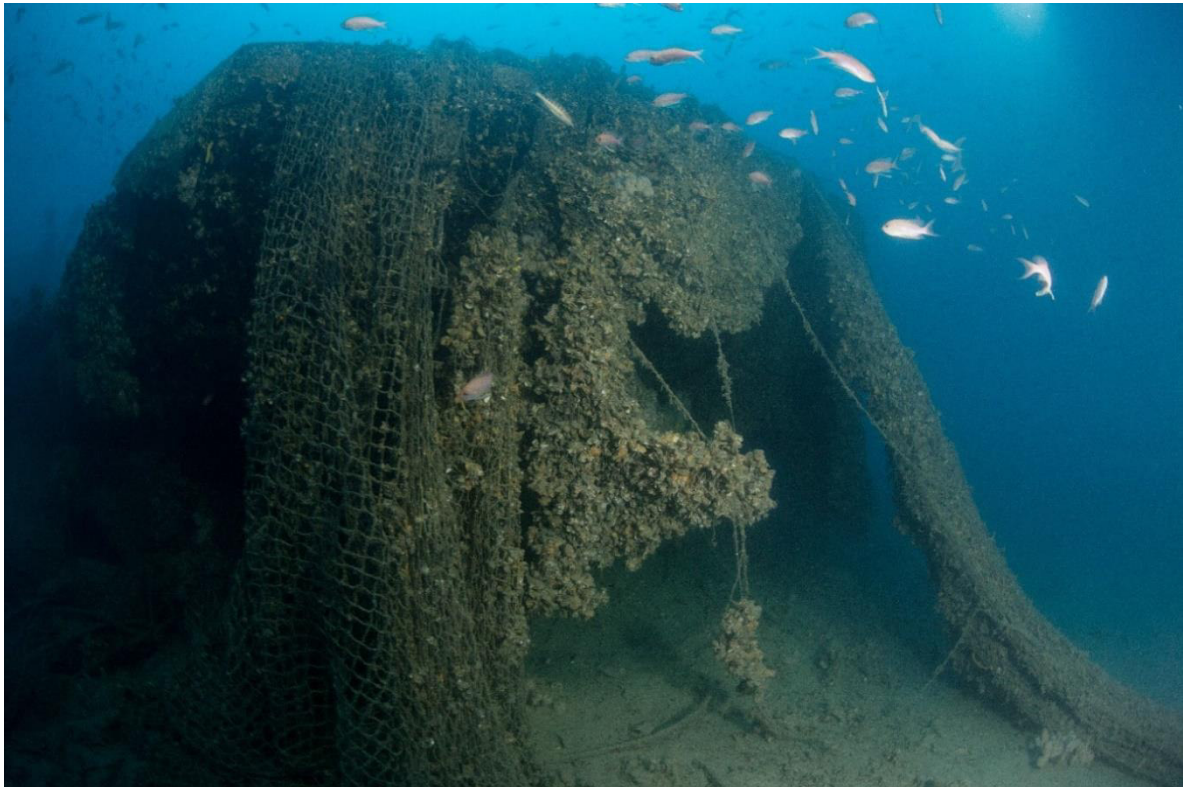
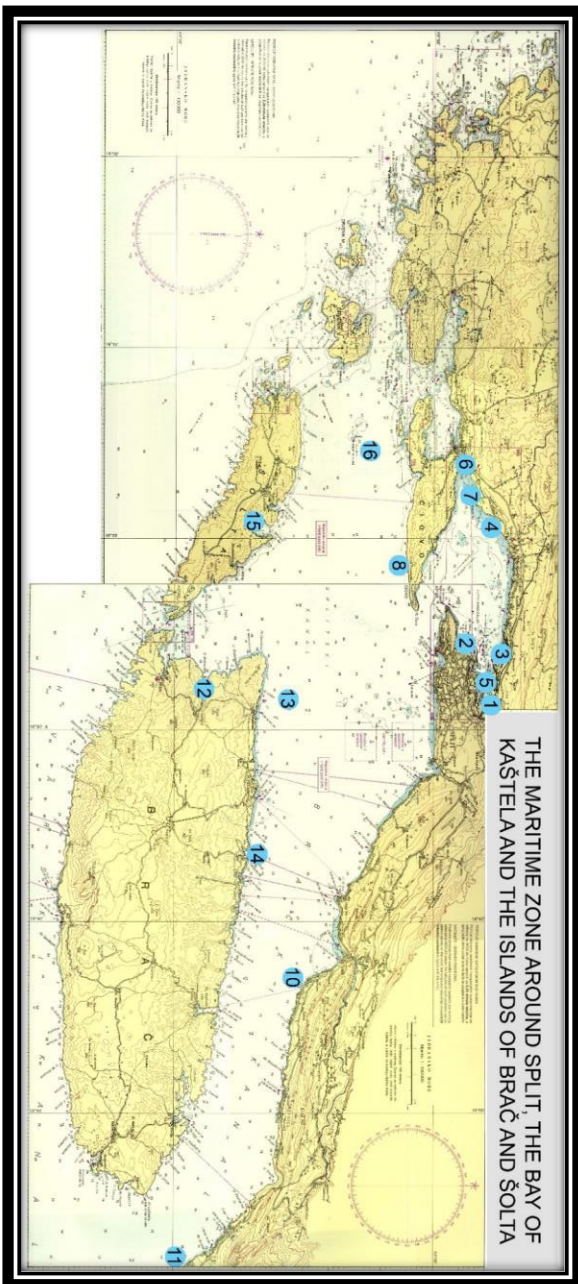
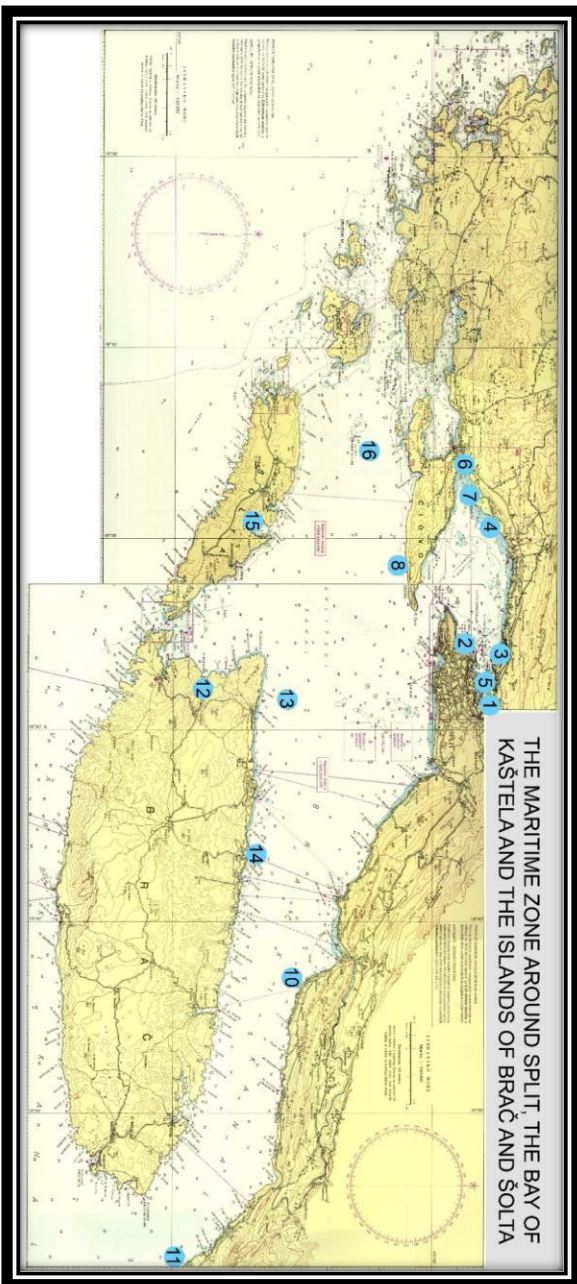
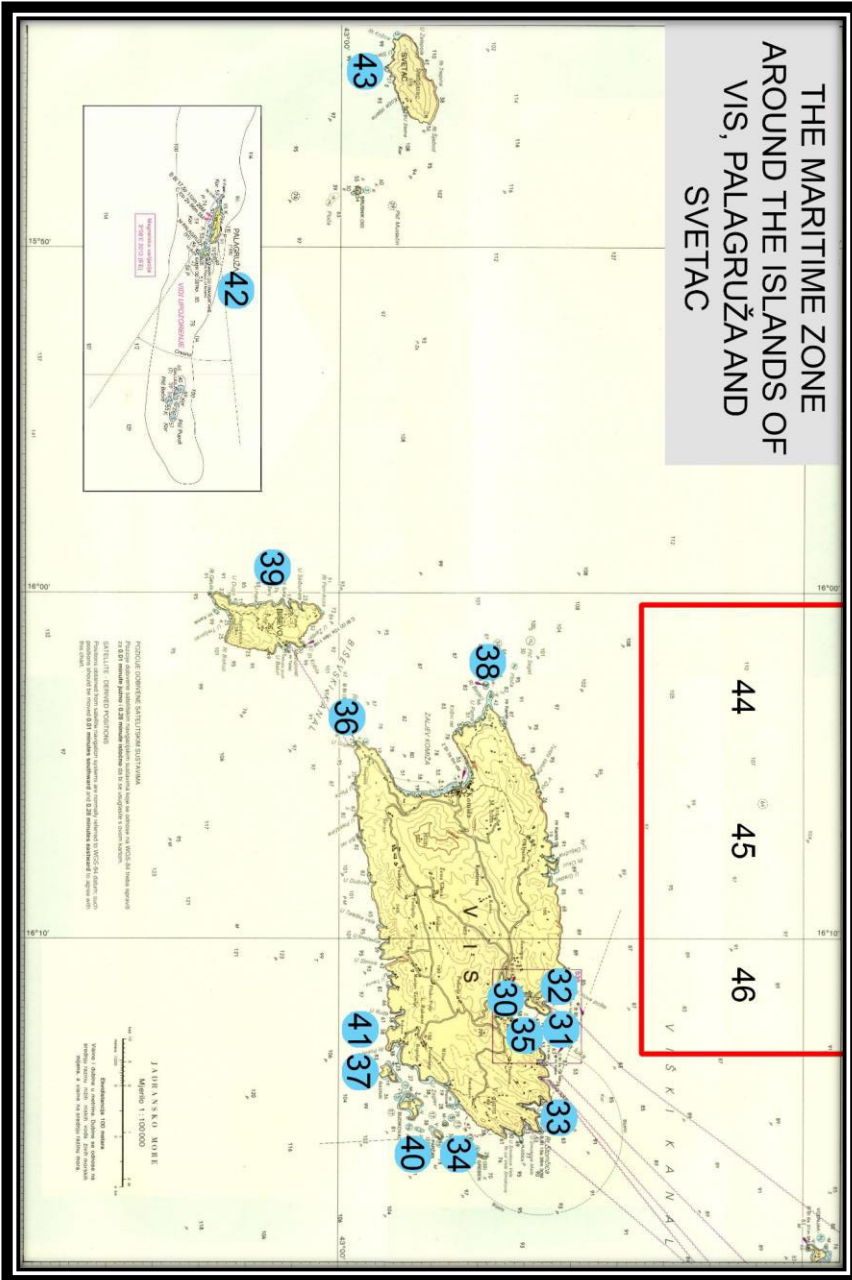


Image 31: The *Radetzky* (photo by: D. Gorički)







4. OVERVIEW OF MUSEUMS AND EXHIBITIONS RELATING TO UNDERWATER HERITAGE

The Croatian Maritime Museum in Split

Since its founding in 1925, the Croatian Maritime Museum has been continuously collecting, preserving and exhibiting the tangible and intangible maritime heritage of the Croatian Adriatic Coast ranging from prehistoric times to the modern day.

One part of its permanent exhibition dedicated to maritime trade allows us to trace the evolution of ships from antiquity to the modern era – from sailing ships and oared vessels to steamships and modern motor vessels. The museum also hosts an impressive ceramic dolium originally used to store goods and provisions which was unearthed at the Trstenik archaeological site in Kaštel Sućurac. The underwater archaeological collection is further comprised of numerous ancient anchors and amphorae excavated from various historic shipwrecks.

The Archaeological Museum in Split

The Archaeological Museum in Split is the oldest museum of its kind in Croatia. Emperor Francis I visited Split and Solin in 1818 and the decree on the founding of the Archaeological Museum was issued in 1820 on his initiative. It was originally housed in a building erected in 1821 along the eastern wall of Diocletian's Palace. Frane Bulić is responsible for the construction of the current museum building, designed in 1914 by August Kirstein and Fridrich Ohman. The Museum contains the Epigraphic collection (collection of inscriptions), Numismatic collection, Prehistoric collection, Graeco-Hellenistic collection, Roman-Provincial collection, Early Christian collection, Medieval collection, Submarine Archaeology collection, a collection of artwork and artisanal objects, a collection of Modern Age monuments, and a collection of contemporary monuments. Since the Museum was at the forefront of underwater archaeological excavations, it hosts a large number of amphorae, lead anchor stocks and other earthenware finds discovered in the scope of those surveys. Since 1878, it has been publishing the first Croatian archaeological journal – “Vjesnik za arheologiju i historiju dalmatinsku” (Journal of Dalmatian Archaeology and History).

Frane Bulić became its director in 1884. Along with its activities of collecting, processing and presenting archaeological monuments and material, the Museum also conducts systematic surveys on sites in Salona and Issa, and houses parts of its collection in Solin (the Archaeological Complex of Salona and Tusculum) and Vis (the Issa Archaeological Collection in the fort of Our Lady's Battery).

The Issa Archaeological Collection

The Collection was set up in 1983 by the Archaeological Museum in Split and is housed on the upper floor of an old Austrian fort called Our Lady's Battery, originally constructed in 1842 in the middle of the spacious bay of Vis. It is the most extensive collection of Greek monuments in Croatia, consisting mostly of articles discovered on the site of the ancient Greek town of Issa, located on the southern slopes of Gradina and on the Pirov peninsula in Vis. Rare prehistoric artifacts found on the island are also exhibited, as are the finds from the Hellenistic cistern in Velo Zopje, in the island's interior, and underwater archaeological finds from the shipwreck in the cove of Vela Svitnja, north of the town of Vis. It is in this cove, in the 1970s, that the Archaeological Museum in Split conducted investigations on the only underwater archaeological site to have been spared from looting. This resulted in the excavation of 634 amphorae, some of which still had their lids on. They were transported to the Austrian fort and exhibited in its storage room, arranged in the same manner as they would have been while on board a ship. The shipwreck, which dates back to the 2nd and 1st century BCE, is 16 meters long, 8 meters wide and it lies at a depth of 35 to 55 meters. The seabed of this cove is also littered with the broken-off necks and bases of amphorae as well as other, smaller fragments of ancient pottery.



Image 32: Amphorae in the Issa Archaeological Collection

The Stari Grad Museum – shipwreck near Vrboska – underwater archaeology collection

The Stari Grad Museum hosts thirteen collections, each containing valuable artefacts pertaining to the history of Stari Grad and the island of Hvar in general. The underwater archaeology collection consists of cargo recovered from a 4th century shipwreck (amphorae and the remains of nautical equipment) in the bay of Duboka along the north coast of Hvar, near the village of Vrboska.



Image 33: Amphorae exhibited in the Stari Grad Museum

The Hvar Heritage Museum

The Hvar Heritage Museum was founded in 1950 as the Historic Archives of Hvar due to the relentless efforts and enthusiasm of Niko Duboković Nadalini. Registered as the Center for the Protection of the Cultural Heritage of Hvar since 1965, it is responsible for protecting, processing and presenting the heritage of the island. Its Archaeological Collection, which is mostly made up of finds from the seabed around Hvar, was formed following the purchase of several private collections from Hvar (Marchi-Jeličić, Novak), donations from various institutions and people (the Croatian Academy of Sciences and Arts, the Archaeological Museum in Split), confiscations from unauthorized excavations, and primarily from finds unearthed in the course of archaeological excavations of the island over the last few years (the remains of cargo and naval equipment from ancient shipwrecks, finds from underwater archaeological surveys, and finds from excavations and surveys as part of project Hvar). The collection also contains an ancient anchor from Mala Garška Bay on Hvar.

The Town Museum of Makarska

The Town Museum of Makarska was founded in 1995 and is located in the baroque palace of Tonoli. Along with a souvenir shop, the newly-refurbished ground floor hosts the permanent exhibition “Tangible Cultural Heritage of Makarska”, divided into the following collections: archaeology, ethnology, numismatics, the cultural and historical collection, and the collection of photographs, postcards, posters and maps. The archaeological, ethnological, and cultural and historical collection give an insight into how Makarska and the surrounding area used to look in the past. The archaeological collection is made up of items unearthed in the wider Makarska region, including items excavated from underwater sites near Jakiruša, Baška Voda and Podgora. The Museum also conducted several archaeological excavations in the surrounding seabed (Brela, Bast, Veliko Brdo, Tučepi, Gradac), with the investigation of a prehistoric settlement and an ancient fort on Sveti Petar in Makarska still ongoing. The finds from cave Bubnjavača in Veliko Brdo, up to 8000 years old, are excellent examples of ancient decorative pottery.

The Trogir Town Museum

The Museum was founded in 1963 and opened to the public in 1966. It is housed in the Garagnin-Fanfogna palace, one wing of which bears architectural elements ranging from the Romanesque to the Baroque periods, while the other is a two-story baroque building built in the mid-17th century to the designs of Ignacio Macanović. The Museum’s permanent exhibition depicts the historical events, artistic styles and everyday life of the town from the Middle Age to the present day. It hosts archaeological items discovered on the seabed around Trogir.

Museum of the Town of Kaštela

The seat of the Museum is housed in one of the best preserved forts in Kaštela – Castle Vitturi. It was founded in 1999 after the reorganization of the Regional Museum of Kaštela, which in turn grew out of the activities of the Studin Gallery (founded in 1988). The wealth of the cultural heritage of Kaštela is reflected in the activities conducted by the Museum, which in gathering and presenting finds contributes to the preservation of the region’s cultural heritage. The Museum is divided into the Archaeological Department, the Cultural-historical Department, the Modern and Contemporary Art Department, the Pedagogical Department, the Restoration and Conservation Department, and the Documentation Department.

The Museum's permanent display is housed in Castle Vitturi in Kaštel Lukšić, but in 2012, another display was set up in the archbishop's castle in Kaštel Sućurac. The Museums is also responsible for two archaeological sites: the remains of the ancient settlement of Sikuli in Resnik and Mujina Cave in the bay of Lubin. The majority of moveable finds from three underwater archaeological sites (Resnik-Sukuli, Kaštel Sućurac-Trstenik and Kaštel Sućurac-Barbarinac) are housed in the Museum. Most of the finds originate from Sikuli, where numerous earthenware items from the 2nd and 1st centuries BCE were found. The site at Trstenik contained Dressell 20 type amphorae from Hispania.

A collection of ancient anchors in Rogač and Maslinica

A large number of anchors have been discovered on the seabed of the eastern Adriatic coast. Anchors are an essential piece of naval equipment and have been in use since prehistoric times up until the modern day. They symbolize sailors, hope, perseverance, endurance, composure and fidelity. The anchor is also the symbol of Saint Clement, the patron saint of anchor manufacturers. The first prehistoric anchors were made from a suitable stone which would have been either round, wedge or oblong shaped and around which a leather rope would have been tied, usually following a natural or cut groove on the stone to prevent it from slipping off. These stone anchors would soon after start being made with a hole through which the rope would have been tied. Composite wood and stone anchors evolved from this design. The stone part of the anchor was gradually made thinner and narrower until it ended up being a hooked stock while branches and, later, wooden shanks started being fastened in place of the hole. The stone stock was first replaced by a lead one in the 4th century BCE which would then be replaced by an iron one later on. Lead and wood composite anchors are a result of rapid advances in shipbuilding from 300 to 400 BCE, and lead stocks from such anchors are frequently found in the Adriatic. An underwater archaeological survey of the seabed in front of Maslinica on the island of Šolta led to the discovery of new, mostly individual, archaeological finds, including three ancient anchor stocks. Seeing as

these extremely valuable and interesting archaeological finds were in danger due to their location and shallow depth, it was necessary to bring them up to the surface as soon as possible. Upon completion of the conservation and restoration process, the restored anchors were returned to the island of Šolta and publicly exhibited in the port of Rogač and the village of Maslinica.



Image 34: An ancient anchor in Maslinica on the island of Šolta

The following exhibitions with accompanying publications have been organized within Split-Dalmatia County in recent time, all with the aim of presenting to the public the region's underwater cultural heritage.

- “Brela- Jakiruša”, underwater archaeological site – exhibition and catalogue (The Town Museum of Makarska, August 2000)
- “In the sea of intimacy” (Trieste, December 2017)

- “Iz grada isplovi ovog -ISSA MARITIMA” – exhibition and catalogue (Croatian Maritime Museum in Split, November 2018)
- “Podvodna arheološka baština otoka Hvara” (The Underwater Archaeological Heritage of the Island of Hvar) – exhibition and catalogue (Arsenal Gallery in Hvar, October 2019)
- “ZAMBRATIJA- Prapovijesni šivani brod” – exhibition and catalogue (The Museum of the Town of Kaštela, March 2020)
- “POD Vodna BAŠTINA SPLITSKO-DALMATINSKE ŽUPANIJE” (The Underwater Heritage of the Split-Dalmatia County) – a cultural and tourist guide book (Split, December 2019)

5. A LIST OF GIS PORTALS, WEBSITES AND SOCIAL NETWORKS RELATED TO UNDERWATER HERITAGE

- <https://www.min-kulture.hr/> - Ministry of Culture, Register of Cultural Goods
- <https://www.dalmacija.hr/> - Split-Dalmatia County
- <https://www.pomorskodobro.dalmacija.hr/> - Maritime Property, Split-Dalmatia County
- <http://www.h-r-z.hr/index.php/zavod/ustroj/sluba-za-arheoloku-batinu/odjel-za-podvodnu-arheologiju/777-jurica-bezak-> Croatian Conservation Institute, Department of Underwater Archaeology
- <https://icua.hr/> - International Center for Underwater Archaeology in Zadar
- <http://www.podvodni.hr/>
- <https://scubadiving.hr/> - Diving club Issa
- <https://www.anma.hr/> - Diving club ANMA
- <http://www.crodive.info/> - Diving club Manta

6. TABLE AND VALORISATION OF UNDERWATER CULTURAL PROPERTY

SITE	MANAGEMENT	PROTECTION/ CONSERVATION	REAL ACCESSIBILITY	LEGISLATION/ REGULATIONS	VALORISATION
The port of Salona and the Vranjic peninsula	Ministry of Culture	Partially surveyed and conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Split - bay of Špinut	Ministry of Culture	Partially surveyed and conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Kaštel Sućurac-Trstenik	Ministry of Culture	Partially surveyed and conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned, protected with cage
Kaštel Štafilić-ancient Sikuli	Ministry of Culture	Partially surveyed and conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned

Kaštel Sućurac-Barbarinac	Ministry of Culture	Not surveyed	Only freediving and snorkeling allowed	Preemptively protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Trogir-Pantan i Kopilica	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Documented cultural property/ not protected	<i>in situ</i> presentation planned
Trogir-Divulje	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Documented cultural property/ not protected	Presentation not planned
Island of Čiovo-Our Lady of Prizidnica	Ministry of Culture	Surveyed, site plundered	Diving not allowed	Documented cultural property/ not protected	Presentation not planned
Stobreč	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	Presentation not planned
Omiš-Caep Čelina	Ministry of Culture	Partially surveyed, not conserved	Diving allowed	Not protected	Ravaged by plundering
Baška Voda	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	Presentation not planned
Vičja Luka	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	Presentation not planned

Sutivan	Ministry of Culture	Surveyed	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i> , VR presentation planned
Splitska Bay	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	Presentation not planned
Piškerica Bay	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned
Mlin Shallows	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Perna Bay near Sućuraj	Ministry of Culture	Surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	Presentation not planned
Paržanj near Pakleni islands	Ministry of Culture	Partially surveyed and conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Cape Pelegrin	Ministry of Culture	Partially surveyed and conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	Presentation not planned
Stari Stani Bay	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned

Duboka Bay near Vrboska	Ministry of Culture	Surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	Amphorae exhibited in the Stari Grad Museum
Duba Bay	Ministry of Culture	Survey in process	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Veli Porat Bay near Šćedro	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	Archaeological surveys and <i>in situ</i> presentation planned
Cape Izmetišće on the island of Sveti Klement	Ministry of Culture	Partially surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Archaeological surveys and <i>in situ</i> presentation planned
Rake Bay, island of Šćedro	Ministry of Culture	Partially surveyed, not conserved	Only freediving and snorkeling allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned
Ancient shipwreck, Island of Šćedro	Ministry of Culture	Partially surveyed, protected with cage	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned
Stambedar near Pakleni islands	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned
Steamship Dubrovnik	Ministry of Culture	Surveyed and conserved	Diving permitted through	Protected cultural property of the	Presented <i>in situ</i>

			licensed diving centers	Republic of Croatia	
B-24 Liberator (Le petit fleur)	Ministry of Culture	Surveyed and conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Vis harbor	Ministry of Culture	Partially surveyed and conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Islet of Host	Ministry of Culture	Partially surveyed and conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i> , protected with cage
Vela Svitnja Bay	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Amphorae exhibited in the Issa Archaeological Collection in Vis
Cape Stončica	Ministry of Culture	Partially surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Grebeni	Ministry of Culture	Partially surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Bay of Vis - shipwreck	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> presentation planned

Vassilios	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Brioni	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Teti	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
B-24 Lady Luck, Island of Biševo	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
B-24 Tulsamerican	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i> , VR/AR presentation planned
B-17 G	Ministry of Culture	Surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Palagruža, submarine area	Ministry of Culture	Partially surveyed, not conserved	Diving permitted on some sites through licensed diving centers	Protected cultural property of the Republic of Croatia	Certain areas presented <i>in situ</i>

Svetac	Ministry of Culture	Partially surveyed, not conserved	Diving permitted through licensed diving centers	Protected cultural property of the Republic of Croatia	Presented <i>in situ</i>
Re d'Italia	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned
Palestro	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned
Radetzky	Ministry of Culture	Partially surveyed, not conserved	Diving not allowed	Protected cultural property of the Republic of Croatia	<i>in situ</i> and VR/AR presentation planned

7. DATA COLLECTION

For the purpose of compiling the “status quo” analysis, the participants were sent an email containing a questionnaire, translated into Croatian. The participants took part in a meeting held on January 15th in castle Vitturi. They included local diving clubs (Venus diving, PIK Mornar, UPA Rostrum, RK Giričić, RK Spinut), educational institutions (Bijaći elementary school, Braće Radić high school, the University of Zadar), authorities of local (the Town of Kaštela, the local committee of Kaštel Štafilčić) and national government (the Conservation Department in Trogir,

the Ministry of Culture), local museums (the Museum of the Town of Kaštela, the Trogir Town Museum, the Museum of Croatian Archaeological Monuments), the Tourist Board of the Town of Kaštela, Bijaći – an association for the protection and preservation of the cultural heritage of Kaštela.

The questionnaire was composed of eleven sections with 53 questions in total. It was designed with the purpose of gathering information about various aspects of underwater cultural heritage.

Nine questionnaires in various stages of completion were collected.

The first section deals with assessing the importance of underwater archaeological heritage. The following four questions were asked:

Does underwater heritage have any archaeological significance?

Six participants responded to this questions, all six affirmatively. One participant, who also expanded on his answers in the rest of the questionnaire, highlighted the information potential of underwater archaeological heritage within the scope of archaeological heritage in general.

Does underwater heritage have any historical significance?

Six participants responded to this question, once again all affirmatively. One participant linked this question with the first one.

Does underwater heritage have any scientific significance?

Once again, six participants responded to the question, all affirmatively. One participant again linked this question to the first one.

Does underwater heritage have any social or spiritual significance and value in the sense that it is important for our collective memory?

All participants agree that underwater heritage is significant in this sense, and one participant believes that, depending on the site in question and the collective community awareness, it can become that.

The second section deals with the status of available information on underwater heritage. Four questions were asked:

Which scientific tools used in analyzing underwater cultural heritage are you familiar with? (GIS, webGIS, inventory, map...)

Five participants answered this question. The most common response was GIS, but inventory, maps, specialized databases, cultural heritage registers, ARKOD, ispu.mgipu.hr (zoning information system) were also mentioned. One participant wrote that, as far as they were aware, Croatia lacked such databases but that the Register of Protected Underwater Heritage Sites, which is available on the website of the International Center for Underwater Archaeology in Zadar (www.icua.hr), could be a valuable tool.

Who conducted the categorization and mapping, if it had been done at all? As part of what project?

Only one participant answered this question, mentioning the database of the International Center for Underwater Archaeology in Zadar, and noting that it is only for internal use by employees.

Is data available? In what format?

Once again, only one participant responded, saying that the data is available in digital format.

Is the data open source? Open source data is all data that can be freely accessed, used, reused and redistributed. It can, in most cases, be shared and changed by anyone for whatever purpose.

There were three responses to this slightly confusing question. One stated that the data is available in agreement with the employees, while the other two stated that it is not freely available.

The third section deals with the valuation of underwater cultural heritage and “in situ” availability.

Do you agree with the first article of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage?

Six participants responded to this questions; five affirmatively and one negatively. The negative response was not expanded on.

How many underwater archaeological parks are there in the area of Kaštela? Be as detailed as possible.

Five participants responded to this question; four said that there were no underwater archaeological parks near Kaštela and one replied that they were unaware if any existed. Three participants stated that protected archaeological sites did exist, however, with one respondent listing the sites in question (Resnik near Kaštel Štafilić, Trstenik near Kaštel Sućurac, and the islet of Barbarinac).

How many coastal parks are there in the area of Kaštela? Be as detailed as possible.

There were five respondents to this question; four said that there were no coastal parks, while one said that they weren't aware if any existed.

How many blue trails exist in this area? Be as detailed as possible.

There were four respondents to this question; three said that there were no blue trails, while one said that they weren't aware if any existed.

Are the exhibited underwater finds accessible though scuba diving or snorkeling?

There were five responses; four chose snorkeling and one scuba diving.

Is there sufficient information on the Internet concerning underwater sites?

Respondents could choose from a scale of 1 to 5 with 1 meaning they were insufficient and 5 that they were entirely sufficient. Four respondents circled 2, and two of them circled 3.

Are these sites truly accessible for people with disabilities? Be as detailed as possible.

Two respondents answered negatively and two said that they didn't know.

How many diving centers are familiar with underwater sites and can cater to tourists? Do they have a certain permit/license?

Five participants responded to this question; three said that they had no information about this, one stated that there were several diving centers in Croatia that mostly offered tours of modern heritage sites (warships and planes), and one respondent said that while diving centers knew about archaeological sites, they did not consider them as attractive diving destinations.

What solutions suitable for the preservation and presentation of archaeological parks are you familiar with? (Installation of protective cages, signboards, signals, technological solutions – 3D viewers, tablets and markers – cameras/video surveillance systems, archaeological replicas on the seabed, displacement of archaeological material etc.)

All five respondents listed cages as a solution for preserving and protecting finds. Tablets, video surveillance systems, and 3D goggles and viewers were also listed. As a positive example, the site on the island of Pag (Šimuni), where a video surveillance and echo sounding system were set up, is mentioned. The example of Mali Lošinj, where they placed replicas on the seabed, was also listed.

Which solution suitable for the preservation and presentation of blue trails are you familiar with? (See the examples above)

There were two responses; one listed an example from the previous question while the other mentioned the example of the educational sea trail in Veriga Bay, part of the Brijuni National Park in Istria. Info-boards and signposts were set up all along the trail.

Do the archaeological parks or blue trails you are familiar with have a reception area? Where is it located?

There were once again two responses; one cited the diving center while the other said that they did not have a reception area.

The fourth section deals with the valuation of virtual reality (VR) and augmented reality (AR).

What models of virtual or augmented reality used in the presentation of underwater cultural heritage are you familiar with? Be as detailed as possible.

There were five respondents; three said that they were unaware of any such devices while two answered that they were familiar with 3D presentations and 3D goggles.

Are they effective in attracting a wider audience?

Two of the three respondents answered affirmatively while the third said that they did not know.

Are these models user friendly?

Two participants answered affirmatively while two said that they did not know.

Is the technology used in these presentations always effective?

There were no responses; one said that they did not know while the others said that they lacked the necessary data.

The fifth section deals with the museums of underwater heritage and the valuation of their exhibitions.

Identify maritime or “aquatic” museums (like aquarium museums), or museums with a section dedicated to underwater cultural heritage. Be as detailed as possible.

Five participants replied to this question. One said that they did not know, while the others listed the Museum of the Town of Kaštela, the Museum of Croatian Archaeological Monuments, the Maritime Museum, the Archaeological Museum in Split, the Museum of the Town of Trogir, the Archaeological Museum in Zadar and the Museum of Apoxyomenos in Lošinj.

Cite examples of special underwater cultural heritage exhibits within the museums.

There were five respondents. One said that there were numerous examples, while the others mentioned amphorae first and foremost, but also listed other artifacts like earthenware or glass pottery, metal objects, naval equipment and ship structures.

Do you know any truly interactive museums on your area?

Three participants answered negatively while one mentioned the Alka Museum in Sinj and, to a lesser degree, the Šibenik City Museum.

How many exhibitions were dedicated to underwater cultural heritage in the last 10 years? Be as detailed as possible.

Four participants replied to this question. They named the exhibitions dedicated to underwater heritage in the Archaeological Museum of Istria, the exhibition dedicated to the underwater heritage of the Adriatic held in Trieste, the new “Issa Maritima” exhibition in the Archaeological Museum in Split, the exhibition in the Museum of Croatian Archeological Monuments entitled “Discovering Marjan – a presentation of underwater archaeological heritage in the Split-Kaštela region”, as well as several thematic exhibitions in the Museum of the Town of Kaštela related to Sikuli, during which the exhibits unearthed by underwater surveys were presented to the public.

Did the exhibitions include digital and/or interactive exhibits? Be as detailed as possible.

There were once again four replies. The first participant answered negatively, the second affirmatively, the third mentioned the use of video presentations, and the fourth said that LCD screens, tablets and similar devices were included.

Questions in the sixth section concern the protection of underwater cultural heritage.

Which entity/organization is responsible for the protection of underwater cultural heritage?

Four participants answered this question, all of whom listed the Ministry of Culture and the regional Conservation Departments. One participant also mentioned the Ministry of the Interior and the Ministry of the Sea, Transport and Infrastructure.

Which measures exist for the protection of underwater cultural heritage?

Four participants replied to this question and listed various legal measures, issuing if permits, monitoring, urban and spatial zoning plans of local and regional authorities.

According to you, is protection truly compatible with public access?

There were five responses; two answered negatively, one answered that it was partially compatible, and two answered affirmatively with one emphasizing the need for a better system of control and more stringent fines. This would require infrastructure and human resources.

How many underwater sites are protected? Be as detailed as possible.

Five participants answered this question. One makes reference to the Ministry of Culture, one lists the protected sites in the Kaštela region (Barbarinac, Sikuli, Trstenik), and one includes a wider

area of the Eastern Adriatic and lists that 9 sites have protective meshes and one, Pag, has video surveillance since 2019.

The seventh section deals with evaluating the vulnerability of underwater cultural heritage.

Can underwater cultural heritage or a similar ecosystem be susceptible to damage from underwater surveys? If possible, state the context and the reason.

There were five replies to this question. All but one state that it is susceptible to damage considering that every archaeological excavation disturbs the site. One respondent believes that the damage can be avoided provided that the excavation is conducted in accordance with modern methodology and technology.

Can underwater cultural heritage or a similar ecosystem be susceptible to damage from a lack of intervention? If possible, state the context and the reason.

Five participants responded to this question, agreeing that damage can occur due to the lack of intervention. It can be caused by looting, expansion of the coastal belt, erosion, and geomorphological changes.

Can underwater cultural heritage or a similar ecosystem be susceptible to damage from tourist activity? If possible, state the context and the reason.

There were six responses, all in agreement that tourist activity can cause damage, but only if it is uncontrolled and unrestrained. The site in Sikuli was highlighted as an example since many finds are taken from the seabed by tourist not familiar with the rules and regulations.

Section eight concerns local involvement in the issue of underwater cultural heritage.

Identify who would be most likely to get involved: government institutions, official agencies charged with protecting the national cultural heritage (on land and underwater), official agencies charged with protecting natural resources and the environment, official agencies responsible for secure sailing, universities, museums, research centers, cultural or social associations, diving centers, sailing centers, kiosk owners, fishing tour operators, heritage communities etc.

Six participants replied to this question. Two of them listed several entities: the Ministry of Culture, the Ministry of the Sea, Transport and Infrastructure, the Ministry of the Interior, the Town of Kaštela, the town of Trogir, the city of Split, the town of Solin, the Split-Dalmatia County, the University of Split, the University of Zadar, the Croatian Conservation Institute, the Tourist Board of the town of Kaštela, the Port Authority, the Bijaći Association, and numerous other educational institutions and diving clubs.

Which web pages or social media deal with underwater cultural heritage? Be as detailed as possible.

There were five respondents. One answered that they did not know, and the other listed the following pages: morski.hr, podvodni.hr, icua.hr and scuba life.

Identify the best channels of communication for raising awareness of underwater cultural heritage.

Five participants answered this question. One said that they did not know and the others listed social media, specialized web pages, public lectures, educational workshops...

Identify local events where the public can be engaged in the presentation and promotion of underwater cultural heritage.

There were five respondents who listed several events where the public could be engaged. These include exhibitions, public lectures, eco-actions, tourism fairs, the "Noć muzeja" (Museum Night) event, nautical fairs, and the Town of Kaštela feast day.

Questions in section nine concern the collection of funds for the underwater cultural heritage.

If possible, identify public and private sponsors of underwater cultural heritage.

Four participants replied to this question and mentioned public tenders from local authorities, the Split-Dalmatia County, the Ministry of Culture, Split Airport, HEP, banks, and private companies.

Identify possible institutional or private channels for collecting funds for the underwater cultural heritage.

There were four responses to this question. One said that they did not know, while the others listed the same examples as in the previous question with the addition of the Museum of the Town of Kaštela.

Section ten contains questions relating to the management of underwater cultural heritage.

Identify the authorities charged with the management of underwater cultural heritage.

Six participants replied to this question and listed the Ministry of Culture, the Ministry of the Interior, local and regional authorities, and the Museum of the Town of Kaštela,

Identify which laws and/or regulations concern the underwater cultural heritage.

Five participants answered this question citing the Act on the Protection and Preservation of Cultural Property, the Ordinance on Archaeological Excavations, the Ordinance on the procedure and method of issuing licenses for conducting underwater activities within the territorial waters of the Republic of Croatia in areas where cultural property is located, and the Law on Confirming the Convention on the Protection of the Underwater Cultural Heritage.

Identify the best examples of underwater cultural heritage management in effect in your region.

Three participants replied to this question and cited permanent administrative protection, the placing of protective cages in Trstenik and Spinut, and video surveillance.

Is managing underwater cultural property truly compatible with public access? Cite details on positive and negative instances.

There were four respondents to this questions. One answered that it was not compatible without expanding on his reply. The others cited the licensing of diving centers to present individual sites as a good example, while the long delay in obtaining a license was mentioned as a negative aspect.

Questions in the eleventh section concern the context and sustainability of underwater tourism.

Can underwater tourism combine leisure time, sport, culture and ecology into one activity?

All six participants replied affirmatively.

Does it really have a low or nonexistent impact on the environment?

Three participants answered affirmatively.

Can it be a “programed alternative tourism”, highly regulated and with low intensity flows?

Four participants agreed that underwater tourism should be highly regulated and with low intensity flows.

Which tourism system type is necessary for underwater cultural heritage?

Five participants replied to this question. One stated that they did not know and the others wrote that a sustainable, well- regulated and low-intensity tourism was necessary.

What type of investment into territorial policies is necessary for underwater cultural heritage tourism?

Five participants gave an answer to this question and wrote that legal, financial, organizational, and expert investments were necessary.

Is that cost effective? Be as detailed as possible.

Five participants responded that it was cost effective, with two remarking that it was cost effective in the long term and one that it depended on the site.

Does it mean that users would have to be charged extra?

There were five respondents; two believed that there should be no extra charges for users, two replied that there should be and one respondent did not know.

Does that imply a kind of “gentrification”, a process where old and cheap (and usually residential) buildings or entire sections of cities, most often labor areas, are transformed into expensive, luxury building for members of the middle class, which usually displace the indigenous population due to higher costs of living.

Five participants responded to this question; four believed that it was not true, while one wrote that partial gentrification could occur.



Image 35: Archaeological excavation of an ancient shipwreck

8. HERITAGE COMMUNITY AWARENESS OF UNDERWATER CULTURAL HERITAGE

The data gathered through the questionnaire give an insight into the issue of underwater cultural heritage in this area. Although not all participants of the meeting filled in the questionnaire, the

sample was relevant enough to allow us to reach certain conclusions and answer the following questions:

1. Is the underwater cultural heritage significant and valuable to the participants/the public and to what extent?

Seeing as the participants are quite aware of the value and diversity of the underwater cultural heritage within the Split-Dalmatia County, the majority of participants are aware that the potential for improvement and tourism valorization exists. Since the scope and intensity of activities related to tourism valorization, as well as to the protection and investigation of certain site, is still insufficient, it can be assumed that further investment and education will result in a rise in activities concerning the underwater cultural heritage.

2. Are the participants/ the public familiar with regional underwater archaeological sites and parks, MPAs, coastal parks, blue trails (if any exist)? To what degree/percentage?

Since the participants were selected due to having some link to underwater cultural heritage, it is safe to assume that they are familiar with certain sites in the area. In the bay of Kaštela these are mostly archaeological sites containing coastal infrastructure (Barbarinac, Trstenik, Vranjic, Salona, Spinut, Sikuli, Pantana) and most of the participants are well acquainted with them. In the past few years, smaller or larger archaeological surveys were conducted on most of these sites, which was extensively covered by local printed and digital media. Members of local diving clubs often help out during archaeological surveys and by working with underwater archaeologists they gain the necessary expertise. These same members often report newly-discovered archaeological sites to the competent authorities. The public has also been familiarized with the wealth of underwater cultural heritage in the area through exhibitions and public lectures.

3. Are the participants/the public familiar with the regional authorities and the legislation/regulations concerning the underwater cultural heritage?

According to the data collected, the participants are familiar with the legal regulations, especially with the Act on the Protection and Preservation of Cultural Property. Due to a lack of data, it is difficult to gauge how familiar the public is with these regulations. But judging by the decrease in the number of incidents related to the plundering and looting of underwater sites, it is possible

that part of the public is also becoming more aware of the importance of the underwater cultural heritage. This primarily concerns the remains of shipwrecks, especially Greek and Roman ones which contain amphorae. Unfortunately, coastal sites continue to be at great risk due to frequent and uncontrolled dredging and filling of the coast. A number of sites were devastated recently, which often goes unnoticed as they lack the proper protection.

4. Are the participants/the public familiar with the local museums, exhibitions, and digital media relating to the underwater cultural heritage?

The participants are familiar with the local museums, which are constantly trying to popularize the underwater cultural heritage of the area through their permanent and temporary exhibitions. The Museum of the Town of Kaštela, the Archaeological Museum in Split, the Croatian Maritime Museum in Split and other, smaller museums have in their collections items relating to underwater cultural heritage, most of them dating back to Antiquity (amphorae, crockery, naval equipment...). Permanent and temporary exhibitions do not make sufficient use of digital media and accessories. Some museums are trying to put more emphasis on digital content in their more recent exhibitions. Nevertheless, museum curators are not well connected with people working in the IT sector, a fact that must change in the future if better and more attractive exhibitions are to be made.

5. What do the participants/the public think about using virtual and augmented reality in the valuation of the underwater cultural heritage?

The data collected from the questionnaire indicates that participants have a positive opinion of using virtual and augmented reality for the purpose of valuating the underwater cultural heritage. It also indicates that the participants are not well acquainted with the possible applications of new technologies.

6. Do the participants/the public know if and how the underwater archaeological sites are protected? Do they know the competent authorities?

The data collected indicates that the participants are familiar with almost all methods of protecting the underwater cultural heritage in the region. The methods include iron protective cages and video surveillance, but also legal actions protecting individual sites and underwater

archaeological zones. It is particularly important to familiarize the maritime police with the locations of individual sites so they can monitor them more efficiently.

7. Do they know if the sites are truly accessible? Do they consider the existing protective measure to be sufficient for the sites and the underwater ecosystem? Do they consider public access to be compatible with the preservation of sites?

The data collected from the questionnaire indicate that the accessibility of certain sites presents a problem and that collecting more data via systematic surveys is necessary if the sites are to be made more accessible and attractive. The majority of underwater sites, with certain exceptions, are not considered tourist attractions, making it difficult to estimate the potential devastation due to tourism overexploitation. Nevertheless, considering the vulnerability of underwater sites, it is necessary to develop their tourist potential in a sustainable and well-regulated manner.

8. Do the participants/ the public consider that they are involved in the system of management, protection and valuation of underwater cultural heritage? Do they know anyone involved in these activities?

The participants want to be involved in activities related to the underwater cultural heritage. Some are enthusiasts who wish to participate in archaeological surveys, while others have an interest in the economic activities related to tourism valorization. Members of diving clubs often report new sites or warn the authorities of looting taking place on existing sites. In the region of Kaštela, divers harvesting seashells also often report new underwater finds, as was the case with Resnik, Sikuli and Trstenik.

9. Are they familiar with GIS, websites, social media or local events related to the underwater cultural heritage?

The participants are not too familiar with GIS, but they are aware of websites and certain Facebook pages connected with underwater cultural heritage.

10. What do the participants/ the public think about underwater tourism and its sustainability?

The participants agree that underwater tourism is a special kind of tourism requiring a higher degree of specialization and a specific market. They believe that the scope and organization of

projects related to tourism valuation have to be adequate and well thought out in order to avoid possible damage to the underwater heritage and to ensure its long-term sustainability.



Image 36: 3D model of an ancient shipwreck near Šćedro (made by: Mariusz Milka)

9. CONCLUSION

The Analysis and Regional Comparative Study of the Underwater Heritage in Split-Dalmatia County was conducted as part of the international Interreg project “UnderwaterMuse”, coordinated by the Regional Institute for Cultural Heritage of the Autonomous Region of Friuli Venezia Giulia and its Croatian partners, RERA SD regional development agency of Split-Dalmatia County and the Museum of the Town of Kaštela.

Over 200 underwater archaeological sites have been documented and protected within Split-Dalmatia County and 46 underwater cultural properties have been analyzed. Special care was taken to include the whole County and to show various types of underwater heritage, from port facilities and anchorages, ancient and medieval shipwrecks to modern wrecks and WWII airplanes. The sites showcased date to a period spanning from the earliest prehistoric times all the way to World War II. Along with a short description of each site, information concerning their depth, protection status and accessibility for visitors are also given.

Questionnaires composed of 53 questions were collected and analyzed as part of this study. The participants included members of diving clubs, employees of museums, educational institutions, and regional and state authorities. These questionnaire allowed for some conclusions to be reached concerning the knowledge about underwater cultural heritage and the legislation regulating its protection and preservation. Likewise, the participants were questioned about their knowledge of local museum and their role in the presentation of underwater archaeological sites. Finally, they were asked about their familiarity with new methods of presenting underwater heritage, notably through virtual and augmented reality.

Analyzing underwater sites and the opinion of the local populace concerning the importance of the underwater cultural heritage of Split-Dalmatia County led to the conclusion that diving tourism based on underwater heritage is an important factor in the wider strategy of tourism development. The development of underwater tourism will not only extend the tourist season, but it will also enrich the tourism offer with a number of new products and services, and stimulate the growth of numerous related activities. Diving tourism also contributes to the protection and preservation of underwater cultural heritage by encouraging further surveys of the underwater area. Split-Dalmatia County is already one of the main hubs of underwater tourism in Croatia and it has enormous potential for further growth due to the natural and cultural wealth preserved on its seabed. The cooperation between all levels of society, from state institutions to regional authorities and local communities, is of paramount importance for the protection of underwater heritage. In order to better protect and popularize underwater cultural property, it is necessary to continue with the archaeological investigation, conservation and presentation of underwater sites, whether in situ or in museums. Likewise, it is important to embrace and utilize new technologies, augmented and virtual reality in particular, in order to make underwater heritage more accessible to both the inhabitants and visitors of Split-Dalmatia County.

10. BIBLIOGRAPHY:

Abramić, M. 1932. Spomenici iz bedema stare Salone. *VAHD 50*: 56-64.

Abramić, M. 1949. Arheološka istraživanja grčke kolonije Issa na otoku Visu. *Ljetopis*

JAZU 55: 9-17.

- Abramić, M. –Colnago, A.. 1909. Untersuchungen in Norddalmatien. *Jahreshefte des Österreichischen archäologischen Instituts* 12: 13-112.
- Alfirević, S. 1965. Geologija Jadrana. *Matica hrvatska Split, Split*.
- Arnaud, P. 2006. La Navigation en Adriatique d’après les données chiffrées des géographes anciens. U: S. Čače – A. Kurilić – F. Tassaux (ur.), Les routes de l’Adriatique antique – Putovi antičkog Jadrana, Institut Ausonius – Sveučilište u Zadru, Bordeaux - Zadar: 39-53.
- Babić, I. 1991 (1984). Prostor između Trogira i Splita; *Kulturno historijska studija*. Zavičajni muzej Kaštela, Kaštel Novi.
- Babin, M. 2003. Nastavak hidroarheoloških istraživanja na položaju Trstenik / Lučica u Kaštel Sućurcu. *Obavijesti HAD-a XXXV/3*: 80-86.
- Barbarić, V. 2010. Gradina Rat kod Ložišća, otok Brač, 2007-2008. *Arheološka istraživanja na srednjem Jadranu, [Izdanja HAD-a 26]*. Hrvatsko arheološko društvo, Zagreb: 157-173.
- Benjamin, J. –Črešnar, M. 2009. Submerged prehistoric site discovery and a proposed application in the Croatian Adriatic. *Jurišićev zbornik*. Hrvatski restaruatorski zavod - Međunarodni centar za podvodnu arheologiju u Zadru, Zagreb: 52-67
- Bonefačić, Ž. 2006. Kratka povijest ronjenja u Hrvata (1); Vremenska bespuća, pa Krapljani i Zlarinjani. *Aqualung –Magazin za ronjenje i podvodni svijet* 1: 108-110.
- Bonefačić, Ž. 2006a. Kratka povijest ronjenja u Hrvata (2); U sjeni boga Marsa. *Aqualung - Magazin za ronjenje i podvodni svijet*2: 108-110.
- Božek, S. – Jurišić, M. – Orlić, M. 2000. *Brela –Jakiruša. Podmorsko arheološko nalazište*. Gradski muzej, Makarska.
- Brusić, Z. 1976. Late antique and byzantine underwater finds along the Eastern coast of the Adriatic. *Balcanoslavica* 5: 31-39.

- Brusić, Z. 1990. Resnik kod Kaštel Novog; Helenističko pristanište. *Arheološki pregled* 29 (1988): 117-119.
- Brusić, Z. 1991a. Helenistička i rimskodobna luka u Resniku. U: A. Babin (ur.), *Brod istočne obale Jadrana u starom i srednjem vijeku, katalog izložbe*. Muzej grada Kaštela, Kaštela: 47-50.
- Brusić, Z. 2004. *Resnik –hidroarheološka istraživanja, katalog izložbe*. Muzej grada Kaštela, Kaštela.
- Brusić, Z. 2006. Kaštel Štafilić – Resnik (turističko naselje). *HAG* 2/2005: 358-360.
- Brusić, Z. 2008. Underwater excavation of the Hellenistic harbour of Siculi in Resnik near Split. U: Radić Rossi – Gaspari – Pydyn 2008: 167-175.
- Bulić, F. 1899. Tre sarcofaghi romani nel villaggio di Vranjic (Urania?) sotto il livello del mare. *BASD* 22: 105-111.
- Bulić, F. 1900. Ritrovamenti risguardanti i sarcofaghi romani sotto il livello del mare nel villaggio di Vranjic presso Salona. *BASD* 23: 141-142.
- Bužančić, R. 2002. *Heraklova luka Splitska na otoku Braču*. Jadrankamen, Pučišća.
- Cambi, N. 1969. Tipološka i kronološka razmatranja o antičkim nalazištima na dnu srednjeg Jadrana. *Podmorske djelatnosti s gledišta medicinskih i društvenih nauka, Mornarički glasnik, Pomorska biblioteka* 22: 223-230.
- Cambi, N. 1970. *Priručnik za hidroarheološka istraživanja*. Republički zavod za zaštitu spomenika kulture, Zagreb.
- Cambi, N. 1972. Vis, uvala Vela Svitnja – brodolom antičkog broda. *Arheološki pregled* 14: 80-82.
- Cambi, N. 1973. Problemi zaštite i smještaja amfora – iskustva nakon novih podmorsko – arheoloških istraživanja na otoku Visu. *PITANJA* 1973: 106-110.
- Cambi, N. 1975. Problematika istraživanja i dokumentacije opljačkanih podmorskih ležajeva. *PITANJA* 1975.: 144-152.

- Cambi, N. 2009. Bilješke o podmorsko-arheološkim nalazima na Jadranu. *Jurišićev zbornik*. Hrvatski restaratorski zavod – Međunarodni centar za podvodnu arheologiju u Zadru, Zagreb: 134-142.
- Denegri, S., Kukoč, S. Podvodna baština Splitsko-dalmatinske županije; kulturno- turistički vodič, Split 2019.
- Čargo, B. 2003. Arheološka djelatnost na otoku Visu i njegovu arhipelagu od 1992. do 2003. g. *VAHD 95*: 399-469.
- Čargo, B. 2004. *Issa, povijesno arheološki vodič*. Arheološki muzej Split, Split - Vis.
- Čečuk, B. 1968. Jadran u prethistoriji. *Pomorski zbornik 6*: 383-416.
- Čerina, D. 2000. Zaštitna arheološka istraživanja podmorja južne obale u Trogiru. *Obavijesti HAD-a XXXII/2*: 68-72.
- Čerina, D. 2001. Izvješće o arheološkom nadzoru građevnih radova pri rekonstrukciji južne obale u Trogiru. *Obavijesti HAD-a XXXIII/1*: 59-63.
- Duboković Nadalini, N. 1963. Važan arheološki podvodni nalaz kod Hvara. *Bilten Historijskog arhiva komune hvarske 5-6*: 60-63.
- Duboković Nadalini, N. 1969. Uvodno izlaganje s osvrtom na problematiku ronjenja u vodama Hvara. *Podmorske djelatnosti s gledišta medicinskih i društvenih nauka, Mornarički glasnik, Pomorska biblioteka 22*: 209-214.
- Frka, D. – Mesić, J. 2002. *Tajne Jadrana. Ronilački vodič po olupinama hrvatskog Jadrana*. Adamić, Rijeka.
- Gaffney, V. – Kirigin, B. – Petrić, M. – Vujnović, N. – Čače, S. 1997. *Projekt Jadranski otoci: Veze, trgovina i kolonizacija 6000 pr. K. –600 god. Svezak 1. Arheološka baština otoka Hvara, Hrvatska*. BAR International Series 660, Oxford.
- Gluščević, S. 1994. Brodolomi i brodarenje na istočnoj obali Jadrana od prapovijesti do 19. stoljeća. *Kaštelanski zbornik 4*: 25-60.

- Glušćević, S. 1994a. Brodolomi na Jadranu u antici i srednjem vijeku. *Adrias - Zbornik Zavoda za znanstveni i umjetnički rad HAZU u Splitu 4-5*: 13-32.
- Glušćević, S. 2004. Podmorsko arheološko istraživanje u Trogiru i na Pantani. *Obavijesti HAD-a XXXVI/1*: 124-131.
- Ilakovac, B. 1968. Keramika iz antičkog broda potonulog kod Paklenih otoka. *Diadora 4*: 183-200.
- Jurišić, M. 1988a. Brodolom na Paklenim otocima. *Karaka*: 36-38.
- Jurišić, M. 1991. Istraživanja podmorskih arheoloških lokaliteta u Hrvatskoj tijekom 1990. godine. *Obavijesti HAD-a XXIII/1*: 26-28.
- Jurišić, M. 1991a. Istraživanja podmorskih arheoloških lokaliteta u Hrvatskoj tijekom 1991. godine. *Obavijesti HAD-a XXIII/3*: 57-58.
- Jurišić, M. 1993. Hidroarheološka istraživanja u Hrvatskoj 1992. godine. *Obavijesti HAD-a XXV/1*: 27-29.
- Jurišić, M. 1994. Podmorska arheološka istraživanja tijekom godine 1993. *Obavijesti HAD-a XXVI/1*: 40-44.
- Jurišić, M. 1995. Antički brodolom nedaleko Vrboske – otok Hvar. *Obavijesti HAD-a XXVII/1*: 29-31.
- Jurišić, M. 1996. Hidroarheološka djelatnost Državne uprave za zaštitu kulturne i prirodne baštine u godini 1995. *Obavijesti HAD-a XXXVIII/1*: 32-35.
- Jurišić, M. 2004. Podmorska arheološka istraživanja na Jadranu tijekom 2002. godine. *Ronilac 2*: 122-123.
- Jurišić, M. 2006. Luka Splitska. *HAG 2/2005*: 363-365.
- Jurišić, M. 2006. Duboka na Hvaru. U: A. Durman (ur.), *Stotinu hrvatskih arheoloških nalazišta*. Leksikografski zavod Miroslava Krležje, Zagreb: 120-121.
- Kamenjarin, I. 2006. Kaštel Štafilić – Resnik. *HAG 2/2005*: 356-358.

- Kamenjarin, I. 2009. Kaštel Štafilić – Resnik. *HAG* 5/2008: 551.
- Katunarić, T. 2009. Stari Grad – luka (Priko). *HAG* 5/2008: 637-639
- Mesić, J. 1999. Zaštitna istraživanja i rekognosciranja podmorskih arheoloških lokaliteta tijekom 1998. *Obavijesti HAD-a XXXI/2*: 72-77.
- Mesić, J. 2000. Podmorska zaštitna istraživanja i rekognosciranja Odjela za zaštitu arheološke baštine u godini 1999. *Obavijesti HAD-a XXXII / 2*: 53-58.
- Mesić, J. 2006. Vis – potonuli brod Re d'Italia. *HAG* 2/2005: 414-416.
- Mihajlović, I. 2009. Brodolomi sa sarkofazima na istočnoj jadranskoj obali. U: L. Bekić – I. Miholjek (ur.), *Istraživanja podvodne kulturne baštine u Hrvatskoj; Priručnik*. Međunarodni centar za podvodnu arheologiju u Zadru, Zadar: 4-5.
- Miholjek, I. 2007. Podmorje Palagruže. *HAG* 3/2006: 415-416.
- Miholjek, I. – Mihajlović, I. 2009a. Vis – antička luka, uvala Stonca. *HAG* 5/2008: 654-656.
- Nikolanci, M. 1959. Podmorska arheologija u svijetu i kod nas. *Mornarički glasnik* 6.
- Oreb, F. 1990. Prehistorijsko, antičko i starokršćansko razdoblje na otoku Šolti. U: A. Mihovilović (ur.), *Otok Šolta*. Vlastita naklada, Zagreb: 47-67.
- Oreb, F. – Kirigin, B. 1980. Lučki objekat u Saloni; primjer gradnje na drvenim stupovima. U: *Materijali, tehnike i strukture predantičkog i antičkog graditeljstva na istočnom jadranskom prostoru* (Zagreb 1976.). Odjel za arheologiju i Centar za povijesne znanosti Sveučilišta u Zagrebu, Zagreb: 111-114.
- Orlić, M. 1988. Rekognosciranje podmorja oko otoka Palagruže. *Obavijesti HAD-a XX/3*: 42-43.
- Orlić, M. – Jurišić, M. 1986. Rekognosciranja i istraživanja u jadranskom podmorju. *Obavijesti HAD-a XVIII/1*: 42-44.
- Orlić, M. – Jurišić, M. 1986a. Podmorska arheološka istraživanja na Jadranu u godini 1986. *Obavijesti HAD-a XVIII/3*: 49-51.

- Orlić, M. – Jurišić, M. 1989. Istočna obala Jadrana, Rekognosciranje podmorja. *Arheološki pregled* 28 (1987): 199-201.
- Orlić, M. – Jurišić, M. 1989a. Otok Sv. Klement / uvala Stori Stoni, Potonuli antički brod s teretom. *Arheološki pregled* 28 (1987): 89-90.
- Orlić, M. – Jurišić, M. 1993. Antički brodolom kod otoka Šćedra. *Godišnjak zaštite spomenika kulture Hrvatske* 17:149-178.
- Pešić, M. 2008. Excavation and in situ protection of the perforated dolia in the port of Vis. U: Radić Rossi – Gaspari – Pydyn 2008: 187-195.
- Petrić, M. 1994. Arheološki nalazi u hvarskoj luci. *Periodični izvještaj Centra za zaštitu kulturne baštine otoka Hvara* 162: 81-84.
- Petrić, M. 1999. Hvarsko iskustvo u podmorskoj arheologiji: povijest, dokumentacija, prezentacija. *Periodični izvještaj Centra za zaštitu kulturne baštine otoka Hvara* 163: 44-50.
- Petrić, M. 1999b. Zaštitna istraživanja antičkog brodoloma u uvali Duboka. *Periodični izvještaj Centra za zaštitu kulturne baštine otoka Hvara* 163: 57-60.
- Petrić, M. 1999c. Zaštitna istraživanja antičkog brodoloma u uvali Petrov Bok. *Periodični izvještaj Centra za zaštitu kulturne baštine otoka Hvara* 163: 60-65.
- Petrić, N. 1994. Pretpovijest Jadranskog pomorstva. *Adrias – Zbornik Zavoda za znanstveni i umjetnički rad HAZU u Splitu* 4-5: 5-12.
- Petrić, N. – Radić Rossi, I. – Vučetić, M. 2009. Luka grada Hvara od prapovijesti do srednjeg vijeka. *Histria Antiqua* 17: 157-168.
- Protić, G. 1984. Nalaz antičkih sidara na otoku Visu. *Obavijesti HAD-a* XVI/3: 45.
- Radić, I. 1990. Olovne prečke antičkih sidara – dva nova nalaza iz podmorja otoka Visa. *Diadora* 12: 65-78.

- Radić, I. 1991. Rekognosciranje jadranskog podmorja na području Republike Hrvatske tijekom 1990. godine. *Obavijesti HAD-a XXIII/1*: 29-30.
- Radić Rossi, I. 2002. Rimski svijećnjak iz podmorja Palagruže. *VAMZ* 35: 173-189.
- Radić Rossi, I. 2003. Potonuli tragovi rimskoga gospodarskog kompleksa u Kaštel Sućurcu. *Kaštelanski zbornik 7*: 153-178.
- Radić Rossi, I. 2005a. K. Sućurac – Trstenik. *HAG* 1/2004: 228-230.
- Radić Rossi, I. 2005b. Nastavak podmorskog istraživanja na položaju Trstenik u Kaštel Sućurcu. *Obavijesti HAD-a XXXVII/1*: 109-113.
- Radić Rossi, I. 2006c. Podvodni lokaliteti; Glavat na Mljetu; Vela Svitnja na Visu; Vlaška mala na Pagu. U: A. Durman (ur.), *Stotinu hrvatskih arheoloških nalazišta*. Leksikografski zavod Miroslav Krleža, Zagreb: 83-85; 126-127; 282-283; 298-299.
- Radić Rossi, I. 2006. Prošupljeni doliji–osebujni nalazi iz hrvatskog podmorja. *Histria Antiqua* 14: 83-94.
- Radić Rossi, I. 2007. Podmorska arheološka istraživanja u Kaštelanskom zaljevu tijekom 2006. *Obavijesti HAD-a XXXIX/2*: 70-83.
- Radić Rossi, I. 2007a. Caska – podmorje; Kaštel Sućurac – Trstenik; Luka Vis; Split – Spinut; Vranjic – zapadna i južna obala. *HAG* 3/2006: 319-320; 402-404; 407-409; 440-442; 451-453.
- Radić Rossi, I. 2008a. Rescue excavations at Vranjic near Split, Croatia. U: Radić Rossi – Gaspari – Pydyn 2008: 151-166.
- Radić Rossi, I. 2008b. Zaštitno arheološko istraživanje u vranjičkome podmorju 2005./2006. *Tusculum – Časopis za solinske teme*: 17-34.
- Radić Rossi, I. 2008c. Podmorsko arheološko nalazište u predjelu Spinut u Splitu. *Kulturna baština* 34: 351-372.

- Suić, M. 1970. Sadašnje stanje i problemi u realizaciji projekta o hidroarheološkim istraživanjima iz sredstava saveznog fonda za naučni rad. *PITANJA 1970.*: 38-40.
- Suić, M. – Vrsalović, D. 1970. Arheološka istraživanja podmorskih lokaliteta Jugoslavije (idejni nacrt projekta), umnožena građa. Republički zavod za zaštitu spomenika kulture, Zagreb.
- Vrsalović, D. 1972. Sadašnje stanje, iskustva i prijedlozi za što bolju zaštitu hidroarheoloških lokaliteta. U: M. Tešić – A. Botrić (ur.), *Zbornik Savjetovanja o lučkim kapetanijama, Split, prosinca 1971. Društvo za proučavanje i unapređenje pomorstva Jugoslavije – Pomorsko-nautički odjel, Split*: 181-185.
- Vrsalović, D. 1974. *Istraživanje i zaštita podmorskih arheoloških spomenika u SR Hrvatskoj*. Republički zavod za zaštitu spomenika kulture, Zagreb.
- Vrsalović, D. 1976. Istraživanja i zaštita podmorskih arheoloških spomenika na području SR Hrvatske. U: *Materijali XII, IX Kongres arheologa Jugoslavije (Zadar 1972.)*. Hrvatsko arheološko društvo – Savez arheoloških društava Jugoslavije, Zadar: 351-370.
- Vrsalović, D. 1979. *Arheološka istraživanja u podmorju istočnog Jadrana; Prilog poznavanju trgovačkih plovnih putova i gospodarskih prilika na Jadranu u antici, doktorski rad*. Sveučilište u Zagrebu, Zagreb.
- Zaninović, M. 1967. Neki primjeri smještaja antičkih gospodarskih zgrada u obalno-otočkom području Dalmacije. *Arheološki radovi i rasprave* 4-5: 357-371.
- Zmaić, V. 2010. Rekognosciranje podmorja srednje Dalmacije. *Arheološka istraživanja na srednjem Jadranu, [Izdanja HAD-a26]*. Hrvatsko arheološko društvo, Zagreb: 227-244.
- Zubčić, K. 2004. Novootkriveni prapovijesni podmorski nalazi u Baškoj vodi. *Obavijesti HAD-a* XXXVI/1: 35-39.
- Zubčić, K. 2005. Luka Vis. *HAG* 1/2004: 230-232.

D 3.2.2

REGIONAL STATUS QUO ANALYSIS

Puglia Region

Authors: Rita Auriemma

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1. General premises and state of art

1a. *The UCH in the region: history of the research and recent projects*

Nel 1998, su istanza di Cosimo Pagliara, veniva istituito all'Università di Lecce, nell'allora Facoltà di Beni Culturali, l'insegnamento di Archeologia Subacquea. Fu uno dei primi in Italia e soprattutto l'unico, per un lungo periodo, a coniugare la didattica alla ricerca, con cantieri a bassa profondità a cui potevano partecipare gruppi anche numerosi di studenti, grazie al generoso supporto di tecnici che erano anche eccellenti istruttori subacquei.

L'insegnamento e la ricca stagione di attività che a quello si legarono erano stati peraltro preceduti e motivati dalle ricerche avviate nel 1990 nell'ambito di un **Progetto strategico CNR – Università di Lecce, "Metodologie di catalogazione Beni Artistici e Culturali del Mezzogiorno"**, in particolare nell'Unità Operativa "*Porti e approdi*", diretta da Pagliara. Uno dei risultati di quel progetto e del processo virtuoso che ne seguì furono, nel 2004, i volumi dedicati ai paesaggi costieri e alla Forma Maris del Salento, cioè il sistema informativo/GIS della **Carta Archeologica Subacquea**, che costituivano peraltro la fase più recente di una lunga e significativa storia, la storia dell'archeologia subacquea nella Puglia meridionale, ripercorsa proprio nel secondo volume di *Salentum a salo*, a cui rimandiamo¹.

Dal 2004 ad oggi il gruppo di lavoro del Dipartimento Beni Culturali UniSalento si è attivamente impegnato nell' **aggiornamento continuo del sistema** (v. *infra*), svolgendo una costante azione di prospezione estesa o mirata, di monitoraggio ad ampio spettro, di controllo puntuale di segnalazioni, grazie anche a tesi di laurea, di dottorato, a progetti nazionali e internazionali, ad attività di archeologia preventiva².

Tra le ricerche susseguite negli anni più recenti in Regione Puglia va senz'altro segnalata quella sulla fascia costiera e il Mar Piccolo di Taranto, in corso d'opera tra le attività del progetto **FISH AND C.H.I.P.S.** (*Fischeries, Cultural Heritage, Identity and Participated Societies*), nell'ambito del Programma di cooperazione Interreg V/A Greece-Italy³, che mira ad un approccio globale e multi-interdisciplinare alle

¹ Auriemma 2004, II, 5-8.

² La sequenza delle ricerche dal 2004 ad oggi apparirà in *Salentum a salo* III, di prossima pubblicazione.

³ Partner italiani: Università di Foggia- Dipartimento di Studi Umanistici (capofila); Regione Puglia; Lega coop. Pesca-Confcommercio di Taranto; MARTA (partner associato).

attività produttive incentrate sul mare e/o che gravitavano intorno ad esso, identificando e valorizzando gli aspetti identitari delle comunità costiere in relazione alla "memoria storica" del territorio.

Attività di prospezione sistematica sono state condotte nell' **AMP delle isole Tremiti** a integrazione delle ricerche svolte privatamente dall'Associazione Marlin Tremiti – Laboratorio del mare; l'Ente Parco Gargano, per conoscere il patrimonio archeologico sommerso e poter incentivare una diversificazione dell'offerta turistica subacquea, nel 2018 ha affidato un incarico per il censimento e la mappatura dei giacimenti; è stato così incrementato il numero delle evidenze già note e segnalate alla competente Soprintendenza: sono complessivamente 14, da età romana repubblicana al secondo conflitto mondiale, dislocati presso le tre isole dell'arcipelago⁴.

Infine, un progetto di ricerca ha interessato e interessa i paesaggi costieri della **Puglia centrale**, in particolare tra Bari e Bisceglie, nell'ambito dell'intervento cofinanziato dal Fondo di Sviluppo e Coesione 2007-2013, APQ Ricerca Regione Puglia *"Programma regionale a sostegno della specializzazione intelligente e della sostenibilità sociale e ambientale, Future in Research"*⁵.

1b. The GIS/portal/websites/social networks devoted to the FVG UCH

Il primo sistema informativo della Carta Archeologica subacquea del Salento, pubblicato nel 2004 e contenente, in formato MapInfo, i dati cartografici e documentari georeferenziati, tra 2010 e 2011 è stato trasformato in un WebGIS, sviluppato su piattaforma ArcGIS online (www.arcgis.com; http://www.arcgis.com/apps/OnePane/storytelling_basic/index.html?appid=edb2b5022b3a4d4abb1b6f4abc95a2c7) come una sorta di "Facebook geografico" a disposizione, su più piani e livelli di accesso, della collettività, degli addetti ai lavori, degli enti di tutela e di controllo⁶.

La **Carta archeologica subacquea del Salento** è stata progressivamente integrata e comprende oggi circa **650 schede tra relitti (scafi e/o carichi) accertati e ipotetici (80), aree di frammenti, discariche portuali e rinvenimenti isolati** dei nostri fondali. L'ultimo atto ha visto il quasi completo riversamento del GIS nel

Partner greci: Università Ionia di Corfù; Eforia-Museo di Corfù; Cooperativa pescatori di Petriti (partner associato)

⁴ Informazioni gentilmente concesse dall'Ente Parco Gargano (direttore C. Strizzi).

⁵ Disantarosa 2019.

⁶ Auriemma 2004; Auriemma et al. 2011; Auriemma, Cossa 2013; Cossa et al. 2012, 2016, 2017

più ampio sistema informativo della Carta dei Beni Culturali della Puglia, strumento allegato al Piano Paesaggistico Territoriale Regionale (www.cartapulia.it)⁸, in cui il tema del patrimonio culturale è affrontato con una visione olistica, volta a rappresentare i beni culturali in un sistema complesso di relazioni e stratificazioni. Il progetto di *cartapulia* è stato condotto da un gruppo multidisciplinare che ha visto coinvolte le quattro Università pugliesi, la Direzione Regionale per i Beni e le Attività culturali del Mibact con le competenti Soprintendenze, con il coordinamento e la validazione scientifica di G. Volpe (cfr. Appendice: Principali giacimenti subacquei < www.cartapulia.it).

L'implementazione di *cartapulia* in relazione alla fascia costiera di Taranto, compreso il Mar Piccolo, è stata condotta nell'ambito del progetto FISH AND C.H.I.P.S. (v. *supra*).

1.c. Overview of the submerged sites with references

1. Seascapes archaeology

In Puglia, grazie ai progetti sopra menzionati, ampi tratti di costa e dei fondali prospicienti sono stati oggetti di ricerche sistematiche condotte con l'approccio metodologico olistico, contestuale, diacronico, multi e trans-disciplinare dell'archeologia globale dei paesaggi, in questo caso costieri e subacquei, o meglio, paesaggi d'acqua. Di seguito, procedendo da Nord a sud in un ideale periplo, presentiamo una sintetica rassegna delle attività svolte e delle acquisizioni, soffermandoci in particolar modo su quelle più recenti.

Lungo la costa della Puglia centrale, tra Bari e Bisceglie nuove e accurate indagini sono state condotte da Giacomo Disantarosa, nell'ambito di vari progetti dell'Università degli Studi di Bari Aldo Moro in collaborazione con la già Soprintendenza Archeologia della Puglia ora Soprintendenza Archeologia, Belle Arti e Paesaggi per la Città Metropolitana di Bari, che ha coinvolto le attività di formazione previste nel Laboratorio di Archeologia subacquea della sede di Taranto; prospezioni e cantieri didattici subacquei si sono svolti nell'area cittadina di Bari, a Cala S. Giorgio e a Molfetta, permettendo di ricostruire rotte

⁷ La prossima pubblicazione del nuovo volume *Salentum a salo III*, che conterrà tutte le nuove acquisizioni e le ultime revisioni, è stata prevista anche sulla scorta di questo ultimo upgrade.

⁸ La prossima pubblicazione del nuovo volume *Salentum a salo III*, che conterrà tutte le nuove acquisizioni e le ultime revisioni, è stata prevista anche sulla scorta di questo ultimo upgrade.

commerciali e una frequentazione dei porti di S. Giorgio e di Bari a partire da età arcaica ed ellenistica fino a quelle medievale e moderna⁹.

Nell'ambito del lavoro sui paesaggi costieri salentini costantemente condotto dall'Università del Salento (v. *supra*), oltre agli interventi di rilettura dei siti di Egnazia¹⁰, Torre S. Sabina¹¹ e Torre Guaceto¹², a nord di Brindisi, un'acquisizione importante riguarda il sito di **S. Cataldo** e in particolare la struttura del molo di età romana in opera a cassone attribuito da Pausania ad Adriano¹³. Grazie alle reiterate prospezioni e a un intervento più mirato nel 2014, è stata individuata una successiva fase, quattrocentesca, del molo, dovuta alla regina angioina Maria d'Enghjen, che avrebbe sfruttato, almeno in parte, il molo adrianeo come fondazione¹⁴. L'intervento era probabilmente destinato a favorire anche la fiorente colonia veneziana che si era stabilita a Lecce e fare di S. Cataldo una delle ventisei piazzeforti marine che presidiavano il Regno di Napoli.

Un intervento mirato ha riguardato **Otranto**, dove si è identificata un'imponente infrastruttura portuale, in parte obliterata dal molo moderno di S. Nicola, identificata, grazie a una sorprendente convergenza dei dati storici e archeometrici, con l'*opus portus Ydronti* voluta da Carlo I d'Angiò, *rex utriusque Siciliae*, nel suo ambizioso programma di difesa e potenziamento della costa pugliese che implica anche la ristrutturazione del porto di Otranto, con tutta probabilità conclusasi entro il 1282¹⁵.

Sempre a Otranto, recenti ricognizioni subacquee nel porto hanno permesso l'individuazione di tratti della cinta muraria ellenistica, usata come fondazione dalle fortificazioni aragonesi¹⁶.

⁹ Disantarosa 2017, 2018a, 2018b; Nuzzo et al. 2018.

¹⁰ Auriemma 2003a; Auriemma 2004, I, 38-54.

¹¹ V., tra gli altri, Auriemma 2014, 2015; Antonazzo 2014, Antonazzo, Zaccaria 2014; Auriemma, Silvestrelli 2013, *passim*. Torre S. Sabina sarà scenario di uno dei project work del progetto transfrontaliero Italia-Croazia *UnderwaterMuse* e di un più ampio intervento di valorizzazione, nel quadro di un accordo di collaborazione tra Regione Puglia - Poli bibliomuseali, Comune di Carovigno e Dipartimento di Beni Culturali dell'Università del Salento.

¹² Scarano et al. 2008; Scarano, Auriemma, Alfonso 2017; Mastronuzzi et al. 2017.

¹³ L'intervento è stato condotto in un progetto di ricerca coordinato da Giuseppe Ceraudo, che ha visto la rilettura complessiva del sito in concomitanza con il progetto di risistemazione dell'area ad opera del Comune di Lecce; per il molo v. Auriemma 2004, I, 155-156; Sammarco, Marchi 2008, 2012; Sammarco, Marchi, Delle Rose 2014.

¹⁴ Galateo 1558.

¹⁵ Cossa, Auriemma 2016, con bibliografia.

¹⁶ Cossa 2018.

Nell'ultimo decennio si è intrapresa un'indagine sistematica della fascia ionica, nei tratti costieri dei comuni di **Nardò** (tra S. Maria al Bagno e Punta Prosciutto), **Gallipoli**, **Ugento**, **Patù**, in concomitanza anche con tesi di laurea e di dottorato¹⁷.

Un recente approfondimento ha interessato la costa gallipolina e soprattutto l'**isola di S. Andrea**, sia a terra, dove erano già state condotte accurate ricognizioni nel 2003¹⁸, che a mare: si riscontrano significative frequentazioni nell'età del Bronzo Medio e Finale e nelle fasi tardoimperiale e tardoantica, ma anche in età medievale.

I paesaggi costieri del Salento tardoantico sembrano essere vivacemente caratterizzati da insediamenti a carattere produttivo, (per S. Foca, lungo la costa adriatica, abbiamo richiamato la tipologia del "*vicus industriale*"¹⁹), forse stagionale, sicuramente legati allo sfruttamento delle risorse marittime e coincidenti con approdi naturali, per l'attracco e/o l'alaggio di piccole imbarcazioni da pesca. Lungo la costa ionica possiamo riconoscere in questa tipologia le evidenze di S. Andrea su descritte, quelle di Punta Pizzo (Gallipoli)²⁰, S. Pietro (Cheradi)²¹, forse una presenza a S. Maria al Bagno (Nardò) e sicuramente il sito di **Frascone**, presso Torre S. Isidoro, sempre nel territorio di Nardò, all'interno del Parco Naturale regione Porto Selvaggio-Palude del Capitano.

Qui, le indagini del progetto *Il paesaggio come museo. Archeologia della costa di Nardò*²², hanno messo in luce una sequenza stratigrafica ed evidenze che permettono di ipotizzare l'esistenza di un edificio (*villa?*) legato ad una proprietà terriera (*fundus*) di età repubblicana e di un villaggio dedito alla pesca e alle attività legate al mare, dal III sec. d.C. Il sito potrebbe rispondere – per la sua evidente "vocazione"

¹⁷ Si rimanda alla prossima pubblicazione di *Salentum a salo* per la trattazione completa.

¹⁸ De Santis, Congedo 2003, 173-178.

¹⁹ Per S. Foca e il modello insediativo in genere, si veda Auriemma 2004, I, 177-189; 292-293.

²⁰ Coppola 2016; Guilaine, Cremonesi 2003, 28, fig. 1.

²¹ D'Andria, Mastronuzzi 1999.

²² Il progetto si è articolato in un ampio programma di ricerche di archeologia dei paesaggi costieri, con scavi e prospezioni a terra e a mare condotte tra 2008 e 2010 in collaborazione con la Soprintendenza e il sostegno del Comune di Nardò e della Fondazione Caripuglia. Una selezione di materiali dal sito costituisce parte del percorso espositivo del neo-istituito Museo del mare antico di Nardò. Cfr. Auriemma, Pirelli, Rucco 2016, per una nota preliminare. È prevista la pubblicazione completa delle ricerche.

marittima e per la sua posizione – alla seducente quanto nebulosa identificazione con l'*empurium Nauna* di una celebre iscrizione rinvenuta a Nardò e datata al 341 d.C., oggi perduta.

Anche il vicino sito **di S. Caterina** potrebbe rispondere a questa suggestiva identificazione: sulla spiaggia e nei fondali della piccola insenatura emergono diverse evidenze identificabili con infrastrutture di un approdo attrezzato, di servizio al territorio: probabili scivoli per l'alaggio e il ricovero di imbarcazioni, un antemurale e una discarica portuale²³.

Per la fascia costiera di **Porto Cesareo**, coincidente con l'omonima AMP, si sono integrate le conoscenze con rilevanti nuove acquisizioni e studi geomorfologici: il villaggio dell'età del Bronzo sul promontorio in località "**Scalo di Furnu**", che rivela fasi di frequentazione fino ad età arcaica, ha restituito un'ampia porzione sommersa con allineamenti murari e una sistemazione a lastricato, posta tra il promontorio su cui rimangono i resti dell'insediamento e l'isolotto antistante, a profondità che variano tra 2.20 e 3.55 m. Livelli di frequentazione, resti di strutture murarie e manufatti di età romana sul promontorio della Torre Chianca e su quello immediatamente più a ovest, denunciano la presenza di un importante insediamento produttivo di età romana per lo sfruttamento delle risorse del mare (produzione della porpora), di edifici e aree necropolari, in parte semisommersi e sommersi. Anche l'insediamento scoperto sulla penisola della Strea - da identificare probabilmente con l'enigmatica *Cesarea Augusta*, voluta da Federico II (1194-1250) per il potenziamento della costa, come Rocavecchia sull'Adriatico – mostra tratti murari che scompaiono sotto il livello del mare²⁴.

Oltre al comparto ionico, la ricerca si è estesa alla fascia costiera del sud-est barese, con l'estensione della Carta alla Puglia centrale; le indagini condotte nelle varie insenature di Mola (cala Padovano), Polignano (cala S. Vito), Monopoli (cala Incina, cala Marzano, Porto Diavolo presso cala S. Stefano) hanno puntualizzato la funzione di vari approdi, come quello connesso alla villa marittima di Cala

²³ Le evidenze sono state documentate da C. Alfonso nell'ambito della sua tesi dottorale (Alfonso 2015), di prossima pubblicazione.

²⁴ Arthur 2010, c.s.; Congedo 1984, 60-65; Pasanisi 1997, 16-21.

Padovano²⁵, o quello di S. Vito di Polignano, con peschiera, canali di adduzione e cave sotto il livello del mare, annessi al complesso abbaziale²⁶.

Tutte le ricerche e gli indicatori archeologici sommersi e semisommersi hanno permesso di valutare nei vari tratti le variazioni relative del livello del mare e ricostruire il profilo della costa e il paleopaesaggio, per definire modi, forme e fasi del popolamento antico.

b. Cargos, ships and routes

Altrettanto ricco è il panorama relativo ai flussi commerciali e alle rotte, grazie anche alla documentazione più recente di carichi e imbarcazioni, milari delle vie del mare.

Nuovi rinvenimenti confermano l'intensa vitalità dell'Italia meridionale e dell'area basso-adriatica nella produzione ed esportazione del vino in età ellenistica e tardorepubblicana; segnaliamo i carichi a **S. Caterina-Scogli delle tre Sorelle** (Nardò, Le) e presso la penisola della **Strea**, a Porto Cesareo, lungo la costa ionica del Salento, che si aggiungono a quelli già censiti di Gallipoli, Madonnina A (Ta), Savelletri (Br), e La Palombara, Otranto²⁷.

Ai numerosi rinvenimenti isolati e ai giacimenti di anfore grecoitaliche recenti, sicuramente anche di produzione locale, si aggiunge adesso il relitto di **Torre Sinfonò**, nelle acque del Comune di Alliste, Lecce, carico "gemello" di quello, ben noto, di S. Caterina²⁸.

Si segnalano alcune categorie di beni con funzione accessoria di "zavorra vendibile". Vari carichi attestano per la penisola salentina e l'arco ionico un commercio di materiali da costruzione, pietre e soprattutto laterizi (*tegulae* ed *embrices*), da riconnettere alle capacità produttive di quest'area nella tarda repubblica; particolarmente interessante è la rilettura del carico di **Saturo**, che offre un importante *point de repere*

²⁵ Nuovo 2014, anche per i rinvenimenti isolati e decontesualizzati.

²⁶ V. da ultimo Mastronuzzi et al. 2017.

²⁷ Auriemma, Silvestrelli 2013, 440; Auriemma 2004, II, 148-150; carico della Strea: Alfonso 2015, UT 72; Madonnina A: cfr. la recente revisione dei materiali che ha portato a più precise identificazioni delle anfore in Disantarosa et al. 2018; Savelletri: Auriemma 2004, II, 20-21, SR 12; La Palombara: Auriemma 2004, II, 60, SRI 59; Cossa 2018, 130-131.

²⁸ Auriemma 2004, II, 14-18, con bibliografia; Auriemma 2017, 74.

per i movimenti relativi del livello del mare²⁹.

Ai relitti di laterizi si può accostare un carico di bacini e *mortaria* nelle acque di **Gallipoli**, della prima età imperiale, forse proveniente da area centro italiana e diretto in Adriatico o nel Mediterraneo orientale³⁰.

Per quanto riguarda i **relitti a dolia**, vari rinvenimenti – a **Gallipoli**, **Ugento**, nel **Canale d’Otranto**, al largo di **Monopoli** e forse in altre località della costa salentina - arricchiscono lo stato della documentazione ed integrano il quadro delle rotte mercantili legate al grande flusso di esportazioni di vino italico e provinciale di minor pregio e largo consumo³¹. Ai *dolia* sono spesso associati contenitori ovoidali più piccoli, i c.d. *doliola*, contenitori di pece³².

Si registrano testimonianze di importazioni dall’Africa in età medio e tardoimperiale, grazie ai carichi del relitto spiaggiato **Torre S. Sabina 1**, che conserva eccezionalmente anche parti del ponte, di **Torre Chianca** di Lecce e degli **Scogli di Apani**.

Lungo la costa ionica del Salento ricorrono vari relitti di *naves lapidariae*, miliari, con quelli della sponda calabrese, di quella “via del marmo” proveniente dal Mediterraneo orientale: sono stati individuati a **S. Pietro in Bevagna**, **Torre Sgarrata**, **Porto Cesareo**.

Particolarmente significativi, negli ultimi anni, sono stati gli interventi, derivanti da progetti didattici di ricognizione, condotti su relitti di età medievale e moderna; si segnalano qui quelli di **Bacino Grande** e **La Strea**, entrambi a Porto Cesareo (Le), quello veneziano di **Torre S. Sabina**, di cui rimangono *disiecta membra*, che il mare ha restituito in varie occasioni, altri a **T. Guaceto (Br)**, **Torre Rinalda** e **Le Cesine (Le)**³³.

Il mare delle Isole Tremiti custodisce numerosi giacimenti, alcuni dei quali ben noti, come il relitto delle **Tre senghe** (oggetto di scavo della Soprintendenza Archeologica della Puglia tra 1981-1982), il relitto delle **Piastre**, il relitto del piroscampo **Lombardo**, insieme ad altri ancora da indagare e documentare.

²⁹ Colucci 2014.

³⁰ Dell’Anna, Florido, Iannuzzi 2014.

³¹ Auriemma 2002; Auriemma 2004, II, 167-168, con bibliografia, dove si integra il precedente censimento di P. A. Gianfrotta.

³² Cavassa 2008. Auriemma 2017, 73-74

³³ Una prima segnalazione di alcuni di questi relitti è in Di Bartolo *et al.* 2014.

Numerosi, infine, sono i **relitti spiaggiati** lungo tutto la costa salentina, preziosi markers di livelli antichi del mare e di profonde modificazioni del paesaggio.

Un'altra linea di ricerca ha come obiettivo la conoscenza e definizione più puntuale di alcune classi di materiali, a volte "trascurate" dalla ricerca. Si tratta, in particolare, di elementi dell'armamento e dell'attrezzatura di bordo, anche alieutica. Un intervento ha preso in esame il cospicuo *corpus* di ceppi e contromarre in piombo di ancore lignee, nel tentativo di inquadrarne cronologicamente sviluppo e utilizzo in base a fattori intrinseci con l'ausilio di tecniche come la datazione al radiocarbonio, per verificare l'ipotesi di una seriazione tipologica nella diversità dei tipi (fisso e mobile)³⁴.

Segnaliamo infine lavori, tuttora in corso, sull'iconografia navale, sia di età arcaica che di età medievale e moderna³⁵.

1.d. Overview of the museums or of the most important or most recent exhibitions dedicated to this heritage

Iniziativa importante e significativa è stata la mostra "***Nel mare dell'intimità. L'archeologia subacquea racconta il Salento***" (www.nelmaredellintimita.it; e-mail: info@nelmaredellintimita.it; Facebook: [@nelmaredellintimita](https://www.facebook.com/nelmaredellintimita); Instagram: [@nel_mare_dellintimita](https://www.instagram.com/nel_mare_dellintimita)), allestita dal 5 luglio 2019 al 5 luglio 2020 a Brindisi, presso l'Aeroporto del Salento, promossa da Regione Puglia-Assessorato all'industria turistica e culturale e Aeroporti di Puglia, che, tra reperti di archeologia subacquea, contenuti multimediali inediti, arte contemporanea e narrazioni, costituisce un'ideale veleggiata lungo le rive di questa terra alla scoperta della ragnatela di rotte e degli intensi rapporti che l'hanno coinvolta nella *koinè* mediterranea, rendendola nei secoli "porta d'Italia". Una mostra che è anche al centro di una rete di relazioni progettuali e di programmazione – voluta dall'Assessorato attraverso l'impegno dei suoi Poli biblio-museali – dei musei del territorio, chiamati a impegnarsi non solo prestando alcuni preziosi reperti delle rispettive collezioni, ma ospitando all'interno del proprio museo un corner dedicato proprio alla mostra, con materiale informativo e approfondimenti multimediali.

³⁴ Corvaglia 2015. È stato avviato con il CEDAD un protocollo metodologico ed un progetto sperimentale.

³⁵ Salentum III c.s.; Cossa 2017.

Tra i musei partner, il recentissimo **Museo del mare antico di Nardò** è dedicato interamente ai paesaggi costieri e subacquei del territorio; benché piccolo, è denso di contenuti, anche didattici: la ricerca archeologica a terra e a mare e le nuove tecnologie, il sito costiero di Frascione, con le diverse fasi, il giacimento subacqueo di S. Caterina e le altre evidenze sommerse o semisommerse del mare di Nardò. Altri musei hanno invece cospicue sezioni di approfondimento su paesaggi d'acqua e sulla ricerca archeologica subacquea: è il caso dei due Musei ex Provinciali di Brindisi e Lecce, ora acquisiti dalla regione attraverso i Poli biblio-museali regionali, anche per la loro lunga storia e il secolare ruolo di presidio del territorio che hanno svolto. Peraltro, in entrambi i musei, a cavallo tra gli anni '60 e '70 del secolo scorso, furono attive sezioni locali del Centro Sperimentale di Archeologia Subacquea di Albenga, istituito dal padre fondatore dell'archeologia subacquea italiana, Nino Lamboglia.

Il **Museo Archeologico di Brindisi**, fondato nel 1884 e completamente rinnovato nel 2009 ha varie sale e collezioni di Archeologia Subacquea, derivanti dalla lunga stagione di ricerche subacquee condotte dalla stessa direzione del Museo lungo tutta la costa brindisina. Spicca l'esposizione del carico di Bronzi di Punta del Serrone, con la statua del Console Lucio Emilio Paolo, protagonista di prestigiose mostre internazionali, i cui "avatar" digitali e reintegrati attraverso un brillante lavoro di studio iconografico e modellazione creativa arricchiscono la mostra presso l'Aeroporto.

La ricca sezione dei "Paesaggi di mare" apre il rinnovato percorso espositivo (2019) del **Castromediano di Lecce**, museo del territorio articolato in moduli dedicati ai "paesaggi" del Salento (seguono i paesaggi di terra, del sacro, dei vivi, dei morti e dello spettacolo). Tra i focus, la ricostruzione della fiancata di un'imbarcazione di età romana con il suo carico di anfore vinarie e olearie, e la scenografica rappresentazione di un paesaggio d'acqua, quello del relitto di Porto Badisco, con le anfore originali del carico scenograficamente protagoniste di un grande acquario popolato da fauna e flora marine.

Il nascente **Museo archeologico di Carovigno** ha sede nello splendido Castello Dentice di Frasso e si sviluppa in 2 sezioni. Al piano terra, l'*Archeologia Subacquea* è illustrata dagli eccezionali rinvenimenti provenienti dai fondali di Torre Santa Sabina, l'importanza dei quali è sottolineata dalle riproduzioni della stratigrafia sommersa e di un'imbarcazione romana ispirata a uno dei relitti presenti nella baia. Lungo

tutto il primo piano si snoda invece la ricchissima narrazione delle testimonianze archeologiche della *Città e Territorio*.

Anche il **Museo Civico “E. Barba” di Gallipoli**, il più antico nel Salento, vera e propria *Wunderkammer* per la ricchezza e la varietà tipologica delle raccolte, vanta una sezione dedicata ai rinvenimenti in mare acquisiti nel corso della sua lunga storia, che sarà presto oggetto di un allestimento dedicato.

La Torre di Santo Stefano o **Torre Chianca di Porto Cesareo**, nell’omonima AMP, ospita un percorso archeologico che descrive la ricchezza del paesaggio costiero di Porto Cesareo e dei suoi giacimenti subacquei: la mostra permanente *“Storie dal mare di Porto Cesareo. La statua del dio Thot e le recenti ricerche di archeologia subacquea”*, inaugurata nel 2017; un focus è dedicato alla preziosa statuetta del dio Thoth, rinvenuta negli anni ’30 del Novecento nelle acque in prossimità della Torre. Il piano terra è riservato ad attività di biologia marina e di sensibilizzazione ambientale.

Nella cinquecentesca torre di guardia, simbolo della Riserva Naturale dello Stato e Area Marina Protetta di **Torre Guaceto**, un allestimento museale racconta il paesaggio, i luoghi e le attività commerciali di questo tratto di costa in età romana, grazie anche alla replica integrale di un piccolo cabotatore adibito al trasporto del vino e dell’olio del territorio, entro anfore fabbricate in loco, al grande terminal di Brindisi. Nella rete dei musei del “mare dell’intimità” va ricordato il **Museo Archeologico Nazionale di Taranto – MarTA**, che annovera tra le sue ricchissime collezioni anche preziosi reperti da mare, come la statua acefala di Kore da Montegranaro.

Sempre nel Comune di Nardò, che vanta una ricca serie di esposizioni museali, si trova il **Museo-Acquario di S. Maria al Bagno**, nato da un progetto di Cooperazione Territoriale (Programma Grecia-Italia 2007-2013), *APrEH*, per raccontare i fondali di quel tratto di costa sia dal punto di vista biologico-naturalistico che da quello storico-archeologico, con la presenza quindi di relitti (ricostruiti o virtuali) nella loro attuale situazione di rapporto col mezzo acqueo.

Materiali e contesti da recupero subacqueo sono conservati nel **Museo nazionale “Giuseppe Andreassi” e Parco archeologico di Egnazia** (soprattutto nei depositi), provenienti in parte dal bacino portuale antistante, dotato di infrastrutture in cementizio di età romana. L’allestimento attuale è stato inaugurato nel luglio 2013 e comprende dieci sale in cui sono esposti i reperti provenienti dagli annessi

scavi archeologici, tra i più importanti della regione. Il Museo è inserito nel programma del progetto MUSAS (v. *infra*).

Le ricerche del Dipartimento di Beni Culturali dell'Università del Salento sui paesaggi costieri e subacquei del territorio sono parzialmente illustrate nel **Museo Storico -Archeologico dell'Università del Salento – MUSA**,

nato con lo scopo di documentare e valorizzare le attività di ricerca del Dipartimento e i loro risultati. L'allestimento, concepito secondo i più moderni criteri espositivi, si avvale dell'esposizione di oltre 300 reperti provenienti dalle attività di scavo nel territorio salentino, ma soprattutto di riproduzioni di contesti archeologici e prodotti multimediali.

Nella Puglia settentrionale, il **Museo civico archeologico "Michele Petrone" di Vieste**, riallestito nel 2019, vanta un ricco nucleo di anfore da trasporto ed ancore in pietra e in piombo, testimonianza dell'antica vocazione marinara viestana in età romana e tardoantica.

A Bisceglie, nel Museo Civico Archeologico sono esposti reperti da recupero subacqueo: anfore provenienti dai fondali nei pressi del Salsello; dal 2002 è inoltre attivo il **Museo Civico del Mare**, che mostra sezioni dedicate ai modelli navali, strumenti per la navigazione, ancore, pesca, ex voto, attività subacquea e archeologia sottomarina.

Il **Museo del mare di Monopoli**, all'interno del Castello Carlo V, nasce nel 2010 per valorizzare le evidenze storiche della città e del suo rapporto con il mare, dall'età del Bronzo ai primi dell'Ottocento, esponendo una serie di reperti significativi sul tema, precedentemente conservati presso i depositi comunali e pertanto non fruibili.

La **Mostra Etnografica Permanente del Mare a Molfetta**, gestita dall'Archeoclub, offre un percorso nella sapienza secolare della costruzione delle barche in legno; ha preso parte della brillante iniziativa *Museo Navigante*, promossa tra gli altri dal Mu.MA-Galata di Genova, che ha riunito 58 musei, pubblici e privati, del mare e della marineria per valorizzare il patrimonio culturale marittimo italiano (www.museonavigante.it).

~~Un'altra mostra permanente è stata realizzata all'interno della torre costiera di **Torre Chianca di Porto Cesareo**: “Storie dal mare di Porto Cesareo. La statua del dio Thot e le recenti ricerche di archeologia subacquea”, dal 2017 al 2018.~~

Il **Porto Museo di Tricase** - Ecomuseo di Venere si trova al centro dell'area tutelata dal Parco naturale regionale “Costa Otranto, Santa Maria di Leuca e Bosco di Tricase” e rappresenta forse l'unico esempio concreto di musealizzazione diffusa di un porto, del suo mare, del suo territorio costiero e della sua gente. Nel 2017 è stato formalmente riconosciuto quale “Ecomuseo di interesse regionale” e comprende il Museo delle Imbarcazioni Tradizionali, la Scuola di Vela Latina e di Antica Marineria, il **Centro Culturale Permanente sulle Antiche Tradizioni Marinaresche** con la Bibliomediateca del Mare, ecc.

Va infine segnalata la nutrita presenza in Regione di musei e mostre dedicate all'ambiente marino e al patrimonio naturalistico.

1.e. Policies for the regional UCH

- Protection and management

The underwater cultural heritage of the sea of Puglia is under the management and jurisdiction of the regional **Soprintendenza Archeologia, belle arti e paesaggio per le province di Brindisi, Lecce e Taranto**, **Soprintendenza Archeologia, Belle arti e Paesaggio per le province di Barletta-Andria-Trani e Foggia**, **Soprintendenza Archeologia, belle arti e paesaggio per la città metropolitana di Bari**.

Taranto sarà anche la sede della nuova **Soprintendenza Nazionale per l'Archeologia del patrimonio Subacqueo** che avrà anche centri operativi a Venezia e Napoli ([Art. 37 DPCM 2 dicembre 2019 n.169](#)).

Un importante ruolo gestionale è svolto dalla **Regione Puglia – Assessorato all' Industria turistica e culturale, Gestione e valorizzazione dei beni culturali** che ha in corso progetti a carattere regionale e internazionale sul patrimonio sommerso, così come dalle Aree Marine Protette (v. *infra*, valorizzazione e accessibilità); la Regione ha peraltro finanziato a monte anche numerosi programmi di ricerca e innovazione (cfr. *Future in Research*), così come di riqualificazione di musei e luoghi della cultura, nonché di sostegno alle imprese delle filiere culturali, turistiche, creative e dello spettacolo, per esempio con il

recentissimo bando *Radici e ali*, (POR 2014-2020), che favorisce in particolare **l'imprenditorialità giovanile nel settore dei servizi integrati culturali e di accoglienza.**

Vari Comuni sono molto attivi, sia direttamente che indirettamente, attraverso la loro presenza nei consorzi di gestione delle AMP/Riserve naturali/Parchi costieri e la riqualificazione/attivazione di luoghi della cultura legati al mare (v. *supra*).

legislation/regulations

- C.P.C.M. 3763/6 del 20.04.1982 (Circolare Spadolini)
- Legge quadro 6 dicembre 1991 sulle Aree Marine protette
- DPR 554 del 1999 o regolamento della Legge Merloni
- Codice dei Beni Culturali DL 42 del 22/01/2004 e s.m.i.; Art. 10, comma 4, i) Le navi e i galleggianti aventi interesse artistico, storico od etnoantropologico
- Convenzione Unesco 2001. Convention of the protection of the Underwater Cultural Heritage = LEGGE 23 ottobre 2009, n. 157. *Ratifica ed esecuzione della Convenzione sulla protezione del patrimonio culturale subacqueo, con Allegato, adottata a Parigi il 2 novembre 2001, e norme di adeguamento dell'ordinamento interno.*
- Faro Convention 2005
- [DPCM 2 dicembre 2019 n.169, Art. 37: Istituzione della Soprintendenza Nazionale per l'Archeologia del patrimonio Subacqueo.](#)

accessibility and valorisation (in situ and/or through VR/AR)

In Puglia non sono stati istituiti parchi archeologici subacquei come quello di Baia³⁶ ma sono in atto varie iniziative di valorizzazione e fruizione, sia a carattere regionale che interregionale e internazionale, a partire dal progetto **UnderwaterMuse** in corso.

³⁶ Il Ministero dell'Ambiente e della tutela del territorio di concerto con i Ministeri per i Beni e le Attività Culturali, delle Infrastrutture e dei Trasporti, delle Politiche agricole e forestali e d'intesa con la Regione Campania ha istituito il Parco Sommerso di Baia (D.I. 7.08.2002), equiparato ad area marina protetta. La gestione provvisoria del Parco sommerso è stata affidata alla Soprintendenza per i Beni Archeologici di Napoli e Caserta.

Molti di essi trovano scenari privilegiati nelle aree costiere e marine protette presenti in Regione: 1 Parco nazionale (Parco Nazionale del Gargano), 3 aree marine protette (Isole Tremiti, Torre Guaceto e Porto Cesareo), 6 Parchi naturali regionali (Dune costiere Torre Canne - Torre San Leonardo, Costa Otranto - S. Maria di Leuca e Bosco di Tricase, Porto Selvaggio - Palude Del Capitano, Litorale di Punta Pizzo - Isola di S. Andrea, Litorale di Ugento, Saline di Punta della Contessa), 5 Riserve statali (Lago di Lesina – non citata, Torre Guaceto, Oasi WWF Le Cesine, Saline di Margherita di Savoia, S. Cataldo – non citata), 2 Riserve regionali (Litorale Tarantino orientale, Palude del Conte e Duna Costiera di Porto Cesareo)³⁷.

Il **Museo nazionale e Parco archeologico di Egnazia** e il **Museo Nazionale di Manfredonia** sono tra i luoghi della cultura inseriti nel progetto interregionale “MUSAS- MUSEi di Archeologia Subacquea” (PON Cultura e Sviluppo 2014/2020), che riguarda complessivamente 6 attrattori (due per ciascuna regione) della Calabria, Campania e Puglia. Scopo del progetto è realizzare un programma di valorizzazione integrata attraverso l’adozione di soluzioni tecnologiche innovative che metta in rete aree archeologiche sommerse e Musei che conservano reperti di provenienza subacquea³⁸.

Si registrano inoltre attività di valorizzazione mirate: l’Amministrazione comunale di Isole Tremiti d’intesa con la SABAP Foggia, Barletta Andria Trani e l’AMP e in collaborazione con l’Associazione Albatros - Progetto Paolo Pinto” *Scuba Blind International*, ha avviato la musealizzazione del relitto del *Lombardo* che sarà fruibile nella stagione estiva 2020 anche dai subacquei non vedenti.

Anche le altre AMP hanno attivato, in maniera sperimentale, percorsi naturalistico-culturali, visite guidate e progetti di restituzione virtuale dei paesaggi e delle evidenze archeologiche; ricordiamo il progetto “Torre Guaceto Smart Innovations” dell’AMP di Torre Guaceto e il progetto “Sentieri Blu” dell’AMP di

³⁷ <http://www.parks.it/regione.puglia/>; a questi si deve forse aggiungere il Parco Regionale del Mar Piccolo (TA) (in via di realizzazione anche nell’ambito del progetto F.I.S.H.&C.H.I.P.S.). Tutte le aree sono citate nei vari questionari, tranne Lesina e S. Cataldo.

³⁸ Le attività connesse consentiranno, inoltre, di definire le buone pratiche per promuovere la conoscenza dell’archeologia subacquea ed i percorsi di visita sia reali che virtuali in ambiente sommerso e subaereo, promuovendo il turismo archeologico subacqueo e ampliandone le esperienze sensoriali, monitorando e proteggendo i siti archeologici subacquei.
<http://www.icr.beniculturali.it/documenti/allegati/DAVIDDE%20Abstract.pdf>

Porto Cesareo che ha avuto come obiettivo quello di valorizzare le risorse ambientali e culturali presenti, mettendoli in rete e promuovendoli attraverso materiale informativo, pannelli didattici, acquisto di natanti per l'esplorazione anche subacquea: 2 dei percorsi sono dedicati all'archeologia. I "Sentieri Blu" hanno, di fatto, un punto di accoglienza nelle torri costiere di Torre Lapillo e Torre Chianca, gestite del Comune di Porto Cesareo in collaborazione con le associazioni ambientaliste che, in ossequio ad appositi piani di gestione condivisi con l'Amministrazione comunale, offrono ai numerosi turisti servizi di informazione sulle peculiarità ambientali e culturali del territorio costiero e sommerso di Porto Cesareo e del Salento. Inoltre, nella stessa AMP operano con licenza circa 4 diving e 5 aziende specializzate in escursioni in barca, che conducono i turisti prevalentemente sul sito delle colonne romane di Torre Chianca, facilmente accessibile con maschera e pinne, poiché si trova ad una profondità di 4,5 mt.

Queste ed altre esperienze saranno messe in rete e potenziate nell'ambito un vasto programma di valorizzazione del patrimonio sommerso - "**Puglia Seascapes**" - avviato dalla Regione Puglia. La visione sottesa al progetto comprende ricerca scientifica, sia archeologica che ambientale, il tema dell'accessibilità e della fruizione, le sfide della promozione del territorio e dello sviluppo sostenibile connessi al turismo culturale. Gli obiettivi vanno dalla la promozione e l'upgrade della mostra *Nel Mare dell'Intimità*, alla realizzazione di eventi sul territorio e fuori regione, a partire dall'EUDI Show 2020 di Bologna, e all'ideazione, progettazione e infrastrutturazione leggera di itinerari subacquei e anfibi (tra mare e terra), naturalistici e storico-archeologici, *sentieri blu tra natura e cultura* comprendenti uno o più giacimenti archeologici (strutture, resti di imbarcazioni e di carichi), da realizzare prioritariamente nelle AMP della regione ma anche al di fuori di quelle. Gli interventi prevedono anche la messa a punto di soluzioni per persone con disabilità, grazie all'interazione con esperti come l'Associazione Albatros – Progetto Paolo Pinto Scuba Blind International.

Alcuni diving e associazioni della Regione, in collaborazione con Polo Museale e SABAP, effettuano visite guidate dei giacimenti sommersi³⁹. Le esperienze in corso non presentano però un carattere organico e un'offerta sufficientemente articolata e qualificata (obiettivo del progetto *Seascapes*).

³⁹ Per esempio a Egnazia (Ciancio, Colucci 2018), a S. Caterina di Nardò, nell'AMP di P. Cesareo (v. *infra*).

2. Data collection

2.a. Number and compiling level of the questionnaire

Sono stati consegnati 36 questionnaires out of 110 stakeholders (33%)

Solo un soggetto risponde solo al primo modulo (Archeostudio); il livello di compilazione presenta significative differenze sia qualitative (dati corretti o errati, ricchezza o scarsità di conoscenze, maggiore o minore puntualità delle risposte, differenza di competenze, ecc.) che quantitative; i questionari che presentano la compilazione di tutti i campi (a esclusione di “Non so” o “Non conosco”) sono 8, anche se talora con risposte meno circostanziate o errate (AMP Porto Cesareo, AMP Torre Guaceto, Consorzio Dunamare, Legambiente Puglia, Delfino Diving. Museo Ribezzo, CEA, Terracunta).

2.b. categories of replying stakeholders

- Public/regional Authorities/Bodies: 6

3 MPA/Parks/Ecomuseums: Area Marina Protetta di Porto Cesareo, Area Marina protetta e Riserva regionale di Torre Guaceto, Riserva naturale Ecomuseo Palude La Vela e del Mar Piccolo – WWF Taranto;
1 Regional Authority (ARPA);
2 Municipalities (Nardò, Porto Cesareo)

- Cultural/research institutions: 4

4 Museums: Museo Archeologico Nazionale di Taranto – MarTA; Museo F. Ribezzo e Polo Biblio-museale Regionale di Brindisi; Museo S. Castromediano e Polo Biblio-museale Regionale di Lecce; Museo Storico-Archeologico dell’Università del Salento

- Interest groups including NGOs: 9

Ass. NabuChe, Federazione Italiana Vela-VIII Zona, Italia Nostra Lecce, FAI Puglia, FAI Lecce, Legambiente Puglia, Ass. Delfino Diving Club, Coordinamento Ambientalisti pro Porto Cesareo – CEA, Associazione Marinai d’Italia-Bari

- SMEs: 17

6 Cultural and creative SMEs: Dunamare, Coop Gaia, Jonian Dolphin, Archeostudio, Terracunta, TheMonumentsPeople (Museo del mare antico di Nardò)

11 Diving centers: Aquodiving, Orca, Dwd, Dromia, Costa del Sud, Bubble's world, Corvino, Bari Scuba, Mare del Sud, Sub Molfetta, Tremiti diving

- ***Some observations***

The most numerous group (17 subjects) is represented by small-medium enterprises, cultural and creative SMEs and diving centers; between the first ones (6 subjects), various subjects manage or deal with cultural institution, as, for example, the association TheMonumentsPeople, which manages the Museum of Ancient Sea of Nardò, a city museum/public institution. In this case we must consider a double role.

The second sub-group is the most numerous cluster, constituted by the diving centers (11 subjects). The related questionnaires often reveal scarce or wrong knowledge and informations limited to their geographic/operative range; many of them often answer referring to the environmental, marin heritage rather than to the cultural one.

The second cluster is represented by the interest groups including NGOs (9 subjects), therein appear both well-known regional sections of national level organizations, supposed to be very informed, updated and involved in the cultural policies of the territories, and local associations. Actually, these latter appear to be more aware and conscious of the strenghts and weaknesses of their territories and communities, whereas the first ones often ignore important issues of the regional cultural assets.

The third group corresponds to the public/regional Authorities (6 subjects), including 2 MPA, 1 Ecomuseum and 2 coastal municipalities, both involved in the management authority of the Porto Cesareo MPA and very active in the field of the cultural valorization of their coasts and sea.

At the end, there are the Institutions and Places of Culture, all public but of different level: 1 national, 2 regional, 1 university; furthermore the group of the SMEs, as written, include surely 2 subjects that manage 2 city museums, of Nardò and Ugento.

2.c. sections of the questionnaire better and worse compiled

Tutti hanno risposto alla sezione su significato e valore dell'UCH; la raccolta fondi è forse il tema di cui si ha meno conoscenza, ma anche sulle autorità responsabili di protezione e gestione ci sono molti silenzi

ed equivoci, così come sul tema degli open data (benché la definizione sia stata chiaramente riportata nel format).

2.d. assessment of the sample significance (if possible): is it really indicative?

Il campione della Puglia è molto vario ed articolato, comprende varie categorie di soggetti, pubblici e privati; alcuni questionari rispecchiano una buona, talora ottima, conoscenza delle situazioni territoriali e delle problematiche insite in quelle, così come dei temi della ricerca, tutela, valorizzazione e fruizione turistica del patrimonio sommerso. Si rileva anche una disomogeneità delle aree: quantità e qualità dei questionari degli stakeholders del Salento sicuramente sono più elevate; seguono l'area garganica (manca il diving più attivo, che non ha risposto per una sorta di divieto della competente SABAP) e la Puglia centrale, mentre meno rappresentata e quindi più "silente" è l'area tarantina.

Il maggior interesse e la più evidente consapevolezza riscontrabile nei soggetti salentini è ovviamente imputabile alla forte interazione dell'Università locale con il territorio e le comunità, così come alle varie forme e misure di collaborazione con le altre istituzioni, in particolare le amministrazioni comunali, e alle significative forme di sostegno e riqualificazione messe in atto dalla Regione con bandi e misure specifiche. Pur con queste differenze riteniamo però il campione regionale sufficientemente indicativo.

3. Heritage community awareness

- Is the underwater heritage significant and valuable for the stakeholders/people and in what measure?

All the answering stakeholders agree on the relevance of the UCH and on the 1st rule of the 2001 Convention (*“poiché stimolerebbe atteggiamenti consapevoli a tutela del proprio passato e del proprio futuro, soprattutto se si pensa alle ripercussioni positive a livello di indotti “*- ARPA); la musealizzazione in situ permette di attivare una serie di azioni di valorizzazione e di promozione anche con il coinvolgimento della comunità interessata (2 - Comune Porto Cesareo, CEA), o volte alla riqualificazione e alla ripresa della ricerca archeologica (c'è chi segnala come negli ultimi dieci anni l'archeologia subacquea sia stata abbandonata a se stessa - Dwd). Solo un soggetto prende le distanze dalla regola, almeno nella pratica (CNR-IRSA).

Dal questionario si evince in genere un valore identitario assegnato al patrimonio sommerso, il riconoscimento di una memoria storica e sociale e una piena condivisione della sua rilevanza; ciò è probabilmente dovuto a un lavoro di lungo periodo sulla conoscenza e sulla divulgazione, alla costante attività di ricerca e disseminazione condotta da alcuni soggetti, in primis l'Università e le Associazioni locali, in collaborazione con Regione ed altri soggetti pubblici, in particolare le aree naturali marine e costiere protette.

- Do the stakeholders/people know the regional underwater archaeological sites/parks, MPA, coastal parks, blue trails (if any)? In what measure/percentage?

Come si è precisato nel quadro ricognitivo, in Puglia non sono stati istituiti parchi archeologici subacquei; vari stakeholders rispondono esattamente (9 - Dwd, FAI Lecce, AMP Porto Cesareo, Comune Nardò, Dromia, Costa del Sud, TheMonPeople, MUSA, Terracunta), altri non sanno (3 - Museo Ribezzo, CNR-IRSA, Tremiti Diving); quelli citati come tali sono in realtà giacimenti subacquei protetti da vincolo archeologico, di cui solo alcuni fruibili su autorizzazione o in collaborazione con SABAP o Polo Museale: S. Pietro in Bevagna (talora confuso con la località di Campomarino; 3 - Bubble's world, Jonian Dolphin Terracunta, Ecomuseo WWF Taranto), il Porto romano di Egnazia (5 - Coop. Gaia, Orca diving, Corvino diving, Delfino

diving, Scuba Bari), i siti archeologici dell'Area Marina Protetta di Porto Cesareo (LE), in particolare il relitto delle colonne, nell'ambito del progetto "Sentieri blu" (4 - Comune Porto Cesareo, CEA, AMP Porto Cesareo, Orca diving), In questa AMP (come nelle altre) operano con licenza circa 4 diving e 5 aziende specializzate in escursioni in barca, che conducono i turisti prevalentemente sul sito delle colonne romane di Torre Chianca, facilmente accessibile con maschera e pinne, poiché a bassa profondità.

Sono citati altri siti indagati ma non ancora valorizzati, ritenuti erroneamente parchi o percorsi archeosub, come il sito archeologico di Torre Santa Sabina (Br), il relitto romano di Santa Caterina – Nardò (Comune P. Cesareo, CEA), i relitti di Campomarino di Maruggio, Calincina Polignano (Mare del sud); altri siti citati come percorsi archeologici sono invece di interesse naturalistico, come la Foresta Calcarea di Torre dell'Ovo (Mare del sud, Tremiti Diving).

Alcuni soggetti conoscono percorsi sub di carattere non strutturato e non autorizzato (a cura dei diving center ma non ufficialmente istituiti) (NabuChe, Museo Ribezzo, Costa del Sud), presumendo talora che ce ne siano diversi. Altri conoscono quelli "autorizzati", come San Pietro In Bevagna, Egnazia, il relitto delle colonne di Porto Cesareo (Bubble's world), l'istituendo percorso sul relitto del Lombardo alle Tremiti (Aquodiving), o semplicemente indicano un numero di percorsi (4 percorsi – Dromia); vengono citati come autorizzati percorsi subacquei a S. Caterina o a Polignano e Monopoli, che invece non lo sono (FAI Lecce, Delfino diving, Scuba Bari). Viene inoltre menzionato un percorso subacqueo a Bisceglie, in corso di realizzazione da parte del Civico museo del mare, non altrimenti noto (Ass. Marinai d'Italia).

Solo in un caso si ritiene erroneamente che i diving siano autorizzati a portare i turisti su tutti i siti archeologici che conoscono, godendo di uno specifico permesso (NabuChe), mentre la maggior parte degli stakeholders correttamente sa che in generale i diving conducono visite guidate sui giacimenti subacquei ma senza autorizzazione.

I punti di accoglienza per le visite non sono previsti o sono presso i diving o sulla spiaggia (8 - Mare del Sud, Orca diving, Dromia, Corvino diving, Delfino diving, Scuba bari, FAI Lecce, Costa del sud, Coop. Gaia); fanno eccezione alcune situazioni più strutturate: i "Sentieri Blu" dell'Area Marina Protetta di Porto Cesareo hanno, come si è detto, un punto di accoglienza nelle torri costiere di Torre Lapillo e Torre Chianca

(Comune Porto Cesareo, CEA, AMP Porto Cesareo). Per il percorso a Egnazia, l'accoglienza è nel museo o presso l'Archeolido di Egnazia.

Ci sono inoltre alcuni soggetti che citano percorsi a carattere naturalistico (progetti di snorkeling nel Parco delle dune costiere anche per bambini, con punti accoglienza nei lidi del parco; i percorsi del mar Piccolo di Taranto - Ecomuseo WWF Taranto)

I siti noti risultano fruibili sia in immersione che snorkeling alla maggior parte degli stakeholders.

L'accessibilità alle persone con disabilità risulta nulla (3 - Dwd, TheMonPeople, Legambiente) o molto limitata (7 - Comune Porto cesareo, CEA, AMP Porto Cesareo, Comune di Nardò, Aquodiving, Scuba bari. Ecomuseo WWF Taranto), comunque legata all'organizzazione degli accompagnatori, associazioni ecc. (ARPA, Bubble's world). È prevista nei "Sentieri blu" dell'AMP di Porto Cesareo, che ha formato accompagnatori per non vedenti. Ci sono didattiche come HDSA che preparano istruttori e guide ad accompagnare, gestire ed organizzare ogni singola fase delle immersioni per portatori di handicap (ARPA)⁴⁰.

I parchi archeologici conosciuti al di fuori della Puglia sono quelli Baia (anche in relazione alle soluzioni tecnologiche e probabilmente per i punti di accoglienza – ARPA, Orca diving) e della Sicilia (Delfino diving). Tra le soluzioni adottate che si conoscono, ricorrono le installazioni di gabbie modulari, pannelli, segnaletica e vari strumenti tecnologici (9 - CEA, Comune P. Cesareo, Dwd, Italia Nostra Lecce, AMP Porto Cesareo, Delfino diving, TheMonPeople, MUSA, Legambiente); un soggetto cita i pannelli informativi su basi a corredo del giacimento di S. Pietro in Bevagna (carico di sarcofagi) (Jonian Dolphin); alcuni non le specificano, le conoscono da conferenze, convegni (Museo Ribezzo).

Quasi tutti i soggetti conoscono le AMP, in particolare quelle di Porto Cesareo e Torre Guaceto, ma questa apparente discrasia si deve al fatto che hanno risposto in maggior numero stakeholders salentini. Vengono spesso citati i parchi e le riserve naturali costiere, alcuni in misura più frequente di altri, ma ci si limita a quelli del proprio territorio o provincia, la conoscenza raramente si estende al di fuori, ad eccezione dell'unico caso di Legambiente Puglia che ha una visione complessiva delle presenze regionali.

⁴⁰ Si segnalano anche le attività didattiche per disabili non vedenti dell'Associazione Albatros Progetto Paolo Pinto Scuba blinding, soprattutto nell'AMP Isole Tremiti, da cui purtroppo non abbiamo ricevuto il questionario.

In generale, i nostri interlocutori, e in special modo i diving ma anche le altre SME's hanno maggiori conoscenze e informazioni del patrimonio ambientale che di quello storico-archeologico.

Il grado di conoscenza varia a seconda delle categorie e della prossimità geografica: raramente gli stakeholders hanno conoscenze a livello regionale, di solito si limitano al proprio comune o provincia, ma spesso anche queste conoscenze che dovrebbero essere più dirette sono non corrette o parziali; sorprende la scarsa conoscenza di Fondazioni e Associazioni importanti a livello nazionale come il FAI (FAI Puglia non conosce nemmeno le AMP regionali), mentre molto più informati e consapevoli sono le associazioni locali, in particolare quelle ambientaliste.

Dai questionari si evince che il 25% degli stakeholders ha contezza della situazione reale, vale a dire la mancanza di parchi e itinerari archeologici sommersi regolarmente istituiti e strutturati, a fronte di una sporadica e puntiforme presenza di giacimenti per i quali esistono forme di fruizione autorizzata da singole convenzioni e accordi delle competenti SABAP, anche con modalità e interlocutori differenti. Eppure la Regione ha un potenziale eccellente, unico per varietà, diffusione, accessibilità, in tema di patrimonio sommerso. Servono una visione organica di lungo periodo, una progettazione complessiva di modelli replicabili e una sperimentazione concertata con le varie risorse del territorio.

L'attuale situazione, caratterizzata da discrasie e discrezionalità, rappresenta una sfida impegnativa per gli obiettivi del progetto UnderwaterMuse, in particolare per quanto concerne il WP5; la messa a punto di un handbook di best practices, un toolkit che preveda anche riferimenti normativi per disciplinare l'istituzione di parchi archeologici o ecomusei sommersi e diffusi e modelli di gestione condivisa e partecipata, auspicabilmente pubblica e privata insieme⁴¹, potrà fornire strategie e indirizzi alle politiche culturali della Regione Puglia, soprattutto in relazione e in connessione con le AMP regionali, che hanno già un importante antefatto di ricerca, documentazione, valorizzazione e innovazione tecnologica e sono scenari ideali per l'attuazione di protocolli di ricerca mirata alla valorizzazione, tutela proattiva e fruizione

⁴¹ Il patrimonio culturale non ha bisogno della demonizzazione del privato o dell'antitesi tra privato e pubblico, ma di "più pubblico e più privato", sostiene giustamente G. Volpe, già Presidente del Consiglio Superiore dei Beni Culturali e Paesaggistici.

sostenibile. Un processo in tal senso per l'AMP di Porto Cesareo è in corso di discussione e valutazione, seppure a livello del tutto preliminare.

- Do the stakeholders/people know the regional authorities and the legislation/regulations concerning the UCH?

Per quanto concerne la gestione - autorità, leggi e regolamenti, buone pratiche, compatibilità con l'accesso – si registrano notevoli differenze e incongruenze. La maggioranza degli stakeholders ritiene compatibile l'accesso diretto con la tutela e la gestione dei siti soprattutto se controllato tranne due soggetti (CNR-IRSA, Ass. marinai d'Italia). Molti non conoscono le autorità preposte alla gestione, mentre alcuni erroneamente indicano enti che hanno tutt'altro mandato istituzionale, come il Dipartimento dei Beni Culturali, la Capitaneria di Porto - Guardia Costiera⁴², la Protezione civile (7 - Dwd, Comune Nardò, Aquodiving, Dromia, Terracunta, Ass. Marinai d'Italia, Scuba Bari) o soggetti privati che non possono rivestire autonomamente un ruolo gestionale, per esempio i diving (1 - Aquodiving). Alcuni non conoscono né leggi né regolamenti specifici o buone pratiche (NabuChe, Coop. Gaia) o sanno che esistono ma non le citano (Dromia).

La maggioranza cita però tra gli enti preposti alla gestione correttamente il MiBACT e le Soprintendenze e, ancor di più, Regione ed enti locali (13 - Dwd, FAI Lecce, Italia Nostra Lecce, Sub Molfetta, Museo Ribezzo, AMP Porto Cesareo, Comune di Nardò, FIV, Orca diving, Dromia, Delfino diving, Scuba Bari, MUSA), ma sono ben attestati anche le AMP/Parchi (4 - FIV, Aquodiving, Orca diving, Scuba Bari); viene ricordato anche il Ministero della Difesa per le navi da guerra (Italia Nostra Lecce)

Non si citano buone pratiche di gestione del patrimonio culturale subacqueo già applicate in zona, tranne quelle di AMP/Parchi/riserve naturali (Delfino diving).

⁴² Alle Capitanerie di porto sono storicamente affidate la disciplina e la vigilanza su tutte le attività marittime e portuali, riconosciute con il Regio Decreto che il 20 luglio 1865 ha sancito la nascita formale del Corpo. Il Corpo delle Capitanerie di porto - Guardia Costiera, svolge compiti relativi agli usi civili del mare ed è inquadrato funzionalmente ed organizzativamente nell'ambito del Ministero delle Infrastrutture e dei Trasporti.

Il tema della gestione è uno di quelli su cui sarebbe essenziale un lavoro diffuso di informazione e sensibilizzazione, con l'attivazione di tavoli tematici e la discussione di forme e modalità già esperite in altri contesti, che veda la presenza attiva di SABAP, enti territoriali e tutti gli stakeholders. In tal senso, nell'ambito delle attività del progetto UnderwaterMuse, i meeting che prevedono il coinvolgimento dei Regional Stakeholders Group potrebbe essere occasioni di confronto, progettazione e concertazione senz'altro utili.

- Do the stakeholders/people know the regional museums, exhibition and digital productions devoted to the UCH?

Gli stakeholders conoscono in genere i musei e le mostre permanenti o temporanee presenti nel loro raggio d'azione, con poche eccezioni (per esempio per i musei più grandi). Ricorrono più frequentemente i luoghi della cultura del Salento, sempre per la maggiore incidenza di stakeholders salentini.

Vengono citati il Porto Museo di Tricase (2 - ARPA, Nabuche), il Museo etnografico del mare – Molfetta (1 - ARPA), il Museo Archeologico Ribezzo di Brindisi (6 - Bubble, Museo Ribezzo, Coop. Gaia, MUSA, Terracunta, Legambiente), il Museo Storico-Archeologico dell'Università del Salento – MUSA (1 - MUSA), il Museo del Mare Antico di Nardo' (8 - Bubble, Comune P. Cesareo, CEA, Coop. Gaia, TheMonPeople, MUSA, Terracunta, Legambiente), il Museo-Acquario del Salento di Santa Maria al Bagno (8 - Bubble, NabuChe, FAI LECCE, Comune P. Cesareo, CEA, AMP Porto Cesareo, Dromia, TheMonPeople); Torre Chianca del Comune di Porto Cesareo (2 - Comune P. Cesareo, CEA); Museo e Parco Archeologico di Egnazia (2 - Dunamare, Coop. Gaia), Museo di Gallipoli (1 - Dromia), il Museo civico del mare di Bisceglie (1 - Ass. Marinai d'Italia), il Museo del mare di Monopoli (1 - Legambiente).

Alcuni non conoscono affatto musei dedicati al mare o mostre (7 - Dwd, Aquodiving, Corvino diving, Delfino diving, Scuba Bari) o conoscono solo musei naturalistici (Ketos – Centro Euromediterraneo del mare e dei cetacei, Taranto – Jonian Dolphin, Ecomuseo WWF Taranto, CNR-IRSA; Museo di biologia marina a Porto Cesareo – Orca diving, CNR-IRSA; Museo Oceanografico “A. Cerruti”, Taranto (non più aperto al pubblico ma forse confluirà nel Ketos - CNR-IRSA); Faro della Palascia dove spesso fanno mostre o attività di divulgazione scientifica sull'ambiente marino - NabuChe).

In merito alla fruizione dell'UCH nei musei, anche attraverso soluzioni interattive, in gran parte si registrano risposte nulle (ARPA, NabuChe, Dromia, ecc.); il Museo Ribezzo presenta giochi e videoanimazioni (Museo Ribezzo); solo pochissimi conoscono mostre e musei interattivi (2 - Costa del Sud, Terracunta).

Vari stakeholders conoscono la mostra "Nel mare dell'intimità" e i suoi prodotti digitali e interattivi presso l'Aeroporto di Brindisi con il coinvolgimento della rete museale del Salento (10 - NabuChe, Bubble, Comune P. Cesareo, Comune Nardò, AMP Porto Cesareo, CEA, Museo Ribezzo, TheMonPeople, MUSA, Terracunta) e la mostra permanente "Storie dal mare di Porto Cesareo. La statua del dio Thot e le recenti ricerche di archeologia subacquea" (Comune P. Cesareo, CEA, AMP Porto Cesareo).

La rete museale sorta in relazione alla Mostra può funzionare come attrattore integrato, in piena rispondenza con gli ultimi indirizzi della recente riforma del Ministero dei Beni Culturali e l'attivazione del Sistema Museale Nazionale (DPM 113/2018). La rete della mostra è stata peraltro una delle esperienze propedeutiche al cantiere della rete regionale dei musei (<http://pugliamusei.it/retemusei/>). Nell'ambito della mostra e della sua rete è stato attivato un piano integrato di comunicazione e doveva avviarsi, prima dell'attuale emergenza nazionale, un ulteriore progetto di valorizzazione, "Ballate del Mediterraneo".

Certamente l'analisi condotta sullo status quo rivela una pesante disinformazione sui luoghi della cultura legati al patrimonio sommerso o alla cultura del mare, soprattutto da parte degli operatori turistici e sportivi, in particolar modo i diving, che conoscono talora poco e male anche le potenzialità del proprio territorio. Occorrono quindi strategie e buone pratiche di comunicazione, mutuabili da esperienze consolidate anche in territorio regionale, che potrebbero essere anch'esse oggetto del toolkit da produrre nell'ambito di UnderwaterMuse.

Tra i musei conosciuti e apprezzati dagli stakeholders spicca il Museo del mare antico di Nardò, grazie anche alla capacità gestionale e promozionale dell'Associazione che lo cura e ai contenuti dichiaratamente didattici, rivolti in particolare alle fasce infantili e giovanili (con un percorso totalmente dedicato ai piccoli); altrettanto ricorrente è il Museo Acquario di S. Maria al Bagno, dove gli aspetti naturalistici e storico-archeologici raccontano insieme i paesaggi d'acqua "stratificati" del tratto ionico. Va sottolineato per

entrambi una netta vocazione didattica e un forte intento comunicativo (i contenuti sono molto chiari, fruibili da tutti, non riservati agli addetti ai lavori), ma un altro aspetto è altrettanto importante: entrambi i musei sono esito di rigorosi progetti di ricerca condotti da due Dipartimenti dell'Università del Salento, a testimonianza del fatto che non può esserci diffusione di conoscenza e valorizzazione efficace (e implicitamente tutela, dal momento solo un bene tutelato può essere valorizzato) senza una preventiva e profonda azione di ricerca.

- What the stakeholders/people think about the VR/AR valorisation of the UCH (if somebody experimented it?)

Molti non conoscono prodotti digitali (rendering, modelli 3D, ecc.) ma li ritengono probabilmente attrattivi; non sono sempre efficaci ed efficienti (MARTA); si segnala l'uso di visori 3D di filmati subacquei in 4k a 360° (ARPA); l'AMP di Porto Cesareo conosce e sta sviluppando prodotti di VR e relativi visori, così da rendere fruibile, per esempio, il relitto delle colonne anche ai non subacquei, e li considera strumenti economici ed efficaci, anche per la manutenzione; vengono citati modelli digitali tridimensionali realizzati dall'Università del Salento per il relitto delle colonne e per il sito di Frascione (Comune di Nardò).

Sono citati ed apprezzati le produzioni digitali e interattive (video con modellazioni creative, videoanimazioni, swipe stories, cartografia interattiva) della mostra *Nel mare dell'intimità*, già condivise con tutti i musei della rete, ma presto diffusi on line.

La necessità di produzioni multimediali, con soluzioni tecnologiche innovative è senz'altro un obiettivo importante, non a caso prioritario nel progetto UnderwaterMuse. Va però ribadito che si tratta di strumenti che non possono prescindere da un'efficace narrazione a monte e dai destinatari a cui si rivolgono; è sempre la forza dei contenuti e delle idee a determinarne l'efficacia.

- Do the stakeholders/people know if and how the underwater archaeological sites are protected? Do they know the responsible authorities?

Vari stakeholders ritengono i giacimenti archeologici non protetti e che non ci siano misure efficaci di protezione (Sub Molfetta, Coop. Gaia, TheMonPeople, Tremiti diving DA RIVEDERE); pochi citano siti

archeologici protetti (3 - MUSA, Terracunta, Ecomuseo WWF Taranto); alcuni non conoscono le autorità preposte alla tutela né le misure applicate (CNR-IRSA DA RIVEDERE)

Tra le autorità viene ovviamente citato il MiBACT attraverso i suoi uffici periferici, le SABAP (10 - ARPA, Bubble, Comune P. Cesareo, Sub Molfetta, Museo Ribezzo, Orca diving, Delfino diving, The MonPeople, MUSA, Terracunta); solo 3 soggetti conoscono la neoistituita Soprintendenza nazionale per la tutela del patrimonio subacqueo (Comune P. Cesareo, CEA, Legambiente); altri indicano insieme o in alternativa al MiBACT la Capitaneria di Porto-Guardia Costiera (Dunamare, Sub Molfetta, Bubbles, Dromia, Corvino diving), i Carabinieri (Bubbles), gli Enti di gestione dei parchi (FIV VIII Zona, Tremiti Diving).

Norme e misure di protezione dell'UCH generalmente non sono diffusamente note; solo 6 stakeholders richiamano la Convenzione dell'Aja 1954 e/o la Convenzione Unesco 2001 di Parigi – L.157/2009 (Bubble, Comune P. Cesareo, CEA, AMP Porto Cesareo, Italia Nostra Lecce, MUSA), il Codice della Navigazione (Ass. Marinai d'Italia), così come vincoli archeologici, ordinanze d'interdizione alla navigazione, regolamenti di AMP/riserve/parchi, il PPTR (5 - AMP di Porto Cesareo, Comune Nardò, Coop. Gaia, Orca diving, Ecomuseo WWF Taranto). In particolare, i regolamenti delle aree protette e il PPTR non pongono necessariamente limiti a una fruizione consapevole e sostenibile, ma salvaguardano comunque solo i siti maggiormente noti.

Per quanto riguarda i sistemi di protezione fisica, solo un soggetto cita la copertura di reti metalliche (sul relitto di S. Caterina - mare del Sud)

Tra gli enti preposti alla tutela alcuni citano erroneamente l'Università del Salento - Dipartimento dei Beni Culturali, Regione Puglia (NabuChe) e il Demanio dello Stato (Ass. Marinai d'Italia).

Il tema della protezione è essenziale e come tale è percepito; non tutti però identificano correttamente gli enti di tutela ed in primis gli uffici periferici del MiBACT. Anche in questo caso si dovrebbe mettere in atto un intervento mirato di informazione, che potrebbe trovare nelle attività formative del progetto buone opportunità di conduzione.

Il tema della protezione si interseca anche con quello del coinvolgimento delle comunità: la filiera ricerca/conoscenza, conservazione/tutela, gestione/valorizzazione, fruizione/comunicazione va agita da tutti gli attori per essere efficace; una tutela semplicemente vincolistica e non proattiva, che non coinvolge

e non responsabilizza la comunità di patrimonio non sarà mai efficace, soprattutto nella dimensione subacquea; “non ha ragioni né forza” se le persone non riconoscono quel bene come comune e popolare, quel “capitale territoriale” come “capitale comunitario”⁴³: è pertanto particolarmente interessante una delle risposte all’identificazione dei responsabili della salvaguardia dei beni: “tutti i cittadini insieme alle autorità preposte” (Dwd)

- Do they know if the site are really accessible? Do they consider the existing protection measure enough for the site and the underwater ecosystem? Do they consider the public access really compatible with the site preservation?

Quasi tutti ritengono l’accesso compatibile con la protezione, in particolare se controllato e con guide opportunamente formate (3 - ARPA, Bubble, Orca diving), tranne 3 soggetti (3 - Coop. Gaia, CNR-IRSA, Ass. Marinai d’Italia).

Riguardo alla vulnerabilità del bene, l’analisi mostra come la ricerca non sia percepita come una minaccia, anche grazie alla conoscenza di metodi d’indagine non invasiva e tecnologie innovative, fotogrammetria, Rov, ecc. (4 – ARPA, AMP Porto Cesareo, Comune Nardò, FIV VIII Zona); anzi, la mancanza di ricerca, in quanto non conoscenza, è una minaccia (Dromia); solo in due casi si la ricerca è considerata problematica, ma in relazione all’ambiente (2 - Sub Molfetta, Jonian Dolphin: per pinna nobilis e fondale marino).

La fruizione turistica non è generalmente avvertita dalla maggior parte dei soggetti come pericolosa se normata, controllata e gestita con guide subacquee opportunamente autorizzate e formate; ricerca e fruizione danneggiano se invasive (Coop. Gaia). In controtendenza la posizione di alcuni stakeholders (7 - FAI Lecce, Italia nostra Lecce, Jonian dolphin, Sub Molfetta, Scuba Bari, Tremiti diving, Legambiente), che segnalano pericoli rappresentati dal numero di barche e di ancore, di immersioni e di turisti non consapevoli e la necessità di controlli più frequenti anche nei periodi di bassa stagione e durante l’inverno.

⁴³ Petraroia P. 2016, *La Convenzione di Faro e la tradizione culturale italiana*, in Feliciati P. (a cura di), *La valorizzazione dell’eredità culturale in Italia*. Atti del convegno di studi in occasione del 5° anno della rivista (Macerata, 5-6 novembre 2015), “Il capitale culturale”, suppl. 5 (2016), 17-28; Jalla D. 2016, *Dibattito*, *ibidem*, 37-39.

Il pericolo maggiore agli occhi degli stakeholders sembra essere comunque rappresentato dalla mancanza d'intervento (17 - ARPA, FIV, NabuChe, Costa del Sud, TheMonPeople, MUSA, Terracunta, Ass. Marinai d'Italia, Bubble, Comune Nardò, Orca diving, AMP Porto Cesareo, Dwd, Dromia, Museo Ribezzo, Delfinodiving, Tremiti diving) che determina la perdita di riferimenti e occasioni di studio; conoscenza e segnalazione sono propedeutiche alla conservazione (AMP Porto Cesareo); importanti anche gli interventi preventivi, se i siti sono a rischio di danneggiamento (2 - Comune Nardò, Orca diving).

Tra le minacce legate alla mancanza d'intervento si citano la pesca (2 - Dwd, Dromia), i saccheggiamenti (Museo Ribezzo), l'estrazione degli idrocarburi, la mancanza di leggi e controlli (Delfinodiving, Tremiti diving).

La questione della fruizione sostenibile è forse il tema più importante dell'analisi, che mostra una diffusa posizione a favore, temperata da misure di cautela e prevenzione. Si rileva l'importanza che gran parte degli stakeholders assegna alla formazione e qualificazione delle guide, non a caso tra gli obiettivi del nostro progetto.

Si individua quindi la necessità di affiancare alla normativa sulla protezione del bene anche una serie di regolamenti agili in grado di consentire a individui e comunità di trarre beneficio dal patrimonio inteso come bene comune nel rispetto dell'integrità del bene stesso e del suo valore di eredità da trasmettere alle generazioni future. Il ricorso a figure opportunamente formate, archeologi subacquei con laurea specialistica e adeguata qualificazione tecnica subacquea in possesso di un brevetto scientifico, che affianchino sempre il turista subacqueo, è sicuramente una delle soluzioni.

- **How many actors do they know as involved about the UCH?**

Tra gli attori più citati figurano quelli locali: diving, pescatori, operatori di pesca-turismo, operatori turistici (Orca diving), Università, Musei, Comuni, associazioni ambientaliste e culturali (Dwd, il CEA Porto Cesareo - MUSA), la Regione; meno frequenti gli stabilimenti balneari (1 - Ecomuseo WWF Taranto); peraltro c'è chi avanza dubbi sul coinvolgimento di proprietari di stabilimenti balneari, scuole di vela, pescatori e operatori della pesca-turismo.

Vengono menzionati, ma con minore frequenza, gli Enti incaricati di proteggere il patrimonio culturale nazionale (FAI Lecce), MiBACT e Soprintendenze, Polizia (Costa del Sud); si ritiene essenziale l'opera di sensibilizzazione di tutti questi attori (Italia Nostra Lecce).

Rispetto al coinvolgimento degli stessi stakeholders nelle politiche culturali per il patrimonio sommerso, si registra un décalage tra le associazioni locali e PMI che operano sul territorio, che sentono il patrimonio come proprio, e le Fondazioni e associazioni a carattere nazionale (come FAI o Italia Nostra) che esprimono talvolta una visione più "restrittiva", per esempio sul tema della fruizione turistica .

Tra gli enti pubblici appaiono particolarmente consapevoli le AMP così come i Comuni a quelle connesse: la pratica ambientalista intende il patrimonio in maniera organica, perfetto connubio tra natura e cultura, per cui conosce e valorizza di default i beni culturali sommersi.

Nonostante in molte risposte si noti ancora il gap tra comunità e patrimonio, l'analisi mostra anche segnali in controtendenza: oltre alla risposta già citata a proposito dei responsabili della protezione (tutti i cittadini insieme alle autorità preposte) si richiama anche l'indicazione che viene da uno dei diving, che include anche la sua categoria tra i possibili soggetti gestori (Dwd, Aquodiving). Tali indicazioni, insieme ad altre posizioni di coinvolgimento espresse nei questionari, denotano vivo interesse e disponibilità da parte dei privati a farsi carico anche della buona gestione del bene, come auspica la Convenzione di Faro 2005.

- Do they know GIS, portal, websites, social networks, local events concerning the UCH (if any)?

Numerosi stakeholders citano genericamente o si sono imbattuti in **cataloghi** e **mappature** di siti archeologici sommersi on line, per esempio su piattaforme ArcGIS; solo pochi le ignorano completamente (2 - Bari scuba, CNR-IRSA); vari soggetti conoscono il webGIS della Carta archeologica subacquea della Puglia meridionale curata dal Gruppo di Archeologia Subacquea del Dipartimento Beni Culturali, nonostante sia strumento di carattere squisitamente scientifico (13 - Bubble's world, FAI Lecce, Italia Nostra Lecce, Museo Ribezzo, AMP Porto Cesareo, Comune di Nardò, Dromia, Costa del Sud, MARTA, TheMonPeople, MUSA, Terracunta, LegAmbiente); in particolare l'AMP di Porto Cesareo sottolinea la collaborazione con il Dipartimento Beni Culturali UniSalento per l'implementazione della Carta con i dati

relativi al patrimonio sommerso dell'AMP e per la valorizzazione dello stesso; alcuni diving segnalano la loro collaborazione con l'UniSalento e il Conisma (2 - Costa del Sud, Bubbles).

Altri conoscono la Carta ma attribuiscono il progetto al MiBACT in collaborazione con le Università (!), sanno che i dati sono disponibili online ma vari li ritengono open data (NabuChe; Bubble's world, ecc).

Vengono inoltre citati censimenti/catasti di altri comprensori⁴⁴, così come il GIS/mappa di comunità del mar Piccolo realizzato dall'Ecomuseo locale, che però non comprende siti sommersi o semisommersi (Ecomuseo WWF Taranto). Tra gli enti catalogatori del patrimonio sommerso (ma probabilmente non ci si riferisce a quello pugliese) si citano inoltre l'UNESCO e la federazione sportiva CMAS (Delfino diving).

Molto meno noti risultano il webGIS di *cartapulia* (solo uno degli stakeholders lo conosce, e si tratta di un'istituzione regionale - Museo Ribezzo) e il portale dedicato al Piano Paesaggistico Regionale (PPTR) e all'Osservatorio regionale della Biodiversità (www.paesaggiopuglia.it).

Sugli open data non c'è chiarezza; solo pochi sanno che i dati relativi al patrimonio subacqueo, anche online, non sono open (2 - FAI Lecce, Terracunta); alcuni li ritengono parzialmente open (3 - Museo Ribezzo, Dromia, Delfino diving)

Molti lamentano la scarsità di informazioni sul web; solo alcuni le ritengono mediamente adeguate (3 - FIV VIII zona, Scuba Bari, MARTA). Pochi conoscono siti web specificatamente dedicati all'UCH (vengono citati patrimoniounesco.it, archeologiasubacquea.com).

I questionari riportano numerose indicazioni in merito ai canali utili alla promozione: mostre locali anche temporanee, manifestazioni sportive subacquee o di altro genere (FIV), programmazione turistica estiva (Bubble, Scuba Bari, Terracunta), tutti gli eventi divulgativi (FAI Lecce, AMP Porto Cesareo), eventi locali organizzati dai Comuni (Italia Nostra Lecce, AMP Porto Cesareo) o a livello nazionale/internazionale, come il Salone Nautico di Brindisi - SNIM, i Port Days, le Regate veliche internazionali (per es. Brindisi-Corfù), la Fiera del Levante, la BTM, le Giornate FAI, la Notte dei Ricercatori, le conferenze, i seminari, i convegni (7 - Museo Ribezzo, AMP Porto Cesareo, Comune Nardò, FIV, MUSA, Terracunta, CNR-IRSA), le fiere (Comune

⁴⁴ Grotte di Pertosa-Auletta, in Cilento, *Tra Pietra e Acqua* (Sub Molfetta). Resoconti di guerra, documenti d'archivio, pubblicazioni varie, realizzati dal gruppo subacqueo dei Carabinieri di Bari unitamente all'Ass. Naz.le Marinai d'Italia di Bari e all'A.I.D.M.E.N., in formato cartaceo, non ancora open data (Ass. Marinai d'Italia).

Nardò, CNR-IRSA), le sagre e feste patronali (FIV, Dromia), le ricorrenze storiche (Ass. Marinai d'Italia); il web e i social networks come fb e instagram sono ritenuti da numerosi stakeholders mezzi molto efficaci per la promozione dell'UCH (12 - Jonian Dolphin, Sub Molfetta, AMP Porto Cesareo, Comune Nardò, Coop. Gaia, Corvino diving, Delfin diving, TheMonPeople, Terracunta, Ecomuseo WWF Taranto, CNR-IRSA, Legambiente), seguiti dagli altri media, come tv, radio, video, riviste, anche specialistiche, giornali on line (6 - Coop. Gaia, FIV, Dromia, Delfino diving, Terracunta, Legambiente). Canali importanti possono essere gli operatori culturali, le agenzie di informazione e gli operatori economici sia costieri che dell'entroterra, ma soprattutto l'educazione al patrimonio rivolta alle scuole (7 - Bubble, Dwd, Sub Molfetta, Comune Nardò, Delfino diving, Scuba bari, Terracunta),

I sistemi informativi sul web e gli open data sono gli strumenti dell'accessibilità reale. I dati relativi al patrimonio culturale, resi disponibili in formato aperto, possono costituire un forte acceleratore di crescita digitale, con un duplice vantaggio: "migliorare la qualità dei servizi offerti all'utente e, contestualmente, promuovere una 'tutela attiva' del patrimonio esistente, fondata su una conoscenza sempre più ampia e diffusa anche da parte di una utenza non specialistica" (A. Benvenuti). Per quanto riguarda l'accessibilità ai dati e ai sistemi informativi del patrimonio sommerso, il percorso è ancora lungo e accidentato ma è necessario lavorarvi, anche in ottemperanza alla normativa nazionale e regionale sugli open data (LR 20/2012 DA VD), nonché alla già richiamata Convenzione di Faro.

Numerose sono le suggestioni degli stakeholders in merito ai canali di comunicazione e promozione, con un deciso primato del web e di social networks.

- What the stakeholders/people think about the underwater tourism and its sustainability?

La visione di un turismo subacqueo capace di associare tempo libero, sport, cultura ed ecologia trova un'ampia condivisione negli stakeholders, che convengono in genere anche sugli altri aspetti: è potenzialmente redditizio (Bubble), può/deve essere un "turismo programmato alternativo", ad alta regolamentazione e bassa intensità di flussi (ARPA; NabuChe, Bubble, Dromia ecc.), soprattutto se viene inserito in una pianificazione ben dettagliata e preliminarmente condivisa con gli stakeholder (il concetto è ripreso con analogo convinzione da 4 stakeholders, tra i più illuminati - Comune P. Cesareo, CEA, AMP

Porto cesareo, Scuba bari); è a basso impatto ambientale (*l'impatto ambientale nullo non esiste, si può però pensare di sviluppare il turismo subacqueo in modo sostenibile - ARPA*); non implica necessariamente costi elevati e può essere un turismo per tutti, adatto anche ai bambini (Comune P. Cesareo), se inserito in un pacchetto di offerte (NabuChe, AMP Porto cesareo, Comune di Nardò) e affiancato da attività educative nei confronti dei turisti e da soluzioni preventive (ancorare i manufatti - Delfino diving); negli ultimi anni ha sofferto un decremento per la crisi (Bubble). Non è certamente un turismo di massa (CNR-IRSA).

Una minoranza di stakeholders (9 - Italia Nostra Lecce, Jonian Dolphin, Sub Molfetta, Coop. Gaia, FIV, Delfino diving, Scuba bari, Tremiti diving, Legambiente) lo ritiene invece un turismo di élite o di nicchia, per pochi, non sempre a basso impatto, perlomeno allo stato attuale (Museo Ribezzo), e non redditizio (5 - Italia Nostra Lecce, Jonian Dolphin, Sub Molfetta, FIV, Tremiti diving).

Solo pochi non hanno alcuna idea in merito al sistema turistico che possa incentivare il turismo culturale subacqueo (Dwd) ma alcuni soggetti, in particolare quelli già impegnati nella gestione e valorizzazione del patrimonio, forniscono suggestioni lungimiranti. *“Per il turismo culturale subacqueo è necessario un sistema turistico integrato, fatto di operatori specifici del settore (circoli subacquei), strutture di accoglienza ma anche di primo soccorso specifico per le attività subacquee”* (ARPA). *“Occorre creare una vera e propria rete d'eccellenza, mettendo insieme tutte le risorse ambientali e culturali del territorio, inserite in un piano di gestione condiviso tra enti pubblici e privati; il tutto deve essere strettamente e funzionalmente connesso a punti di accoglienza dedicati alla conoscenza e divulgazione delle peculiarità presenti sul territorio; sarebbe utile creare un biglietto “unico” che racchiuda una serie di servizi integrati di qualità volti alla promozione e alla valorizzazione del patrimonio ambientale e culturale”* (Comune Porto Cesareo; CEA). Il turismo culturale subacqueo trova posto all'interno di un'offerta turistica di qualità ed esperienziale (Comune P. Cesareo, CEA), un turismo lento e sostenibile (Legambiente). Importante è il controllo e la regolamentazione delle visite (FAI Lecce).

Vari stakeholders ritengono che si debba investire sulla ricerca e sulla valorizzazione dei siti così come sulla formazione delle guide (Coop. Gaia – scavi e musei - Comune di Nardò, Terracunta, AMP Porto Cesareo, che ha già formato guide naturalistiche e guide per sub non vedenti e intende servirsi di archeologi

subacquei per i percorsi archeologici NdA), ma anche sulle infrastrutture, in particolare treni veloci per raggiungere il Salento (in aereo è difficile imbarcare attrezzature) e mezzi pubblici per raggiungere la costa, nonché su una promozione adeguata (2 - NabuChe, Scuba Bari); ancora, sui diving, che hanno sempre investito risorse per la promozione del territorio e contribuito alla destagionalizzazione delle attività ma che nessun ente sostiene con finanziamenti e misure dedicate (2 - Bubble, Scuba Bari).

Solo 9 stakeholders rispondono in merito a eventuali sponsorizzazioni o altri canali pubblici o privati per il patrimonio culturale subacqueo: finanziamenti da enti pubblici/MiBACT/Regione/Comuni, bandi europei e nazionali (7 - Orca diving, Dromia, Corvino diving, MUSA, Terracunta, Scuba Bari, AMP Porto Cesareo: le AMP hanno intercettato finanziamenti su bandi specifici), ma anche da privati: gli stessi diving, i tour operator, le agenzie turistiche, le compagnie di crociera, il mecenatismo privato, il crowdfunding (2 - Museo Ribezzo, Legambiente); si suggeriscono anche una tassa a carico dell'escursionista (Orca diving), associazioni di categoria (Dromia), MIUR (Scuba Bari), Fondazioni bancarie, Confcommercio (Terracunta).

Altri nella maggior parte dei casi non rispondono o danno solo risposte generiche (Amministrazioni pubbliche – mare del Sud);

Emerge quindi chiaramente la necessità di un'offerta turistica integrata, diversificata, destagionalizzata per quanto possibile, che faccia leva su forme di mobilità lenta e su una piena sostenibilità, che diventa un punto di forza e caratterizzazione. Certamente per questo occorre un sostegno agli operatori del settore, anche in tema di promozione. Non a caso il progetto Puglia Seascapes avviato da Regione Puglia ha previsto un primo lancio nell'ambito del salone europeo della subacquea – EUDI Show 2020, purtroppo rinviato a causa dell'emergenza, con il coinvolgimento delle 3 aree marine protette e i diving convenzionati, per presentarne le attività correlate al patrimonio ambientale e culturale.

I progetti pilota previsti nel progetto UnderwaterMuse potrebbero essere gli scenari privilegiati per avviare forme di gestione congiunta e progettare con gli stakeholders forme sostenibili di fruizione turistica, incentivando tutte le possibili sinergie e relazioni.

References:

A. Antonazzo, R. Auriemma, G. Tinunin (a cura di), *Nel mare dell'intimità. L'archeologia subacquea racconta il Salento, Into the sea of intimacy Underwater archaeology tells of the Salento*, catalogo della mostra, exhibition catalogue (Brindisi, Aeroporto del Salento, 5 luglio 2019 – 5 luglio 2020), Lecce 2019 ISBN 978-88-31964-28-9.

R. Auriemma, A. Cossa, P. Güll, N. Zaccarelli, *Il Progetto Forma Maris del Salento: interazioni e sviluppi*, in Abstracts del Workshop *Il nuovo Sistema Informativo Territoriale Integrato per la Carta Archeologica del Friuli Venezia Giulia: esperienze a confronto e possibili integrazioni*, Università degli Studi di Trieste Dipartimento di Storia e Culture dall'Antichità al Mondo Contemporaneo Workshop, Trieste 4 marzo 2011 (a cura di P. Maggi e R. Auriemma).

R. Auriemma, *Salentum a salo. 1. Porti e approdi, rotte e scambi lungo la costa adriatica del Salento*. Collana del Dipartimento di Beni Culturali dell'Università di Lecce, Settore Storico-Archeologico, n. 9, Mario Congedo Editore, Galatina 2004 ISBN 8880865951.

R. Auriemma, *Salentum a salo. 2. Forma Maris Antiqui*, Collana del Dipartimento di Beni Culturali dell'Università di Lecce, Settore Storico-Archeologico, n. 10, Mario Congedo Editore, Galatina 2004 ISBN 8880866060.

Cossa A. 2018, *Contributo per la ricostruzione del circuito murario d'età ellenistica di Otranto (Lecce)*, in M. Capulli (ed.), *Il patrimonio culturale sommerso. Ricerche e proposte per il futuro dell'archeologia subacquea in Italia*, Udine, 125-132.

Cossa A., Zaccarelli N., Auriemma R., Güll P. (2012), *La Carta Archeologica Subacquea della Puglia meridionale. Il Sistema Informativo in Rete* in *Atti del XIII Convegno Utenti ESRI*. Roma, 9 -12 Aprile 2012. (http://www.esriitalia.it/images/Atti_13aConfer/Sessioni_parallele_pdf/Beni/03_Beni.pdf)

R. Auriemma, A. Cossa. (2013), *La Carta Archeologica Subacquea della Puglia meridionale. Il sistema informativo territoriale in rete* (http://www.arcgis.com/apps/OnePane/storytelling_basic/index.html?appid=edb2b5022b3a4d4abb1b6f4abc95a2c7)

A. Cossa, R. Auriemma, P. Güll, N. Zaccarelli, *The Underwater Archaeological Map of the Southern Apulia: the GIS (Geographic Information System)*, in Proceedings of the 5th International Congress on Underwater Archaeology, *A heritage for mankind* (Cartagena, October 15th-18th, 2014), IKUWA V, 2016, Posters, 285-287.

A. Cossa, N. Zaccarelli, P. Güll, R. Auriemma, C. Alfonso, *La Forma Maris del Salento ed il Progetto WebGIS subacqueo*, in Luigi Fozzati, R. Auriemma, (a cura di), *Relitti: che fare? Archeologia subacquea del mare Adriatico e del mare Ionio. Ricerca, tutela e valorizzazione dei relitti*. Atti del convegno (Grado, 4-5 maggio 2010), Ariccia 2017, 159-166.

Ciancio A., Colucci G. 2018, *Egnazia: valorizzazione e fruizione delle strutture sommerse lungo il litorale*, in M. Capulli (ed.), *Il patrimonio culturale sommerso. Ricerche e proposte per il futuro dell'archeologia subacquea in Italia*, Udine, 119-124.

Disantarosa G. 2018a, *Archeologia dei paesaggi costieri e subacquei a Cala San Giorgio Bari. Campagne 2013-2014*, in Giuliano Volpe (ed.), *Storia e archeologia globale dei paesaggi rurali in Italia fra Tardoantico e Medioevo*, Bari, 269-280.

Disantarosa G. 2018b, *L'antico portus Sancti Georgii ritrovato. Le ricognizioni archeologiche dei paesaggi costieri e subacquei presso Cala San Giorgio (Italia, Bari). Campagna 2016*, in JAT XXVIII, 105-158.

Disantarosa G. 2019, *Il sistema portuale tra Antichità e Medioevo. Archeologia subacquea e dei paesaggi costieri del litorale, da Bari a Bisceglie*, in *FUTURE IN RESEARCH Un volano per l'innovazione*, Università degli Studi di Bari 'Aldo Moro'.

Nuzzo D., Esposito A., Surdo A., Pellegrino M., Disantarosa G. 2018, *Indagini archeologiche nell'area del Pretorio bizantino di Bari. Primi dati dalla campagna di scavo nel cortile dell'Abate Elia e dalle ricognizioni subacquee lungo il litorale della Basilica di S. Nicola (2017)*, in F. Sogliani, B. Gargiulo, E. Annunziata e V. Vitale (eds.), *VIII Congresso Nazionale di Archeologia Medievale (Matera, 12-15 settembre 2018)*, Firenze, I, 238-243.

Appendice - Principali giacimenti subacquei del Salento < www.cartapulia.it

Codice Identificativo	Denominazione	Comune
TABIS001607	Località Campomarino - Relitto c.d. Madonnina A (età ellenistica)	Maruggio
LEBIS001524	Località Canale d'Otranto - Relitto ipotetico (età imperiale)	Otranto
LEBIS001621	Località imprecisata - Relitto (da età repubblicana a età imperiale)	Gallipoli
LEBIS001620	Località imprecisata - Relitto ipotetico (età repubblicana e imperiale)	Gallipoli
LEBIS001530	Località La Palombara - Relitto (età ellenistica)	Otranto
LEBIS001573	Località Lido Marini - Relitto (età tardoantica)	Salve
LEBIS001738	Località Pietra Mesola/Porto Badisco - Relitto (età repubblicana e imperiale)	Otranto
BRBIS001668	Località Porto di Brindisi - Relitto ipotetico (età repubblicana, imperiale e tardoantica)	Brindisi
LEBIS001572	Località Porto di Gallipoli - Relitto (età imperiale)	Gallipoli
LEBIS001564	Località Punta del Ciolo - Relitto ipotetico	Castrignano del Capo
LEBIS001561	Località Punta Facì - Relitto	Otranto
BRBIS001663	Località Punta Penne - Relitto (età repubblicana e imperiale)	Brindisi
LEBIS001749	Località Riva di Ugento - Relitto (età moderna)	Ugento
LEBIS001743	Località San Cataldo - Relitto ipotetico (età arcaica)	Lecce
TABIS001642	Località San Pietro di Bevagna - Relitto (età imperiale)	Manduria
LEBIS001741	Località Santa Caterina - Relitto (età tardo repubblicana)	Nardò
LEBIS001747	Località Santa Maria di Leuca - Relitto A (età moderna)	Castrignano del Capo
LEBIS001748	Località Stabilimenti termali - Relitto di Santa Cesarea Terme (da età imperiale a età tardoantica)	Santa Cesarea Terme
LEBIS001574	Località Torre Chianca - Relitto B (età imperiale)	Lecce
TABIS001609	Località Torre Ovo - Relitto	Torricella
TABIS001610	Località Torre Ovo - Rinvenimento isolato (età classica)	Torricella
BRBIS001774	Località Torre San Gennaro - Relitto (età moderna)	Torchiarolo
LEBIS001742	Località Torre San Giovanni - Relitto (età repubblicana e imperiale)	Ugento
LEBIS001744	Località Torre San Giovanni - Relitto (età tardoantica)	Ugento

BRBIS001758	Località Torre Santa Sabina - Relitto (età repubblicana e imperiale)	Carovigno
BRBIS001757	Località Torre Santa Sabina - Relitto (età imperiale e tardoantica)	Carovigno
BRBIU000651	Località Torre Santa Sabina - relitto (età tardoantica)	Carovigno
TABIU000981	Relitto "ipotetico di Torre Ovo"	Torricella
TABIU000984	Relitto "Madonnina A"	Maruggio
LEBIU000543	Relitto "Riva di Ugento (LE)"	Ugento
LEBIU001458	Relitto dei mortaria	Gallipoli
LEBIU000284	Relitto delle Colonne - Scalo di Furno	Porto Cesareo
LEBIU001454	Relitto di "Torre Chianca B"	Lecce
LEBIU001456	Relitto di Lido Marini	Salve
BRBIU000506	Relitto di Punta del Serrone (BR)	Brindisi
LEBIU001046	Relitto di S. Caterina di Nardò (LE)	Nardò
LEBIU000545	Relitto di S. Maria di Leuca A	Castrignano del Capo
TABIU000938	Relitto di S. Pietro in Bevagna (TA)	Manduria
LEBIU000544	Relitto di S.Cesarea Terme (Le)	Santa Cesarea Terme
TABIU000262	Relitto di Saturo (TA)	Leporano
BRBIU000744	Relitto ipotetico	Brindisi
BRBIU000739	Relitto ipotetico	Brindisi
LEBIU001468	Relitto ipotetico	Castrignano del Capo
LEBIU001386	Relitto ipotetico (Dolium integro)	Gallipoli
LEBIU001387	Relitto ipotetico (presenza di dolia)	Gallipoli
LEBIU001552	Relitto ipotetico della Palombara	Otranto
LEBIU001471	Relitto ipotetico di Punta Faci'	Otranto
LEBIU001043	Relitto ipotetico di S. Cataldo (Le)	Lecce
TABIU000513	Relitto ipotetico di San Vito (TA)	Taranto
LEBIU001558	Relitto ipotetico nel canale d'Otranto	Otranto
BRBIU000512	Relitto moderno di Torre S. Gennaro	Torchiarolo
LEBIU001048	Relitto romano di Porto Badisco (Le)	Santa Cesarea Terme
LEBIU001044	Relitto Secche di Ugento A	Ugento
LEBIU001042	Relitto Secche di Ugento C	Ugento
TABIU000982	Relitto Torre Ovo (Ta).	Torricella