

## **D.4.1.1 Reports on thematic coordination related to pilot action implementation**

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### **Premises**

The thematic coordination reports summarising the field work in Grado, S.Sabina and Resnik-Siculi are produced by the Lead Partner, with the participation of the other partners.

They include the main points agreed on with partners via bilateral, trilateral or joint online.

## 1. Methodological premises

In the submerged archaeological sites object of the UM pilot actions (WP4), a **methodological protocol** has been activated which coincides with the **research / knowledge, documentation / cataloging, conservation / restoration, widen enhancement / communication / accessibility** chain, which has led to the concerted application in the partnership of traditional and innovative tools of the supply chain itself.

As regards the first 2 strongly interconnected segments, research / knowledge and documentation / cataloging, the tools used are those of the holistic, contextual, diachronic and transdisciplinary vision of the *global archeology of landscapes*, in this case coastal and underwater, or, better, *water landscapes*.

Landscape archeology, or geoarchaeology, is, to use the words of Graeme Barker and John Bintliff "*a coherent sub-discipline of human ecology, neither a form of natural science nor a form of archeology, but an integrated way of understanding humans in dynamic landscapes*"<sup>1</sup>. Being able to tell the story of social groups in changing landscapes, recording their discontinuities, formative processes and identity characteristics is the primary goal of this systemic vision.

In this framework dictated by **Seascapes archeology**, the contribution of different techniques and innovative technologies was crucial; **methodologies and tools shared** and used in the various **pilot projects** were:

### 1. Areal mapping

topographic survey

UAV/drone

### 2. Underwater survey

direct/autoptic survey

metal detector survey

photogrammetric survey

Multibeam and Side Scan Sonar survey

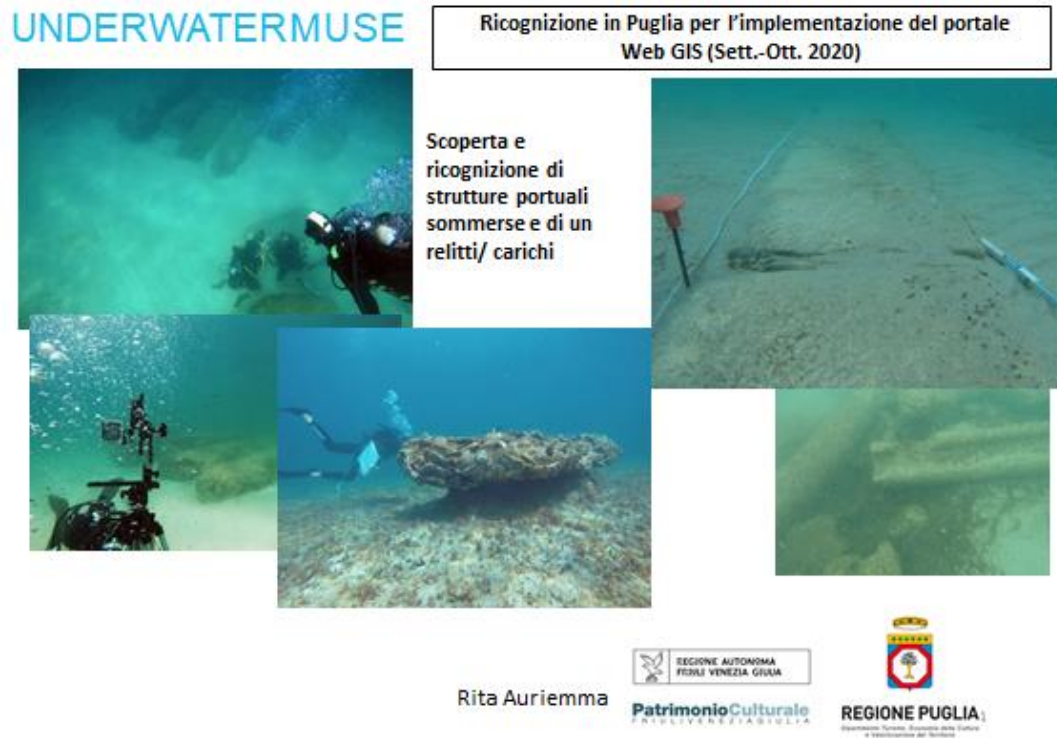
Sub bottom profiler

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<sup>1</sup> Barker G., Bintliff J. 1999: 207

ROV

video-photo documentation



### 3. Excavations

stratigraphic excavation, documentation and analysis

finds recovery

sampling, flotation and sieving

archeometric analyses

washing, consolidation and restoration

### 4. GIS implementation

UM portal

interoperability with CartApulia (Puglia regional cultural heritage GIS); SIGECweb/VIR (National MiBACT digital archives), etc.

**5. Data/metadata implementation and elaboration**

cataloguing

study of the archeological materials

spatial and regressive analysis (for example TSS coastal stretch)

periodization and interpretation of the site and the historical events

## **2. Pilot projects: field activities and the application of shared methodologies**

The activities of the ERPAC in **Friuli Venezia Giulia**, despite the forced interruption due to the COVID19 emergency, have been focused on the preparation of the pilot project, postponed to next year, which will see the in situ musealization of the wreck of a Roman merchantship known as Grado 2 (3rd century BC), which lies 7 miles off the coast of Grado and 19 m deep, in continuity with the previous interventions carried out by the Superintendence of Archeology, Fine Arts and Landscape of Friuli Venezia Giulia, in concert with the Superintendence itself.

The intervention will be directed by the Superintendence and will be carried out in agreement with ERPAC and with the scientific collaboration of the Ca 'Foscari University - Department of Humanistic Studies, of the University of Salento - Department of Cultural Heritage and of the University of Udine - Department of Humanities and Cultural Heritage Studies. The pilot project foresees the cleaning of the portion of the site already covered by modular networks, through the temporary removal of the same, and the bringing to light of the entire archaeological area; excavation trenches will also be carried out to verify the consistency of the deposit and the presence of wooden remains of the hull.

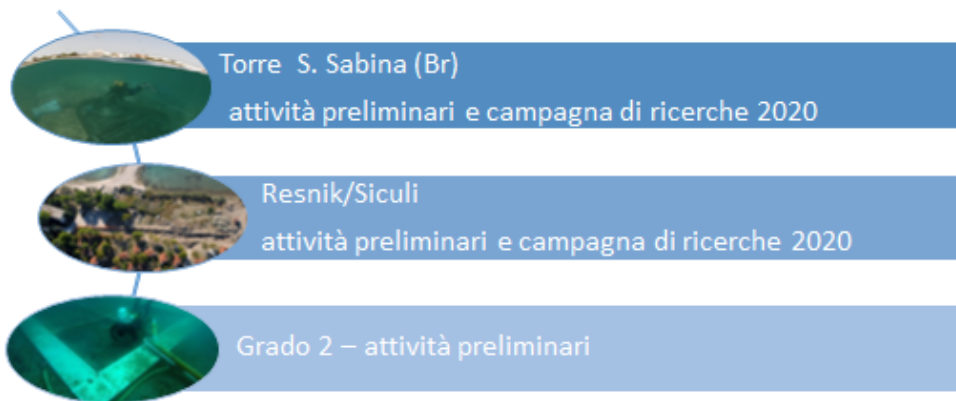
Finally, modular nets, identical to those already in use, will be positioned over the entire exposed surface of the wreck, in order to ensure their protection and use, through underwater guided tours, with modalities and protocols always developed within the framework of *UnderwaterMuse*.

The last few months have seen the start up of **pilot projects in Puglia, Veneto** Regions and in the **Split** district.

In **Puglia**, the choice of **Torre S. Sabina** (Carovigno, Brindisi) as the setting for a pilot intervention within the UnderwaterMuse Project stems from the quality and variety of the archaeological sites in the bay. The exceptional potential of this millenary landing place is an ideal scenario for a holistic approach to research, that is, that of the global archeology of landscapes, in this case coastal and maritime, or seascapes. It is a "super-site", with stratifications of events that are also significant indicators of the evolution of the coastal landscape: cargos and hulls, but also remains of quarries and settlements.

## UNDERWATERMUSE

### *I progetti pilota*



**Programma di mostre e attività educative sviluppate ai fini di un museo subacqueo interattivo**

**Visite incrociate/ revisione tra i partner**

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The fruitful synergy between the various actors involved - SABAP, the Puglia Region, the Universities of Salento, Foggia and Bari, the Polytechnic of Turin, the Municipality of Carovigno, the Hotel owners Consortium, the A.S.S.O. Association - and the support of the territory and the community have allowed the achievement of the objectives of this campaign, preliminary to the broader and more articulated intervention foreseen for the next year.

## UNDERWATERMUSE

*Il progetto pilota della Regione Puglia:  
La campagna 2020 a Torre S. Sabina (Br)*



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 REGIONE AUTONOMA

As for the shared methodologies, the topographic and photogrammetric survey activity provided useful support for the spatial classification and georeferencing of the data acquired during the excavation campaign. The specific objective of the topographic survey was to define a network of vertices with known coordinates, useful for the subsequent acquisition of detailed topographic measurements.

As for the photogrammetric survey, on the other hand, through the use of Drones (also called UAV Unmanned aerial vehicle) it was possible to document the site and its immediate vicinity thanks to the production of metric products (Orthophotos, digital surface models and 3D models) obtained through photogrammetry techniques based on SFM (Structure From Motion) algorithms.

An important activity of photogrammetric surveys took place in an underwater environment, and concerned in particular the stern of the late Imperial Roman wreck, as well as the stratigraphic deposit at the foot of the western ridge.

The multibeam bathymetric survey and side scan sonar scanning of the Camerini Bay of Santa Sabina, object of the investigations, was also conducted. The purpose of the work was to create support outputs



(bathymetric, DEM, morphological) for the underwater archaeological surveys conducted as part of the project.

Multibeam and Side Scan Sonar surveys are survey methodologies included in the Monitoring Program envisaged by the Marine Strategy Framework Directive 2008/56 / EC (MSFD, Marine Strategy Framework Directive), which entered into force in July of 2008.

The study using the Side Scan Sonar multi-beam echo sounder, allows you to know, in detail, the morphology of the seabed and to obtain the Digital Elevation Model of the investigated area, that is a continuous raster-format surface of the seabed, consisting of cells (also submetric ) which describe the depth of the bottom at each point. Furthermore, the survey, using the Side Scan Sonar option, allows you to obtain a georeferenced (photomosaic) image of the investigated seabed.

At torre S.Sabina, the entire stretch of coast was mapped with drone flights, in order to reconstruct the coastal landscape in the various phases, starting from the Bronze Age. A targeted intervention was also carried out on the Roman wreck of the Imperial age, beached and abandoned at the ancient shore, now submerged due to the relative rise of sea level; this intervention aimed at planning the development of the 3D model of the boat, scheduled for next year, which will also allow non-divers a “virtual” dive with viewers and other innovative technologies.

Another objective was to ascertain the presence of the remains of the Galea Magna, a ship of the Serenissima that left Candia (Crete) and was shipwrecked at the entrance of the bay of Torre Santa Sabina on January 1, 1598, after unsuccessfully trying to seek refuge there. The recovery of on-board equipment confirmed the compelling identification suggested by the rich documentation of the Venetian archives.

Another important focus was represented by the stratigraphy of cargos, resulting from the various shipwreck episodes, accumulated at the foot of the western cliff. In this case the excavations verified the extent of this rich deposit, which has returned during the various campaigns the merchandise of an archaic Greek ship (late 6th - early 5th century BC), of a Roman cargo carrying oil and wine from the Salento together with fine imported ceramics (late 2nd century BC), and another cargo of Late Antiquity from the eastern Mediterranean (5th-6th century AD). It is now certain that the overlap of these loads

extends to the mouth of the bay, where several boats have smashed onto the treacherous outcropping cliffs ...

The investigations, directed by Rita Auriemma, University of Salento, have given the expected results and opened wider scenarios to redesign routes, contacts and ancient population of these seascapes.

In **Veneto**, the Department of Humanities of the Ca 'Foscari University, under the direction of Carlo Beltrame, in collaboration with the Superintendence of Archeology, Fine Arts and Landscape for the Metropolitan Area of Venice and the Lagoon and the company Idra Srl, made investigations in the lagoon and in the sea of Venice.

The Venice lagoon represents a very interesting case study, not only for the importance of the submerged archaeological contexts but also for the technical-operational aspect. It is, in fact, an extreme environment, characterized by strong tidal currents and scarce or very poor underwater visibility, as well as by boat traffic, which in certain areas is very sustained, conditions that make diving particularly demanding and not practicable without adequate experience. In this context, it was possible to test the potential of a site documentation by means of digital technology, which provided excellent results, making it possible to make visible what remains basically “invisible” in its overall dimension.

The archaeological sites investigated in the lagoon had already been the subject of previous investigations and traditional documentation, carried out through manual surveys and photographs.

The digital approach has therefore implemented the quality of the documentation, thanks also to the speed of execution, which makes it possible to make the most of the short periods of time in which the environmental conditions are optimal, as happens, for example, in the phase of reversal of the tide, when the current drops significantly and allows you to operate in relative tranquility for a short period.

In this context, it is favorable to carry out the documentation in the inversion period between rising tide and falling tide, when the supply of water from the sea helps to improve underwater visibility. For these reasons, the interventions in the lagoon must be carefully planned, sequencing the type of operations to be carried out in relation to the tide and visibility regime, therefore with great attention also to the

meteorological evolution. Getting an operational sequence wrong can in fact mean losing a large part or an entire day of work.



#### **The so-called “tower” in the San Felice canal**

Among the most significant sites under investigation were the so-called "tower" in the San Felice canal, a massive basement made of bricks, and the remains of a "pier" located in the same canal at Ca 'Ballarin. Both sites are located in the northern lagoon and date back to Roman times. In consideration of their areal extension and visibility, which, even in optimal conditions, rarely reaches 2 m, the surveys proceeded in small portions which were subsequently oriented and joined by a series of topographically surveyed points. The work made it possible to obtain complex photogrammetric models, thanks to which an overall and detailed view of the sites was achieved, with obvious advantages for the study and protection activities.



#### The so-called “Relitto dei Mattoni”

Finally, at sea, off the coast of Venice, the so-called "Wreck of the Bricks" was investigated, located 20 meters deep, a large pile of bricks from a cargo probably dated to the late medieval period, and three shipwrecks dated to the nineteenth century, two off the coast of Eraclea and one near the shore of S. Nicoletto, on the Lido of Venice.

As regards the pilot project in the Municipality of **Kaštela**, excavation and training activities were carried out in the locality of **Resnik, ancient Siculi**, which lasted two weeks as planned.

The research was directed by Mate Parić of the University of Zadar, with the participation of archaeologists Ivan Šuta and Vedran Katavić, the archivist Dominik Žanić and the restorer Ante Jureškin (Municipal Museum of Kaštela); Archaeologists Eduard Visković, Vinka Milišić and Jelena Glamac, archeology students and about twenty members of the Giričić, Rostrum and Spinut diving clubs also collaborated.

Before the start of the campaign, the Tripodij company performed the instrumental survey of the submerged area with a multibeam sonar and sub bottom profiler, adopting, as we have seen, fully shared methodologies. On the basis of this geodetic survey, the excavation areas were identified.

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*Il progetto pilota in Croazia:  
la fruizione virtuale del sito di Resnik/Siculi*



The oldest and least known part of the site is a Neolithic settlement, located at the mouth of the Resnik stream, at a depth of about 3 m, where wells obliterated by a fire, filled with stones and other material were found; Above all, ceramic fragments from the ancient Neolithic, lithic artefacts and animal bones were found. Research confirms the presence of a Neolithic settlement in this area, which has been indicted by previous findings.

The other area subject to research is that of the late Hellenistic settlement, which shows a presence from the second to the first century B.C. The remains of the foundations of the western and southern walls, of one of the roads (also preserved in Roman times) for a length of 10 m, and of 30 wooden poles have been identified. The identification of the wall layout in this area will make it possible to specify the extension and function of the settlement, which was destroyed in the second half of the 1st century B.C., also for its virtual reconstruction; data on the position and shape of the port to the east are known from previous excavations.

The third area coincides with the Roman port. Although the structures are clearly legible in aerial photos, it has never been investigated. This sector has returned most of the materials, datable between the 2nd and 5th centuries A.D.

### ***3. The involvement of stakeholders***

In the sites subject to type 2 pilot interventions (Heritage valorisation), i.e. **Torre S. Sabina** and **Resnik / Siculi**, the full involvement of stakeholders was implemented with various actions, as required by the purposes of WP4 (Testing underwater heritage valorisation methods with stakeholder involvement ).

Regarding the pilot project of **Resnik**, parallel to the excavations, attempts were made to include as many stakeholders as possible. The first contacts with them had been made earlier, at the project's presentation in the Vitturi Castle at the end of 2019. The people who agreed to participate in the project came mostly from local diving clubs who made an effort to motivate their members to take part. In total, 18 divers from diving clubs Giričić, Rostrum, and Spinut went through a course on underwater archaeology. Apart from amateur divers, archaeology students also participated in the excavations, and they had already actively participated in underwater excavations organized by Zadar University and the Museum of the Town of Kaštela. The divers' education was conducted in situ, with an introductory lecture focusing on the site and the excavations that had been conducted up to that point both on land and in the sea. After that, the divers were educated on the techniques and methodology of underwater excavations. Also, they were familiarized with portable archaeological finds that had already been found so that they could better understand how to recognize archaeological finds during the excavation process. Most of the participants had previous experience in archaeological excavations, so the acquisition of new knowledge was very successful. Those who didn't have any previous experience were assigned to work with experienced archaeologists so that they could fit into teams more easily. After each dive, the divers would describe the procedures on each probe, the time of entry and exit, and other information important for the field log. All finds discovered during a workday were processed immediately by conducting primary determination, and after that, the finds were sorted out and photographically documented according to each group. The initial plan was to organize public lectures so that the stakeholders and other members of the public could learn more about the site, but due to the COVID-19 pandemic, it was decided that this activity should be postponed until the epidemiological situation becomes more favorable. Experts from various areas were supposed to give lectures on various aspects of the site.

As for the **Torre S. Sabina** site, the municipal administration and the local community supported the project activities with concrete and completely spontaneous actions; the Carovigno Hoteliers' Association offered room and board to all staff for the entire duration of the excavation campaign; the Municipality has made available spaces for the storage of equipment and the materials laboratory. The local community followed the work with great participation, visiting the laboratories and asking for information on the progress of research on a daily basis.

The team of researchers also welcomed visitors to the site on a daily basis, describing in detail the activities underway and the aims of the project. The final dissemination event of the results, held at the end of the campaign (30 September 2020), organized by the project staff together with the municipal administration, was very successful and it saw the presence of the representatives of the Puglia Region, the 3 universities involved and the Municipality of Carovigno and a large turnout of the public; it was also filmed in live streaming via facebook (ArcheoSubUnisalento).

