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"DIVE IN BLUE GROWTH"

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In memory of Sebastiano Tusa who tragically passed away in the Ethiopian Airlines plane crash (Sunday March 10th, 2019).

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Change behaviour and raise awareness about the Adriatic's underwater treasures as common goods: the UnderwaterMuse Project

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Abstract: The project aims at applying on sample areas (maritime landscapes of Torre Santa Sabina, Grado, Resnik/Siculi, Caorle) a methodological and technological protocol based on research/ knowledge and development/communication of underwater archeological sites that are complex and multi-stratified, characterized by strong diversity. The project's objective is therefore to transform the site into an underwater archaeological park (or eco-museum) through innovative and/or experimental methodologies and techniques in order to try to reduce the loss of important cultural heritages as well as to guarantee an economic spin-off deriving directly from the creation of a sector linked to the tourist-cultural promotion of the context of reference.

UnderwaterMuse will target local communities as long-term keepers of vitality at tourist destinations, promote co-creative partnerships among tourism and cultural actors, public decision makers, creative companies, associations of citizens, facilitating exchange of information. An immersive virtual reality (VR) approach renders underwater sites accessible to a wider public, including people with different kinds of disabilities. Building capacity for professionals already working in this field will help them adapt to a "museum for all" concept, in spite of limited organizational or financial resources. Training diving guides will improve the immersive experience of underwater sites. Regional action plans will enhance environmental management and preservation of coastal areas harbouring those sites. Based on the experience gained, an innovative promotional GIS tool, the 'UnderwaterMuse MAP' for promoting underwater sites with accessibility standards, will be developed. The 'UnderwaterMuse MAP' will be promoted at transnational, national and local level, in the Adriatic and beyond, thus guaranteeing its sustainability and transferability during and after its implementation.

The interdisciplinary partnership from 4 different regions will carry on pilot actions focusing on transforming sites with a strong potential as experience-based tourist destinations testing a sustainable tourist offering in areas less interested by major tourist flows.

Keywords: underwater cultural heritage, in situ protection and valorization, underwater archaeological park, VR, GIS.

Through interpretation, understanding; through understanding, appreciation; through appreciation, protection (Freeman Tilden, Interpreting our Heritage, 1977)

1. A PREMISE: WHY UNDERWATERMUSE NOW?

For the underwater archaeology, the "waterscapes archaeology", the in *situ* preservation and enhancement represents the first option. We can recall two key passages[46]:

1. the Convention on the Protection of Underwater Cultural Heritage 2001;
2. the Faro Convention.

The key goals are clear:

1. building an archaeology community, building awareness;
2. cultural heritage as common good and economic resource;
3. archaeology for the territory, archeology for the environment;
4. research, conservation, protection, management and participation as parts of the same chain.

In the Unesco's Convention on the Protection of the Underwater Cultural Heritage we have the best and forward-looking premise. Actually, as we know, the Unesco's Convention on the Protection of the Underwater Cultural Heritage affirms, in rule 1, that in situ preservation is the first option because the site of a historic event is authentic and the context defines significance.

Moreover, in rule 7, the Convention underlines that *public access to in situ underwater cultural heritage shall be promoted, except where such access is incompatible with protection and management*: heritage is protected for its public interest and its unique value for humanity; it should be enjoyed by as many people as possible; access contributes to the appreciation and awareness, and to a better understanding and knowledge and also to a better protection (Maarleveld et al. 2013).

It's true that heritage is finite but, once adequate measures for protection have been taken, there is no further reason to restrict access permanently.

Experiencing the past under water is rapidly becoming an enormous asset in the leisure industry and the experience tourism. This development has risks and opportunities for the underwater cultural heritage, but providing diving operators with a measure of responsibility and custodianship is a good solution for the need of supervision and control. As an alternative to the direct access, traditional publications and media may be supplemented with more and more virtual techniques, simulating experience or allowing for visualisation at a distance, through internet or other means.

To ensure a worldwide respect for submerged heritage by individual divers and to set a common standard UNESCO has promoted a Code of Ethics for Diving on Submerged Archaeological Sites[47].

1.1 The new stage that strengthens the process: the Faro Convention

After the Unesco's Convention on the Protection of the Underwater Cultural Heritage the new stage of the current process of reappropriation of the cultural heritage as common good, "popular" good, is represented by the Faro Convention, "framework convention", adopted by the Committee of Ministers of the Council of Europe on 13 October 2005 and ratified by 17 member States. In Italy the implementation process inside our legislative system has been interrupted by the change in government and therefore we have only the draft bill.

[46] For the previous conventions and laws related to submarine archaeological sites, a good synthesis is in Negri 2000 and Prott 2000.

[47] UNESCO Code of Ethics for Diving on Submerged Archaeological Sites http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/divers/code-of-ethics/

However, it emphasizes the important aspects of heritage as they relate to human rights and democracy. As we know, it promotes a wider understanding of heritage and its relationship to communities and society. The Convention encourages us to recognize that objects and places are not important in themselves, but because of the meanings and uses that people attach to them and the values they represent[48].

In line with the Faro Convention, we must address our effort to the development of "models for managing underwater cultural heritage in a way that brings benefits for the sustainable economic development of regions", in order to "increase the positive image of underwater archaeology and the involvement of the public in the awareness, the protection and enjoyment of the underwater cultural heritage" *It is necessary to engage, not only from a research perspective, but also as an ethical obligation to the local communities within the environments that archaeologists work. It is important to recognize the different values attached to the project by ourselves as heritage professionals, and the communities as «providers» of knowledge* (Roberts, Benjamin, McCarthy 2016).

The Faro Convention stresses the continuous dissemination of activities and initiatives, in a living dialogue with the communities and the individuals, to start participation processes and raise awareness of ever widening groups.

It is necessary to communicate the entirety and the complexity, to properly use the technologies, to do good storytelling and to stimulate the proactive participation (Volpe, De Felice 2014), in the framework of a "community archaeology".

The Scientific and Technical Advisory Body - STAB of the UNESCO Convention 2001, gathered in its following 5th session in Paris in June 2014, adopted the 3rd Recommendation 3/STAB 5 in which "*recommends* to consider as best practice all initiatives, taken in exemplary manner and in conformity with the Convention, permitting the public at large access to knowledge about the underwater cultural heritage, in particular: responsible **non-intrusive access to observe or document** *in situ* underwater cultural heritage, such as provided through dive trails, submarine visits or glass bottom boat visits; responsible **public access on land**, such as provided by museums, exhibitions and interpretative trails; and access**, such as provided by publications, virtual or digital applications**, websites or other means" (Rey da Silva 2016).

2. PUBLIC ACCESS CASE STUDIES

Some existing examples of responsible public access initiatives could possibly be counted in future under best practices.Around the Mediterranean[49] the best practices of caging experienced in Croatia are well known: Za Planiku, Island Lastovo (1), Saplun, Island Lastovo (2), Bay Koromašna, Island Žirje (3). Islet Supetar near Cavtat (4), Klačine, Island Mljet (5), Bay Vlaška Mala, Island Pag (6),

[48] See in particular art. 10 – Cultural heritage and economic activity, Section III – Shared responsibility for cultural heritage and public participation, 11 – The organisation of public responsibilities for cultural heritage, 12 – Access to cultural heritage and democratic participation, 13 – Cultural heritage and knowledge, 14 – Cultural heritage and the information society. See also Faro Action Plan Handbook.

[49] We can't quote all the exemples outside the Mediterranen, but we remember that currently the largest underwater museum in situ is the Baiheliang Museum in China, where some of the oldest hydrological inscriptions, recording 1 200 years of changes in the water level of the Yangtze River have been seen submerged after the construction of the Three Gorges Dam and now lye at a depth of 43 metres (Ge Xiurun, 2011).

Cape Sorinj, Island Rab (7), Shallows Buje near Umag (8) (Zmaić 2009; Pešić 2011; Mesić 2008, 2014).

We can point out the important experience in Greece: the cases of Methoni Bay – Sapienza Island and the National Marine Park of Alonnissos and Northern Sporades, with the submerged Neolithic site of Aghios Petros, the biggest shipwreck of the classical age, 'Peristera' wreck, and many other well preserved classical, Roman and Byzantine cargos (Georgopoulos, Fragkopoulou 2013, with references); surely another impressive cases are the Sebastos of Caesarea Maritima (Raban, Holum 1996, Raban et al. 2009; Hohlfelder et al. 2007, 2014; Brandon at al. 2014) and Alexandria, Egypt: the latter, aiming at presenting submerged Egyptian culture, including small finds and features, the remains of the Alexandrian harbour and the famed lighthouse on Pharos, is still under study and highly recommended by the personnel of Department of Underwater Antiquities (Morcos 2000; Hafiz 2011; Frigerio 2013; El-Kady 2017).

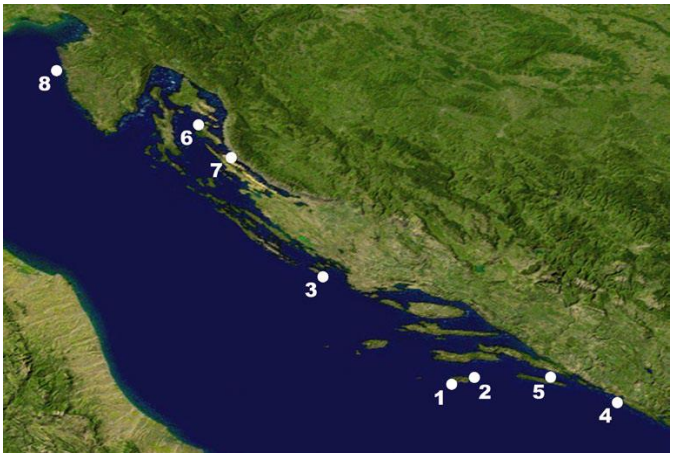

Fig. 1. Caging best experiences in Croatia (*Exploring Underwater Heritage in Croatia 2009*).

Moreover, a few open underwater archaeological excavations can be recalled: the Roman shipwrecks of Bou Ferrer (Juan Fuertes, Cibecchini, Miralles, 2013) or Cap del Vol, where engagement with diving clubs and federations show success (Aguilar 2013).

As far as the Italian experiences are concerned, some marine parks and underwater trails, such the positive experiences of Baia and the Sicilian trails, contrast with the tens of coastal and submerged sites literally abandoned, encircled by abusive urban speculations and wild moorings, whose access is totally uncontrolled with all the risks and possible damage that this situation brings with it (Stefanile, 2012; Stefanile 2016 with references; Secci, Stefanile 2016).

In Pozzuoli and Baiae, in the Gulf of Naples, villas, mosaics, baths, streets, houses and harbour structures of the Roman period were submerged by the sea, as a result of the volcanism. This unique environment, severely looted over the years, has been included in a Marine Protected Area since 2001**.** Since then, the Archaeological Superintendence has carried on some research and documentation works, while the Conservation and Restoration Central Institute – ISCR has experimented with new techniques for the conservation of the underwater structures. The public access has been made possible with the opening of underwater archaeological trails, and through the involvement of the diving instructors active in the area, appropriately trained.

The benefits in terms of local development were foreseen already in the Interminsterial Decree 304/2002 for the Institution of the Underwater Park. The finalities (article 3) include also the promotion of a socio-economical development compatible with the historical and landscape evidences of the area, also sustaining existing local traditional activities; (in this framework) the regulation of the activities related to the management of the touristic flows, guided visits and public transports would

foresee that the above mentioned activities are delivered primarily by the local citizens and businesses.

Currently, five sites/trails are predisposed for diving (and others probably will be open) equipped with guidance ropes and didactic PVC panels, accompanied by official diving guides, trained thanks to professional courses held by the Superintendence. Due to the shallow depth, four of these spots are accessible by snorkeling or on glass bottom boats, suitable also for primary school groups. The area lends itself to underwater archaeology training courses and field schools as well as environmentalist interventions and it is also object of real archaeological research.

The diving centres, made responsible and aware, pay a fee for each diver, and at the same time take a proactive role in UCH protection: sending away the pleasure boaters and intruders, reporting to the Superintendence damages or problems, and even checking divers for eventual artefacts souveniring.

The involvement of diving centers by the Superintendence has been a good choice: the site is undoubtedly more protected and exploited than in the past, and the visits, both of foreigners and locals, are increasing. On the other side, also the diving centers benefit from this activity, increasing their revenues, creating job opportunities (also for archaeologists!), deseasonalising and expanding touristic flows, receiving recognition for the significant results (Stefanile 2016).

Fig. 2. The underwater archaeological Park and MPA of Baia and Gaiola (Naples).

Other case-studies can be the Protected Marine Areas of Gaiola, S. Maria di Castellabate - Punta Licosa (Stefanile, Agizza 2012), Ischia –Aenaria Regno di Nettuno

The Region of Sicily has devoted particular attention to this phenomenon, due to the fact that it is currently the only region that has a Superintendence of the Sea. This has fostered the creation of numerous archaeological trails and the publication of scientific and informative material, related to the underwater tourism (Melotti 2007; www.regione.sicilia.it/beniculturali/archeologiasottomarina/itinerari.)

Where the diving is difficult or there are risks for the UCH, monitoring and broadcasting systems have been employed, through the use of underwater telecameras.

3. THE UNDERWATER TOURISM

The underwater tourism combines in a single activity leisure, sport, culture and ecology, it is very profitable and highly sustainable, low or zero environmental impact, it is a "programmed alternative tourism", at high regulation and low intensity of flows but needs a local touristic system integrated, effective, diversified, as well as areas provided of a status of juridic protection of environmental type (MPA) and/or archaeological type (Parks), in according with a "culture of the territory", investment in protection policies and in making the territory more attractive with specific environmental brands (MPA). On the other side, the underwater archaeological tourism implies elevated costs for the users, limits the fruition and can generate a form of "gentrification". The question is: is it really a tourism for all?

In the UK a study into the economic impact of the historical wrecks diver trails was carried out to determine the number of visitors to the site, and how much each visitor had spent in the surrounding areas. The study aimed to understand the value of the protected wrecks in terms of the economy of the country and the well-being of the people, that is to say the principles of Faro Convention. In the period 2008-2012, considering 3 different sites, there was an increase up to 341%. In the case of *Coronation* Wreck Project, the study found that in 2012 alone over 700 visits were made to the wreck, generating £42000 worth of benefits to Plymouth: over £60 per visitor to the city. The study demonstrates that underwater historic wrecks can actually be a great benefit to local economies.

The success of any designated wreck diver trail can only be evaluated in the long term. Visiting, seeing and touching a real archaeological monument like a wreck site is without doubt a positive experience that can change people's perception of the UCH value. *Public access must remain a cornerstone of any underwater cultural heritage management strategy, a strategy that must receive long-term commitment from both the trail organizers and the heritage agencyes* (Beattie-Edwards 2016).

4. THE PROJECT UNDERWATERMUSE: THE CHALLENGES

Returning now to the initial question (*why UnderwaterMuse now?*), the project UnderwaterMuse could be, such as the Bluemed project and others, one of the responses, based on the principles of the Convention on the Protection of Underwater Cultural Heritage 2001 and the Faro Convention 2005. Furthermore, as far as the international cooperation is concerned, rule 8 of the Unesco Convention 2001 affirms that *International cooperation in the conduct of activities directed at underwater cultural heritage shall be encouraged in order to further the effective exchange or use of archaeologists and other relevant professionals*

The project UnderwaterMuse aims at applying on sample areas (maritime landscapes of Torre Santa Sabina, Grado, Resnik/Siculi, Caorle) a methodological and technological protocol based on research/ knowledge and development/communication of underwater archeological sites that are complex and multi-stratified, characterized by strong diversity. The project's objective is therefore to transform the site into an underwater archaeological park (or eco-museum) through innovative and/or experimental methodologies and techniques in order to try to reduce the loss of important cultural heritages as well as to guarantee an economic spin-off deriving directly from the creation of a sector linked to the tourist-cultural promotion of the context of reference.

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Two work packages particularly concern field activities.

The WP 3 foresees a recognition and analysis of the current state of underwater cultural heritage knowledge and valorization, and a subsequent summary comparative study (1 for each region). Furthermore, the WP 3 includes the involvement of local actors: diving guides, aspiring diving guides, tourist associations, museum curators, beach establishments owners, sailing clubs, local government representatives, MPA or CPA representatives, i.e. all the possible stakeholders.

It aims at adaping underwater cultural heritage tools for the whole partnership and stakeholders: first of all, are foreseen training activities on the use of Augmented Reality tools to recreate the experience of visiting underwater archaeological sites for people who are unable to access the site on their own (children, people with physical disabilities or those who cannot afford diving equipment/tours).

Secondarily, training on action planning and joint WEB GIS development will be delivered to the entire partnership and stakeholders

The process implies a primary selection of sites identified by partners jointly with their Regional Stakeholders Groups) based on joint methodology to be further developed on trans-national level to respond to regional gaps, followed by a study of interoperability with SIRPAC FVG and SIRPAC PUGLIA regional WebGIS. SIRPAC Puglia is the Geographic Information System of the Cultural Heritage of Apulia (Carta dei Beni Culturali – CBC), an instrument of the Regional Landscape Planning (PPTR); it has evolved since 2007 until now, reaching the third final phase.

It is an integrated information System that aims at representing and re-tracing through an interpretative attempt based on scientific data, the complexity and historical depth of the Apulian landscapes.

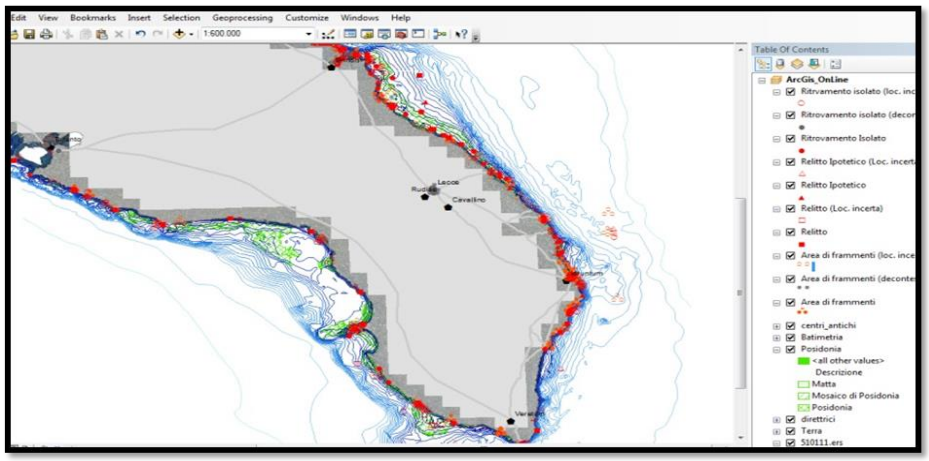

Fig. 3. Southern Puglia underwater archaeological map, integrated in SIRPAC Puglia.

Coherent with the spirit of the Regional Landscape Plan (Piano Paesaggistico Territoriale Regionale, since its inception the Map has been characterized by a holistic, stratigraphic and contextual approach

to the cultural heritage, surpassing the traditional cataloguing models based on fragmentary and sectorial concepts.

SiRPaC FVG is the Geographic Information System of the Cultural Heritage of Friuli Venezia Giulia, constituted by a database of over 320.000 records and related webGIS, implemented in collaboration with Universities, Superintendence public and private institutions (www.ipac.regione.fvg.it/).

It is an instrument for sharing knowledge, of documentation for research and dissemination purposes, but also of efficient territorial *governance, protection and proactive valorization policies.*

The Informative system is a guarantee for the protection that must pass from defensive and proprietary to proactive and communitary, «from economically residual and supported to industrially affordable" (Montella 2009).

The WP 4 includes the preparation and implementation of two types of pilot actions:

- in the field of capacity building

Capacity building on AR-focused training material developed for museum experts to be held in Venice and Split; VR workstation will be realized in Grado, Caorle, Kaštela, Brindisi Museums.

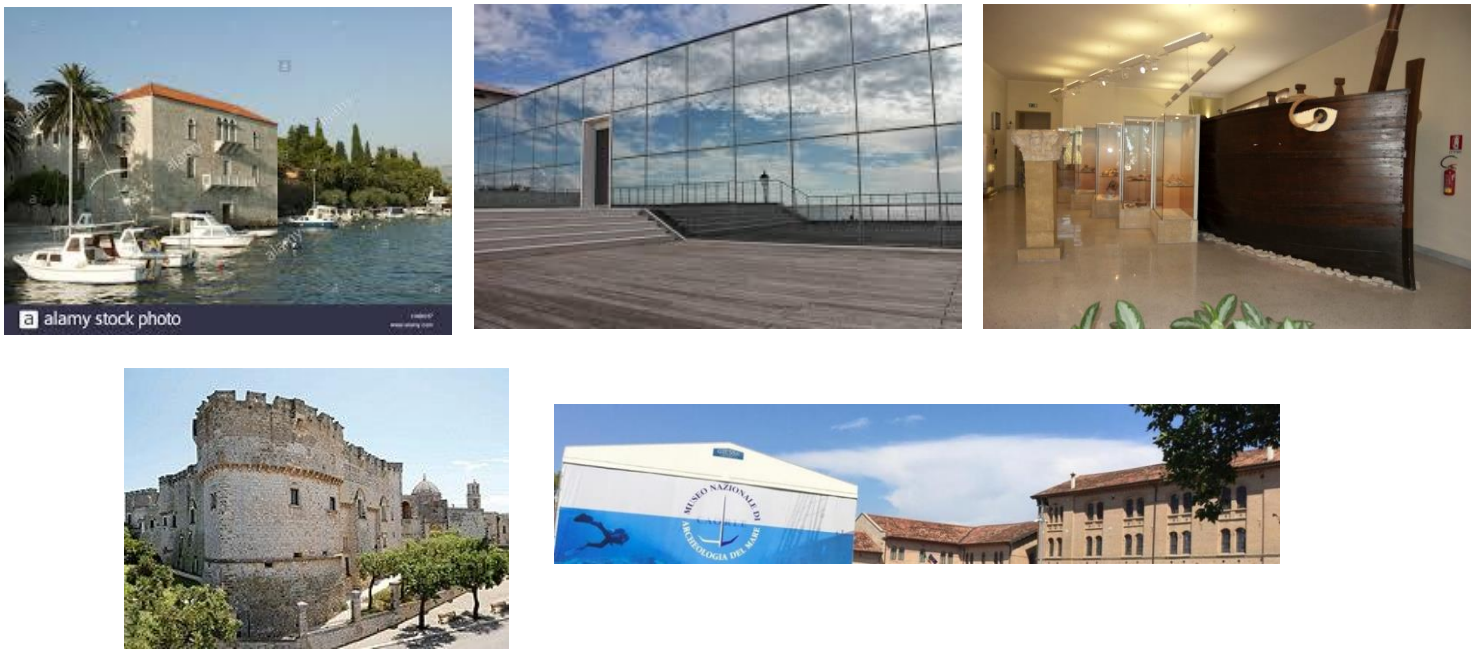

Fig. 4. Project UnderwaterMuse museums: Kaštela, Grado, Brindisi, Carovigno Caorle.

The technology is presented to museum experts at events, in Grado, Caorle, Kaštela and Bari. Stakeholders participate in the decisions regarding the organisation and location of the workstations in the museums where VR becomes available, bearing in mind their accessibility to tourists.

This peculiar pilot action will enjoy the benefits deriving from the established experience and competence in this field of Ca' Foscari University. Beltrame's staff at Università Ca' Foscari has recently produced a virtual dive on the shipwreck of the brig Mercurio (1812) from legacy data (Secci et alii, 2019) which has become a digital workstation in the virtual tour at the exhibition on the Mercurio excavation in the Museo Nazionale di Archeologia del Mare of Caorle, and has also

produced various VR dives from 3D photogrammetrical models made on the cargos of marble of Roman age from Sicily (Balletti et alii, 2016) and Sardinia.

- *in the field of underwater cultural heritage valorization*

The project foresees diverse modalities of enhancement for the diversified cases/sites:

- the shipwreck Grado 2 (or another similar site, if the former is unavailable due to decisions of the new Superintendence): underwater steel cages for its exploration by divers and glass-bottomed vessels.
- the site of Torre Santa Sabina: "blue trails" that encompasses the landing site and exposed portions of shipwrecks, in agreement with Superintendence
  the site of Resnik/Siculi: photographed and mapped in 3D

Exhibition and educational activity programme will be developed for an interactive underwater museum. It is foreseen the dissemination and the collaboration with the schools, considering that children/teens require a different approach to Underwater Cultural Heritage from the rest of the public, but the needs vary considerably depending on age.(Claudino 2016).

Torre S. Sabina, 25 km to the north of Brindisi, is a real challenge for this project, because it's a pluristratified site, with very different evidences, some of them really fragile and vulnerable; first, some **wooden remains** of various shipwrecks, above all TSS 1 wreck, dated back to the late Imperial age (around 300 BC), that seems to be the most preserved hull of that period in the Mediterranean, with surviving stanchions, beams and significant remains of the deck; these wooden remains obviously can't be left without protection, exposed to the elements. Secondarily, the **stratigraphical sequence**, constituted by the overlapping of various cargos of the ships crushed against the reef and sank; these cargos were scattered at the foot of the reef, forming layers alternating with the natural sediments and with the materials dumped as part of the normal everyday activity of the landing place.

We can recognize 2 or 3 distinct sinking episodes, represented by the layers, from the deepest to the most superficial: 1. an archaic wreck, with Aegean amphoras and pottery, coming from Greece; 2. a Late Republican cargo, with local production (in particular oil and wine amphoras of Salento origin) and fine ware of eastern provenance, such as the batch of Megarian bowls. The identification of the deposit with the remains of a cargo is supported by three elements: 1) the position of the pottery finds, often upside down; 2) the high concentration of non-local pebbles in the upper layer ; and 3) the discovery of burnt wooden remains between the pebbles. 3. Finally, in some points, we have scant traces of a third cargo pertaining to the Late Antiquity (Auriemma 2014, Auriemma 2015, Bandiera et al. 2015, Antonazzo, Auriemma 2018).

Also Resnik/Siculi is a pluri-stratified and complex site that presents many affinities with Torre S. Sabina but it shows also an underwater structure of a stone jetty/pier presumably of the Hellenistic age (Babin 2011; Kamenjarin 2016).

Fig. 5. Torre S. Sabina. The underwater stratigraphy

4.1. The UnderwaterMuse pluri-stratified sites: which solutions?

How best to allow the visibility and fruition of such fragile, nebulous and difficult to read underwater evidences? How best to narrate the historical continuum and the waterscape evolution represented by those tenuous remains?

First of all, prior to carrying out the *in situ* protection practice, we should acquire a good knowledge of the different degradation processes and the environmental conditions. It is well known that stability, degradation and corrosion rates of the different materials depend on environmental marine conditions. Thus, shipwreck site formation and degradation are influenced by geomorphologic changes (shoreline erosion, regression, advancement, etc.), physical phenomena (currents, waves, etc.), chemical conditions (in water and sediment) and biological factors (see for example the project ARQUEOMONITOR: Izquierdo et al. 2016 with references).

The concept of managed visitor access via an underwater trail is not a recent acquisition. In the UK since the late 1990's, the trails have been experimented on various wrecks (the Needles protected wreck, HMS *Colossus*, in the Scilly Isles, Cornwall, the Norman's Bay Wreck, The HMS *m/A1* Submarine), with simple/plain but efficient means: an underwater information booklet guides divers around the site and some diver stations were established around the wreck to aid diver navigation (Beattie-Edwards 2016).

Also in Sicily a didactic booklet describing in detail all the underwater itineraries delivered by the Soprintendenza del mare (Sea Superintendence), with maps and sheets of the various sites, can be taken under water by the divers. The POIN Project Underwater cultural trails of the Sea Superintendence uses also more innovative tools, such as the UCH Fruition Interactive System (UG3K): the divers find, close to the evidences, a small buoy with an identification tag containing a chip; thanks to an underwater viewer with antenna, they can read a sheet with information and image (choosing the language, italian or english), like on a normal tablet. The viewers will be given free to the diving centers that will request them, by specific agreements with Port Authorities and MPAs. The project has also foreseen a web portal including all the itineraries, with sheets, video and news, as well as an app for smartphone and tablet.

An hypothesis for the pluri-stratified sites could be the replica of a schematic stratigraphic sequence in the museums of the partnership (Grado, Caorle, Kaštela, Brindisi Museums) and others, related to the same UCH (Carovigno Castle Museum)[50], but also under water, on the sea-bottom at the foot of the reef, with specific materials .

For the well-preserved Torre S. Sabina 1 wreck and the other wooden remains in the bay, that cannot be left exposed or uncovered, the best solution after the setting up of a passive protection system (barrows or strongboxes[51]; Negueruela 2000; Koncani Uhač et al. 2017), could be 3D models to enjoy with underwater viewers when the divers are on the site. In parallel, with other funds and institutional agreements, also the recovery and the restoration of the ship could be studied and planned, as well as the ship's physical replica construction.

The solutions are diverse and they can be tested on the diverse evidences: stratigraphy and archaeological materials in situ reproductions; signals, labels, tags and QR codes; 3D Viewers and tablets; ships replicas, etc.

We have to answer all these questions, but especially we have to think of the valorization of our UCH in a logic of economic, environmental and social sustainability.

4.2. At the end….

Joint methodologies and tools developed in WP3 are applied to the problems identified in WP3 and tested in the context of specific pilot examples in WP4. The information that derives from this process is elaborated in WP5 to generate draft action plans and a ToolKit to be used in future studies or projects of underwater cultural heritage valorization and improved accessibility. The transnational ToolKit synthesizes good practices on efficient underwater cultural heritage valorization and increased accessibility, responding to gaps revealed in the analysis phase, gained from the pilots and from other relevant experiences of partners and RSGs .

In other words, we would like to implement a replicable model of site management plan or programme capable to guarantee the sustainable use of the site and a vision for the future that implies the economic balancing of costs and benefits for society. This model should aim at promoting access and research, public education, efficient and continuous dissemination and experiential tourism. Moreover, it should identify risks for the site stability and conservation, proposing a policy framework of adequate measures.

An authentic site is a joy forever, as a monument for those associating themselves with its history, or its environment, as well as for the local economics of recreational and touristic visits.

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[50] In the Carovigno Castle Museum the permanent exhibition shows a replica of the stratigraphical section of the Torre S. Sabina sea-bottom with all the distinguished layers and the included archaeological original materials representing the overlapped dispersed cargos.

[51] Large metallic modular strong boxes, constituted by a framework to which independent plates are fitted, were used in the excavation of the Mazarron shipwrecks by the Spanish National Maritime Archaeological Museum and in those of the Zambratija wreck by the Archaeological Museum of Istria, Pula.

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