



*Rendere visibile l'invisibile.
Il patrimonio sommerso alla
sfida della valorizzazione.*

*Making the invisible visible. The
submerged heritage takes up
the challenge of the
enhancement.*

Rita Auriemma



Landscapes archaeology <> Seascapes archaeology

The landscape is a system generated by mutual relations between physical / environmental and anthropic / cultural features



Sassetta (fine sec. XIV-1450), Una città sul mare, 1400-1436, tempera su tavola, Pinacoteca Nazionale di Siena (Foto MiBACT).

The contexts

1. coastal sites:

1a. Sites conceived and built totally or partially on land, today submerged or semi-submerged due to changes in sea level:

- settlements or parts of them, from prehistoric to modern times; pre and protohistoric villages, urban sites of historical age;
- residential complexes / housing units and utilitarian, productive plants (*villae maritimae*, *domus*, fish processing factories, (*garismatia*, *cetariae*)
- Sea ports, river ports, endolagunar ports, lake ports, underground ports. Port infrastructures: piers, jetties, breakwaters, docks, lighthouses, slipways, dockyards/shipyards, warehouses/*horrea*, access systems/channels, etc.
- Bridges, embankments and bank reinforcement structures (in particular in lakes and rivers)
- Quarries
- Wells, cisterns
- Caves/sanctuaries

1b. Sites created directly in the water, sometimes regularizing natural evidence:

- fish farming systems: fishponds (*piscinae/vivaria*)
- Caves/*nymphaea*
- Mooring sites / loaders (*caricatori*)





The contexts

2. shipwrecks (hull and / or cargo and / or on-board equipment)

- buried wreck: they are found on the mainland, incorporated by the advancement of the coastline; case studies: Valleponi, wrecks of Fiumicino, Pisa, Olbia, Naples, Yenikapi.
- beached wrecks (case studies: beached wrecks of Salento)
- submerged wrecks at shallow depths, near the coast
- submerged wrecks at medium-high depths or offshore
- deep wrecks

The formation and appearance of these deposits vary greatly depending on the dynamics of the sinking, the chemical-physical characteristics of the submerged environment, the nature of the seabed, the presence and characteristics of the cargo, post-depositional anthropogenic factors and some faunal disturbances .

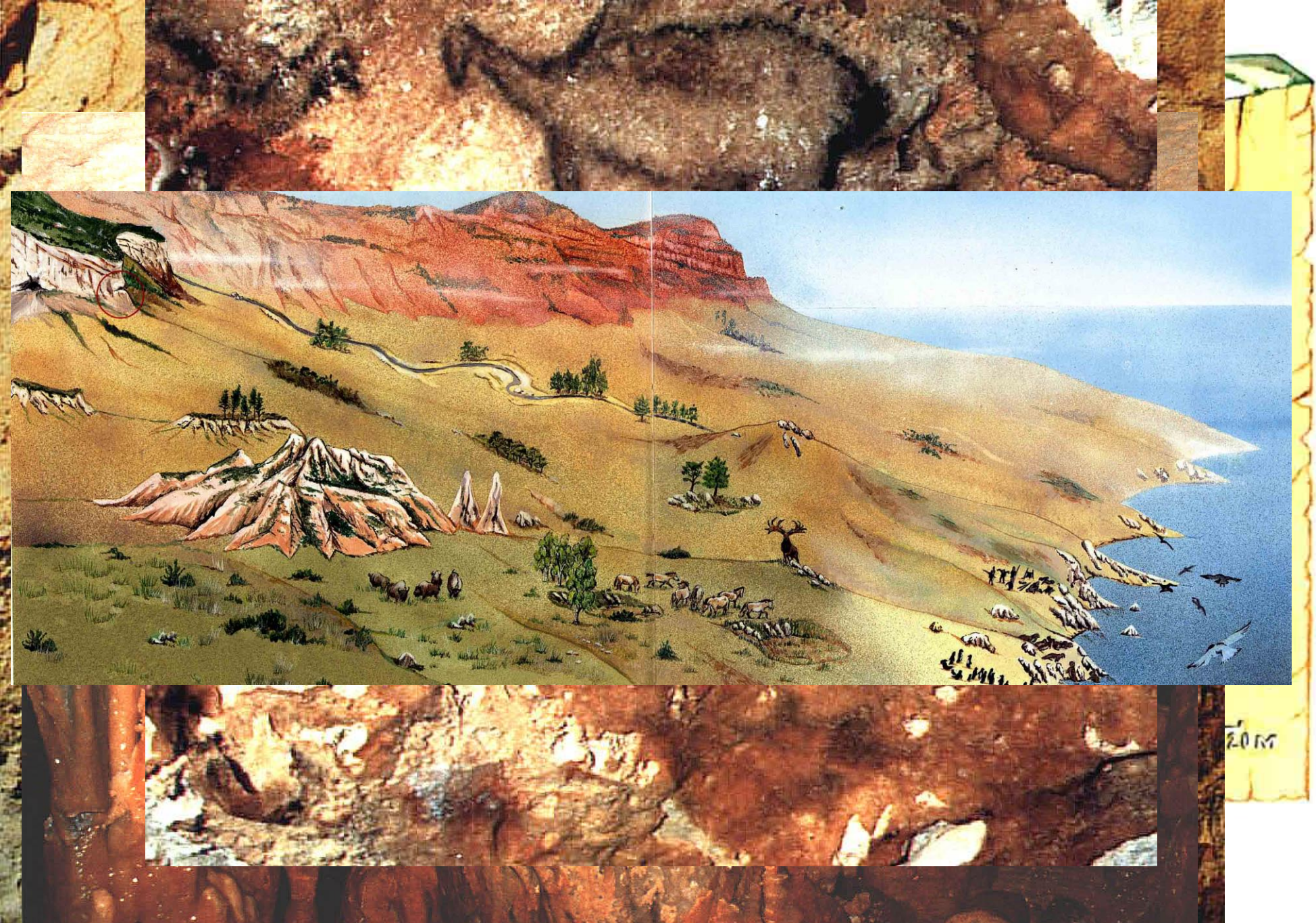


The contexts

3. deposits made up of mobile artifacts:

- Isolated or decontextualized finds: amphorae, anchors, pottery, cargo elements lost during the sinking or in a voluntary throw overboard or in an action of loading or unloading or transshipment.
- Areas of scattered materials referable to anchorages or harbour dumps characterized by heterogeneous materials, different from layers of voluntary draining / filling.

Waterscapes. Underground environments: prehistoric caves

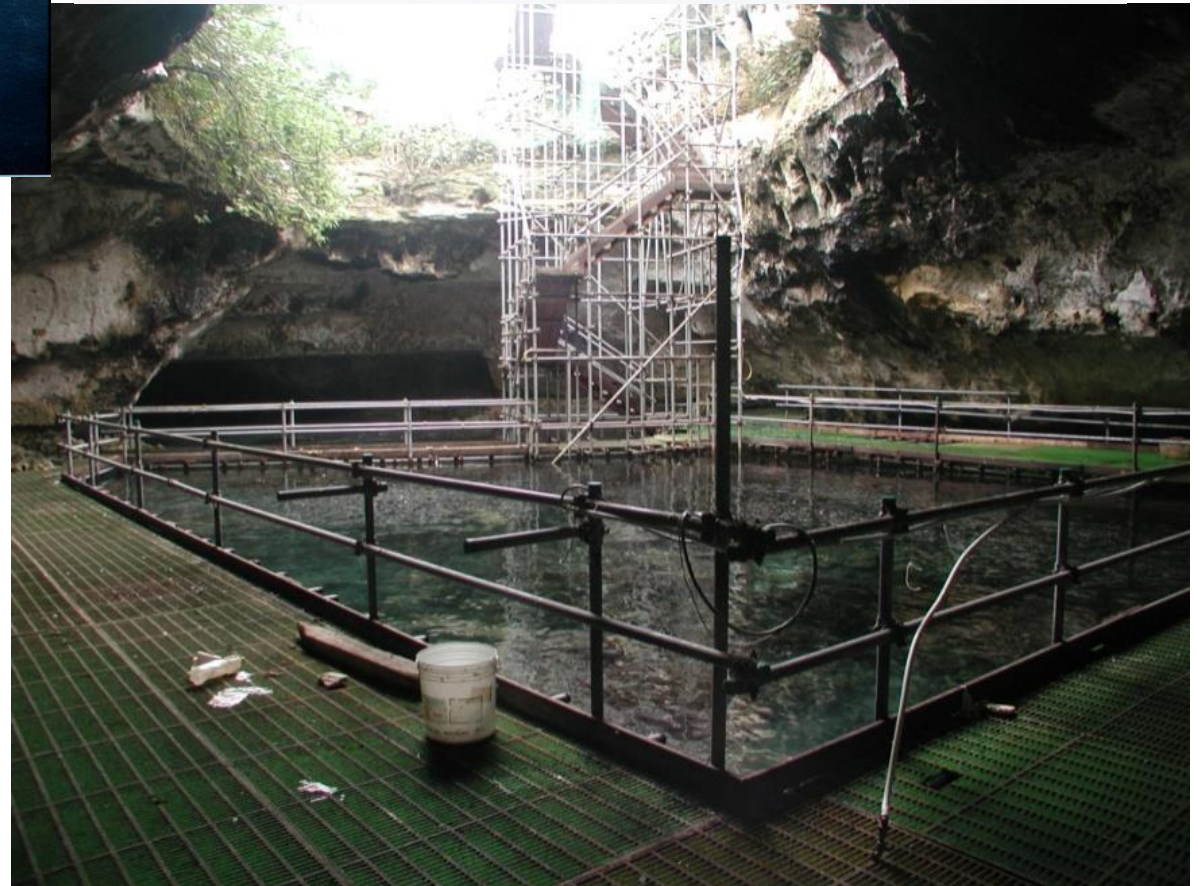
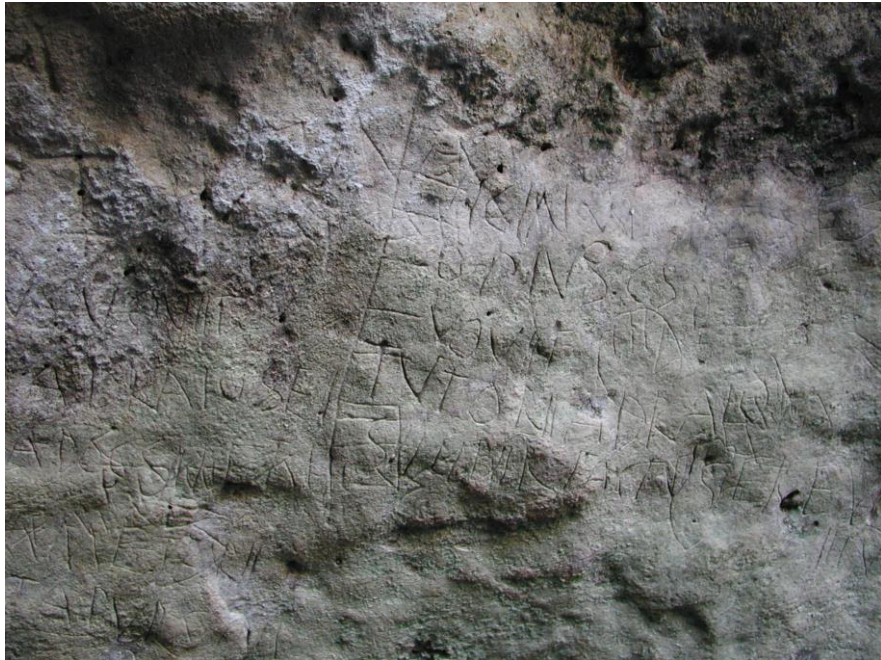
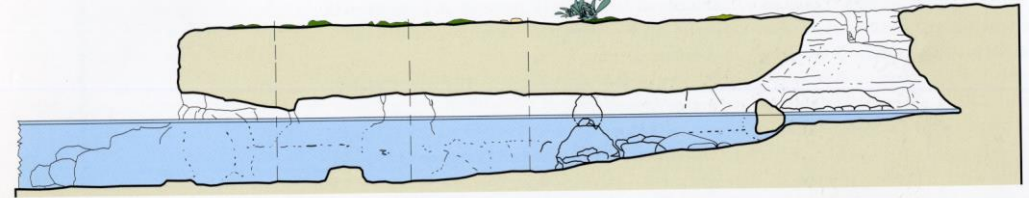


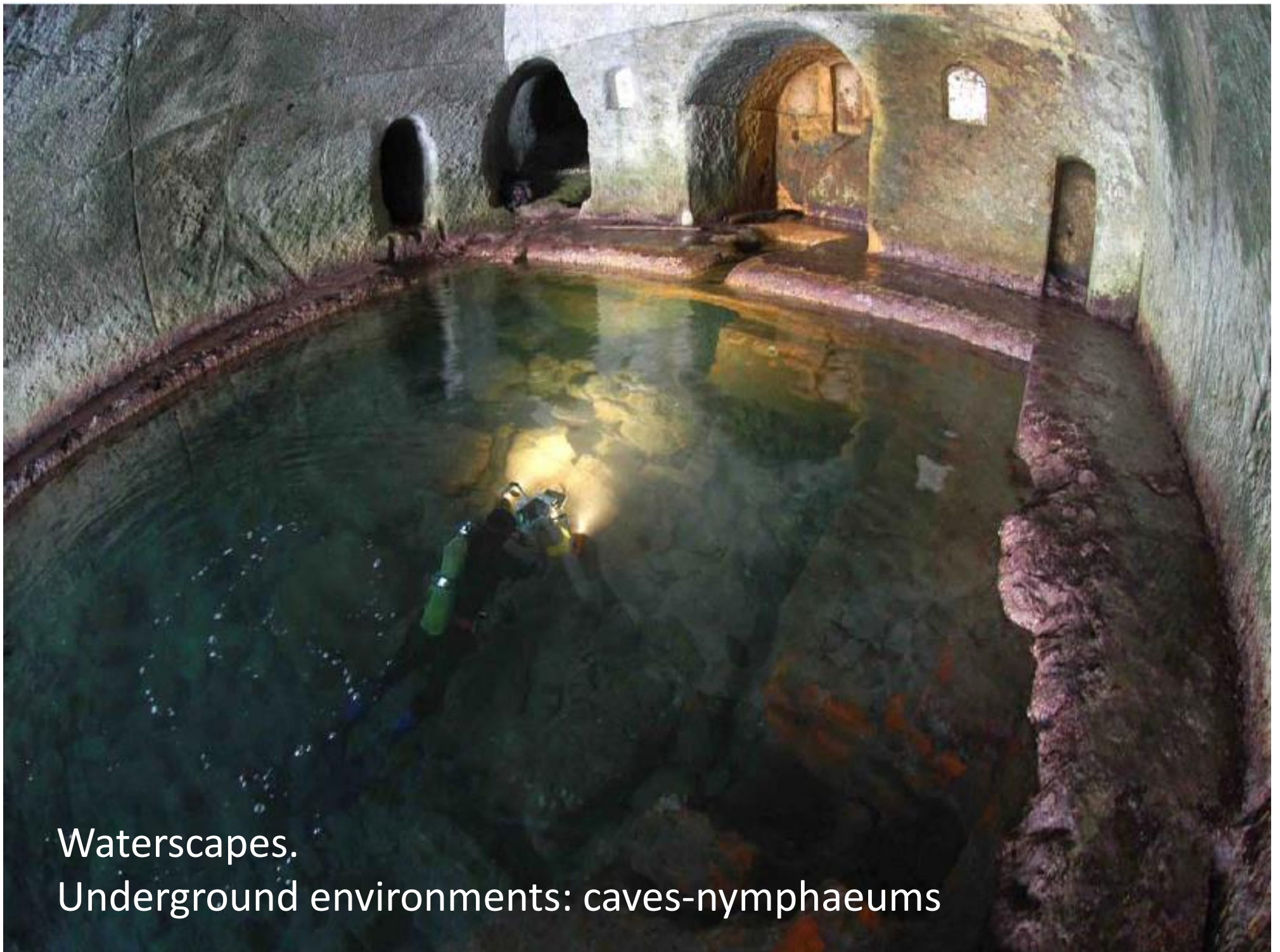
Waterscapes. Underground environments: caves-sanctuaries



0 5 10 m

Rocavecchia – Grotta della Poestia.
Sezione A-A': la cavità n.1
in rapporto all'attuale linea di costa.

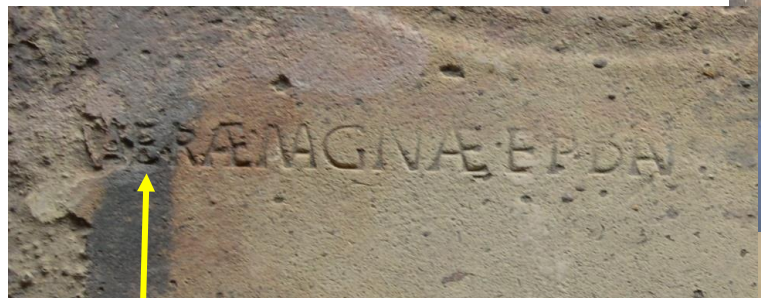




Waterscapes.
Underground environments: caves-nymphaeums

Waterscapes. Rivers.

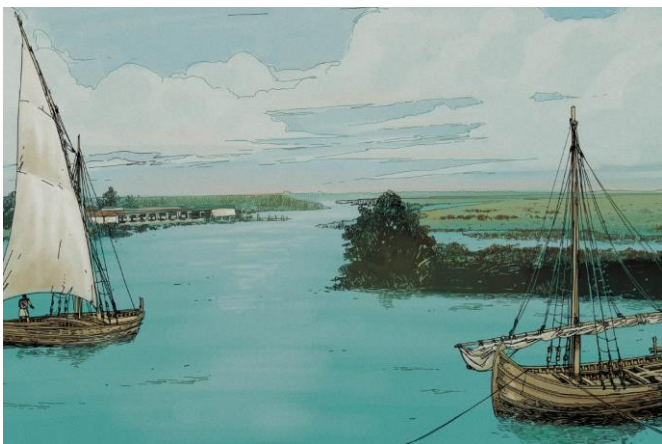
Stella river Friuli Venezia Giulia Region:
wrecks and cargos



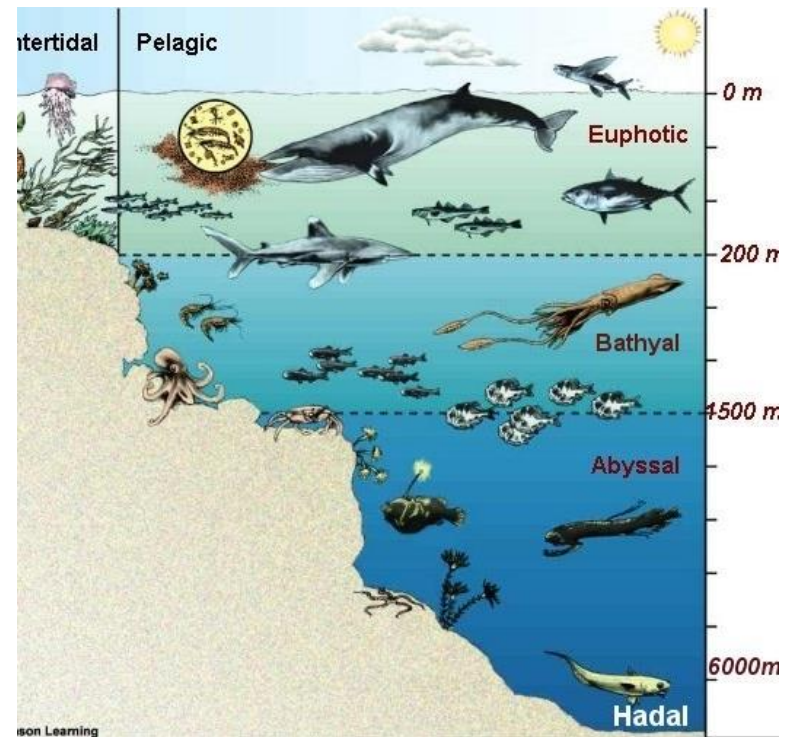
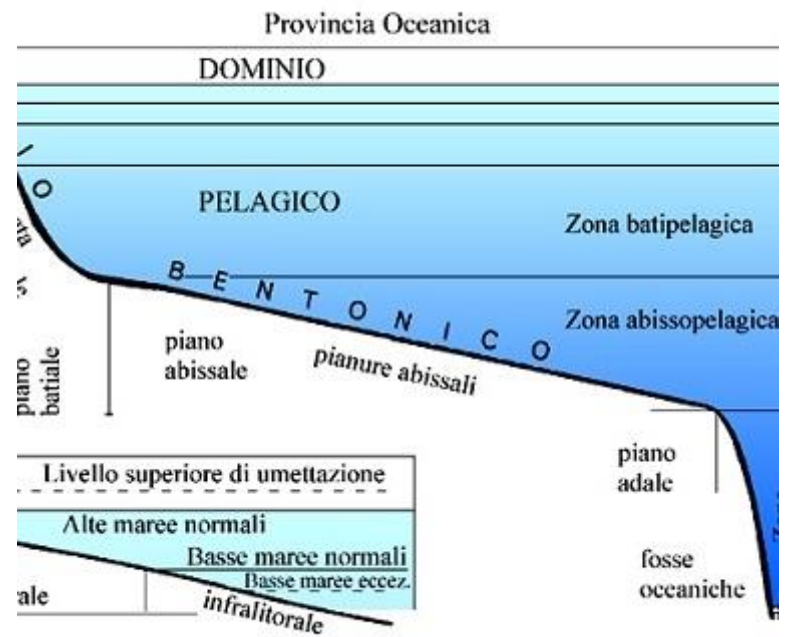
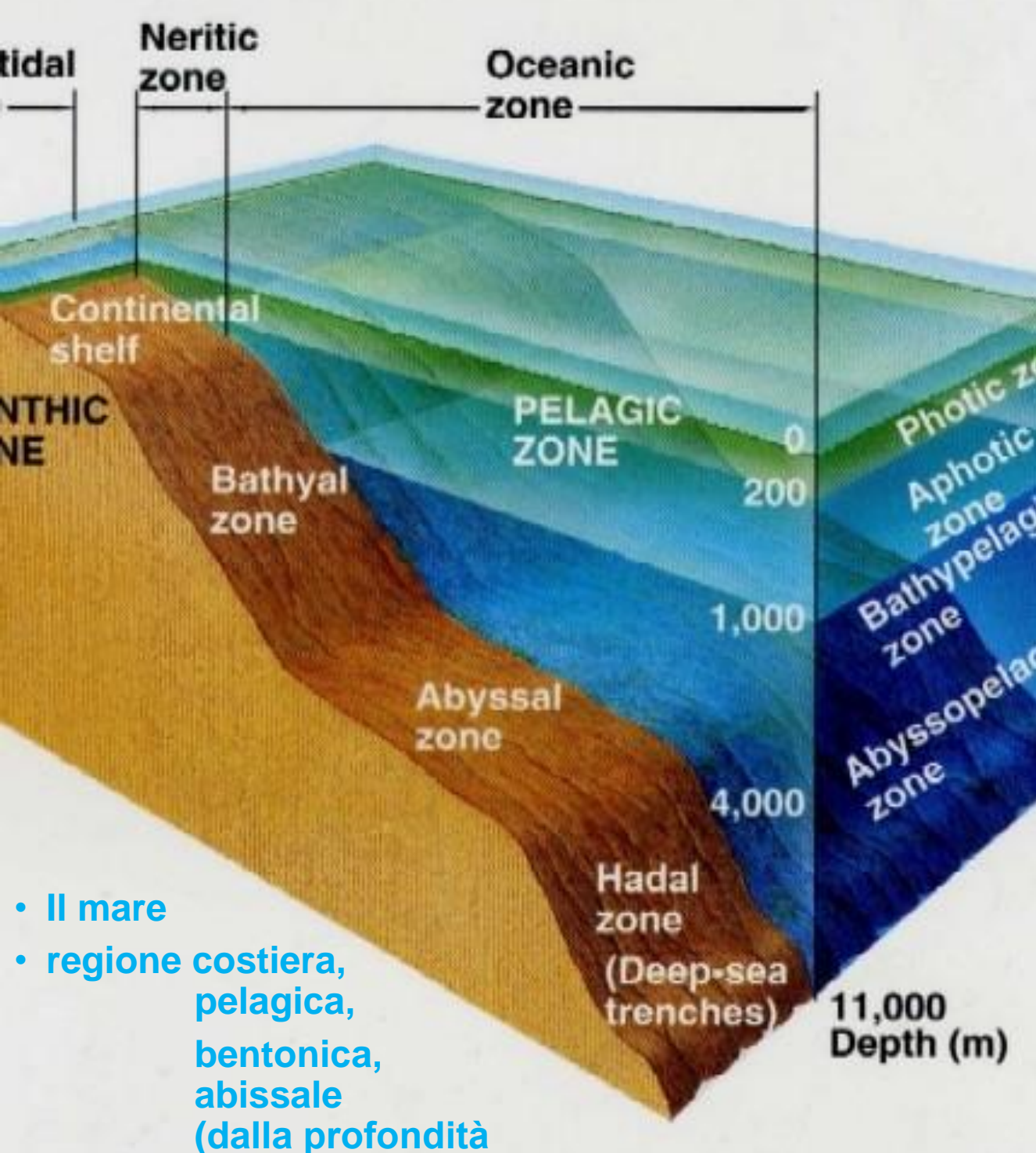
Waterscapes.
Marshes.

State Natural Reserve
Le Cesine (Vernole, Le)
Wet area

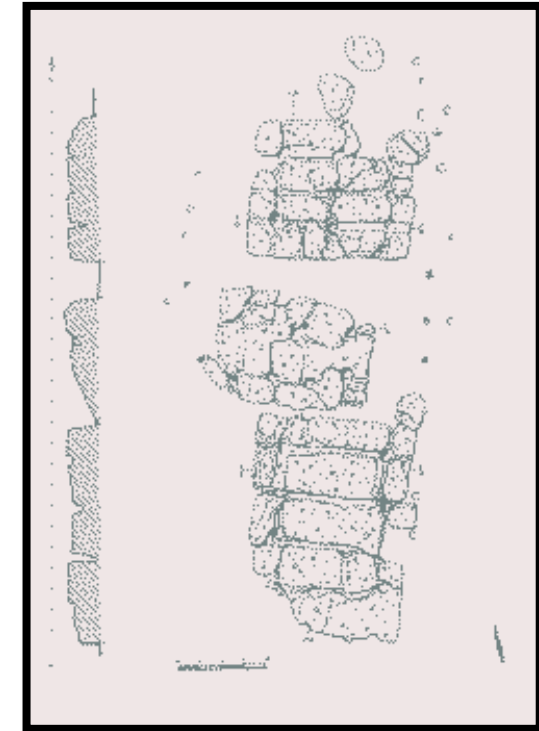
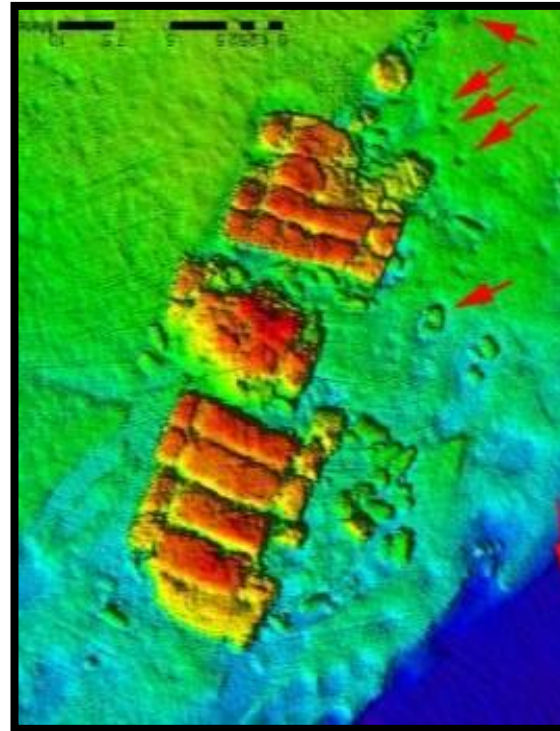
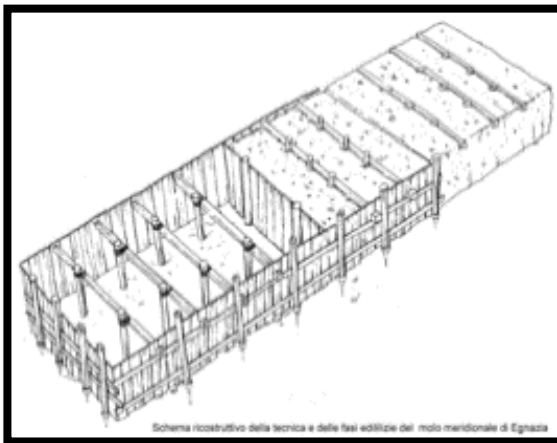




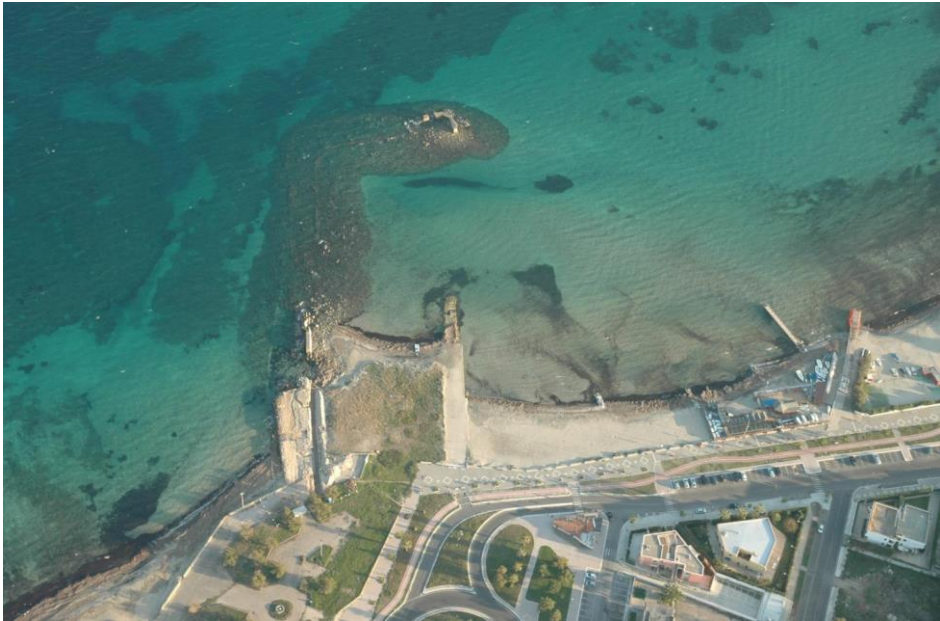
Waterscapes. Lagoons
Marano and Grado Lagoons



- Il mare
- regione costiera, pelagica, bentonica, abissale (dalla profondità di 500 m)



Sites:
ports /port infrastructures
Egnazia (Brindisi)
The southern pier
built in concrete with pozzolana in wooden formworks

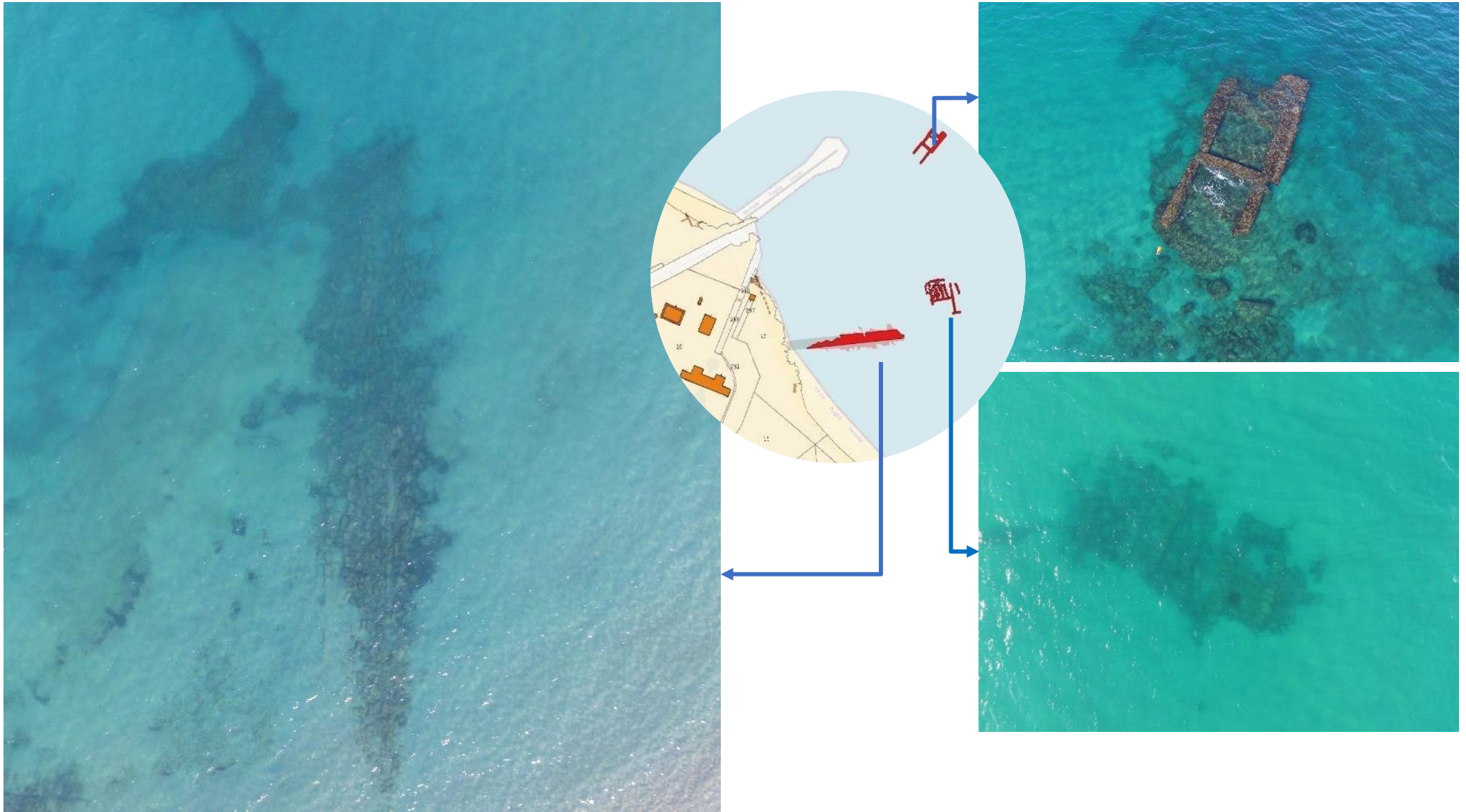


Sites: ports /port infrastructures

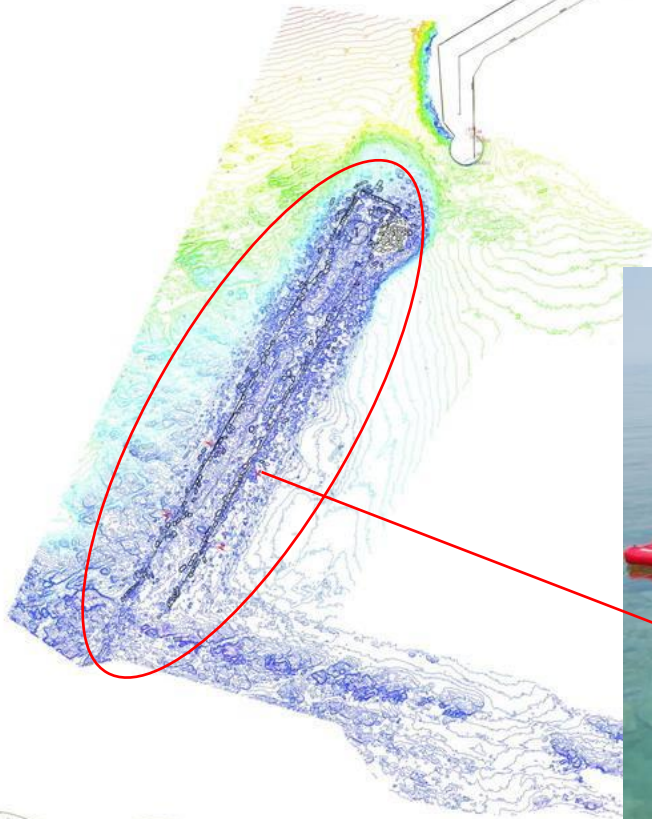
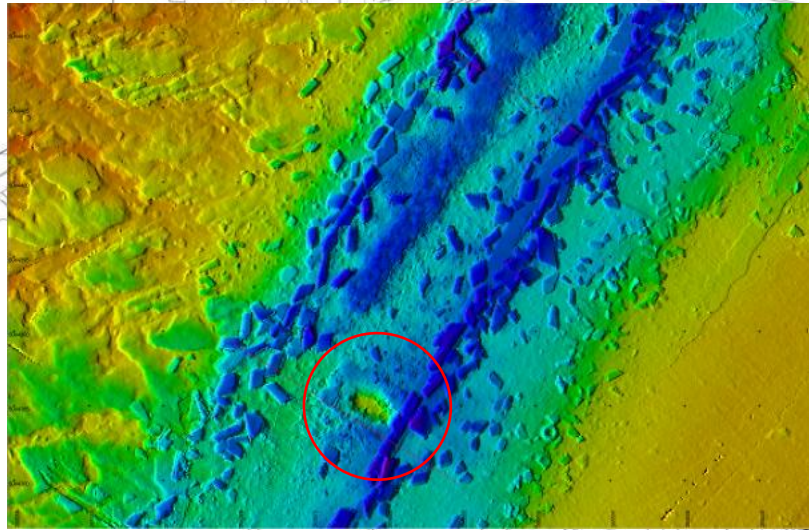
S. Cataldo (Lecce). The Hadrian Emperor's pier, built in concrete lined with marginal walls of ashlar masonry

Sites: ports /port infrastructures

S. Giovanni (Lecce). The port complex recently discovered: foundation in ashlar masonry and other parts in concrete



Arheološki Muzej Istre (AMI)
 Muzej Grada Umaga – Museo di Umago
 Dipartimento di Storia e Cultura dell'Antichità al mondo
 contemporaneo - Università di Trieste
 Savudrija - Salvore: Campagna di ricerche archeologiche 2011
 Tav. 1. Planimetria generale delle evidenze



- ① Antemurale sud (campagna 2011)
- ② Molo nord (riel. da Degrassi 1957)
- ③ Banchina (riel. da Brusić 2009)
- ④ Platea (campagna 2011)
- ⑤ Cisterna (campagna 2011)
- ⑥ ⑦ ⑧ Strutture murarie (campagna 2011)
- Linea di costa attuale (campagna 2011)



Sites: ports /port infrastructures
 The Savudrija harbour (Histria, Croatia):

southern pier/breakwater lined with marginal walls in ashlar masonry and stones filling

Sites: ports /port infrastructures

Landing places related to

villae maritimae

lined with marginal walls

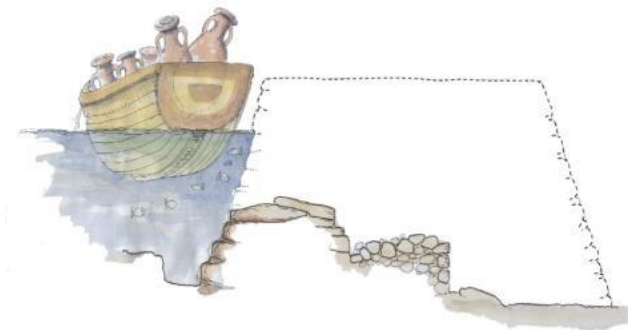
in ashlar masonry and stones filling

Busuja, Poreč

Croatia

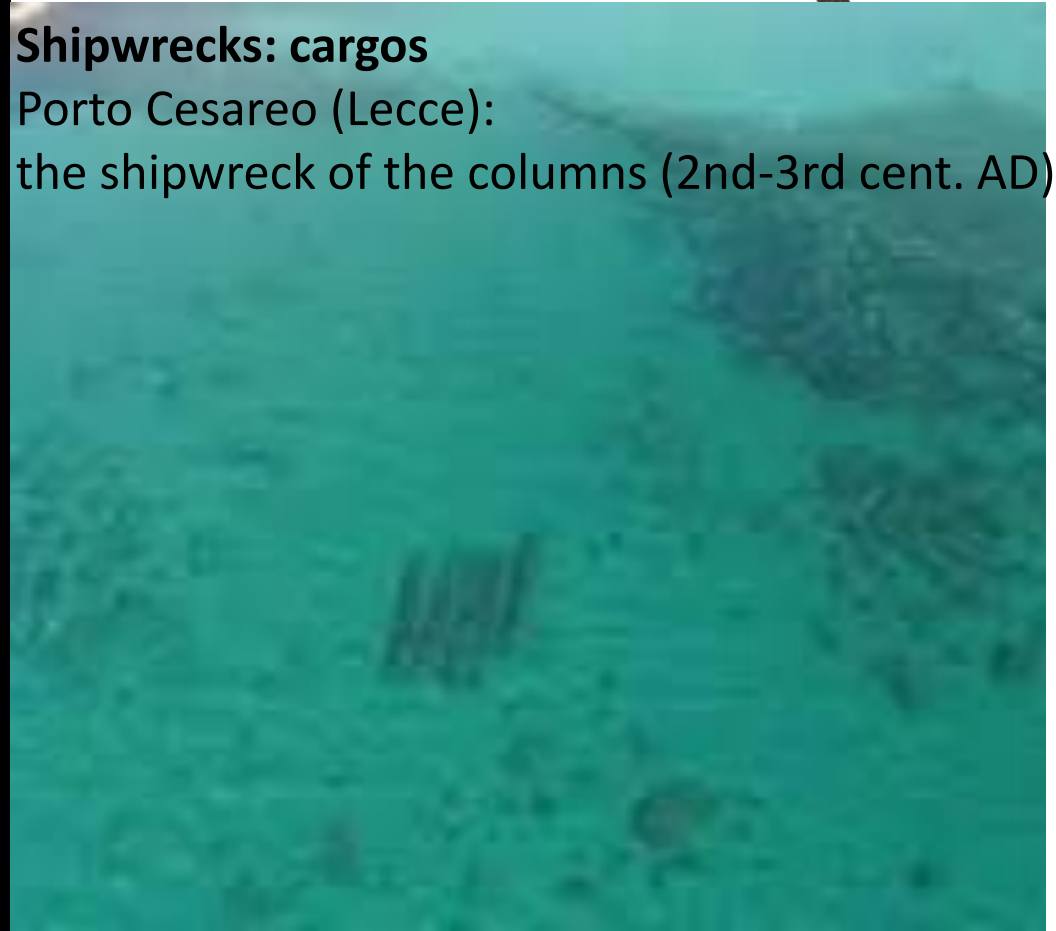


Punta Sottile, Muggia
Italy





Shipwrecks: cargos
Porto Cesareo (Lecce):
the shipwreck of the columns (2nd-3rd cent. AD)





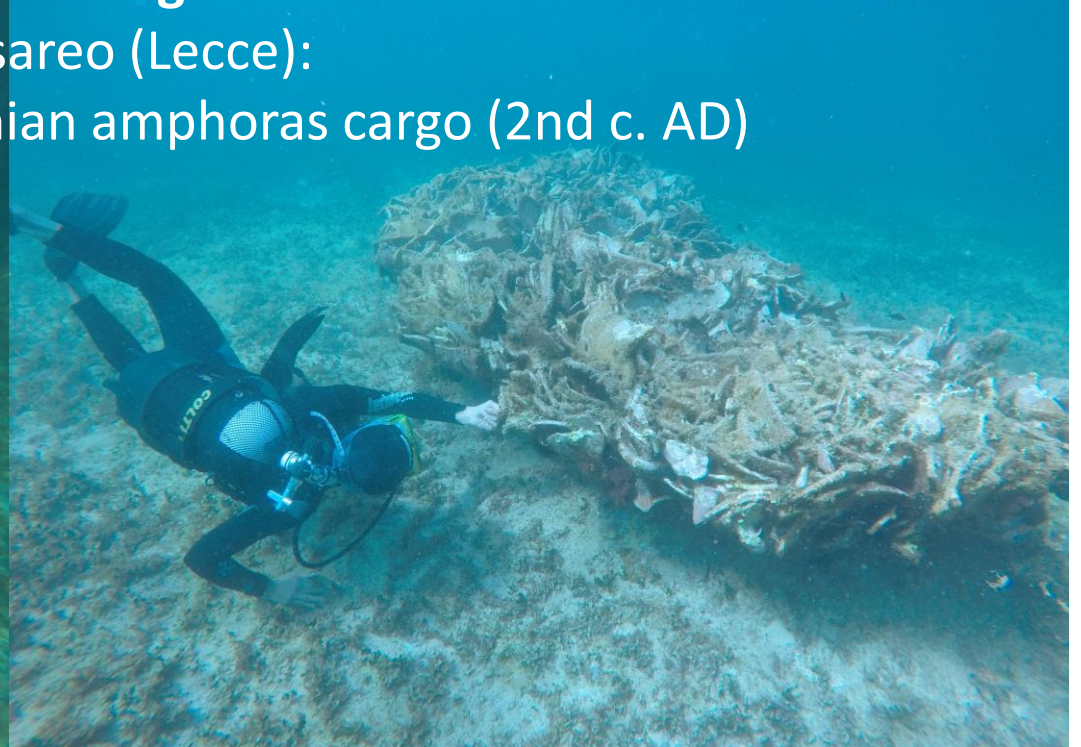
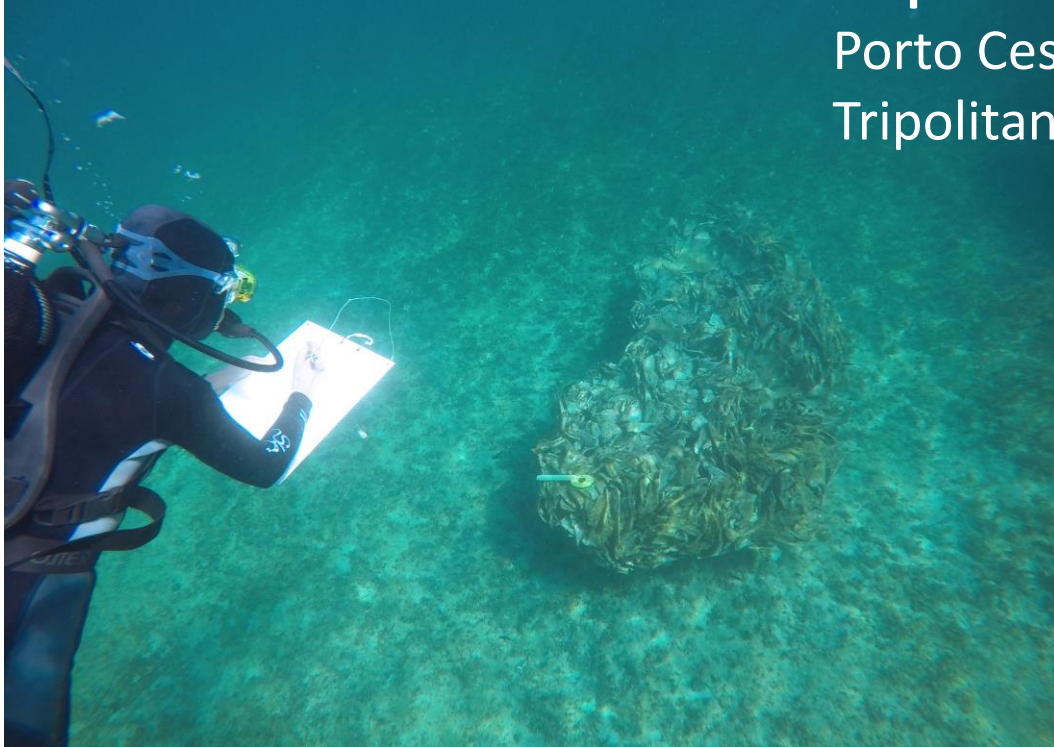
Shipwrecks: cargos

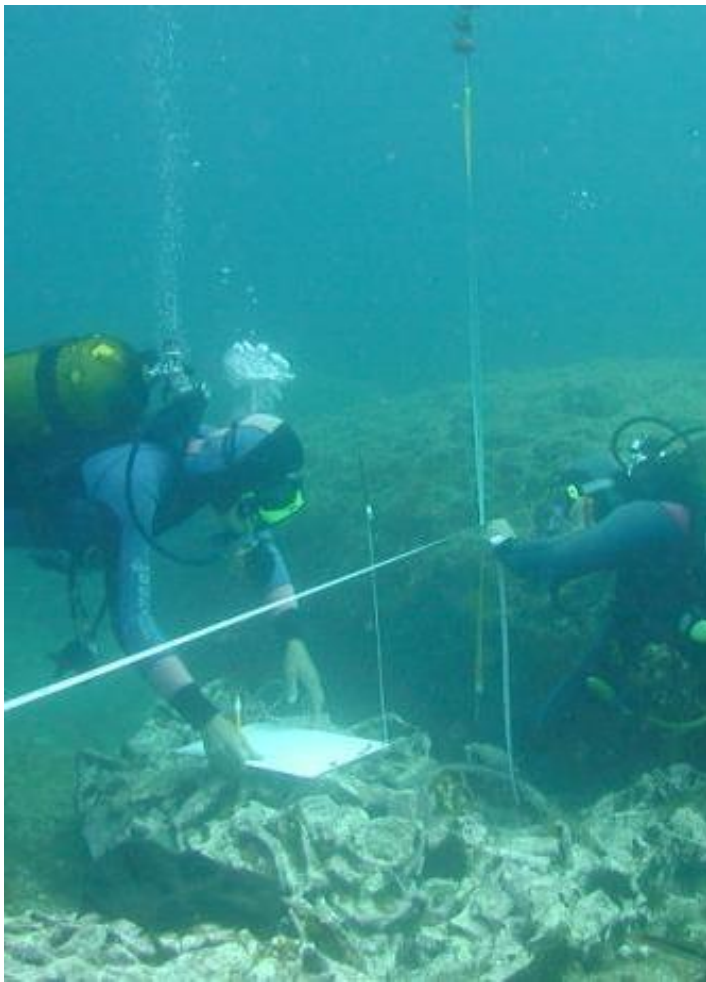
S. Caterina di Nardò (Lecce):
amphoras cargo (2nd c. BC)





Shipwrecks: cargos
Porto Cesareo (Lecce):
Tripolitanian amphoras cargo (2nd c. AD)

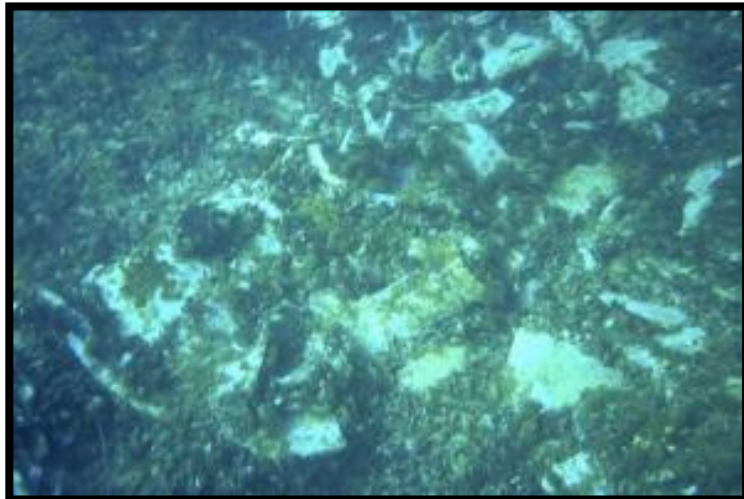
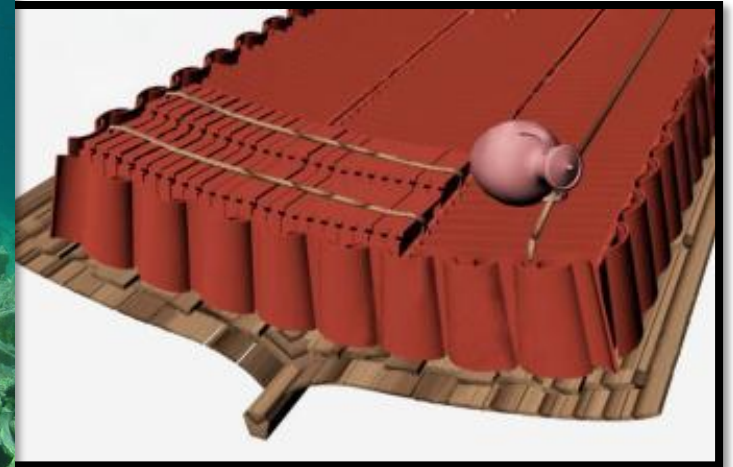




Shipwrecks: cargos

Gallipoli(Lecce): The mortaria shipwreck (1st c. AD)







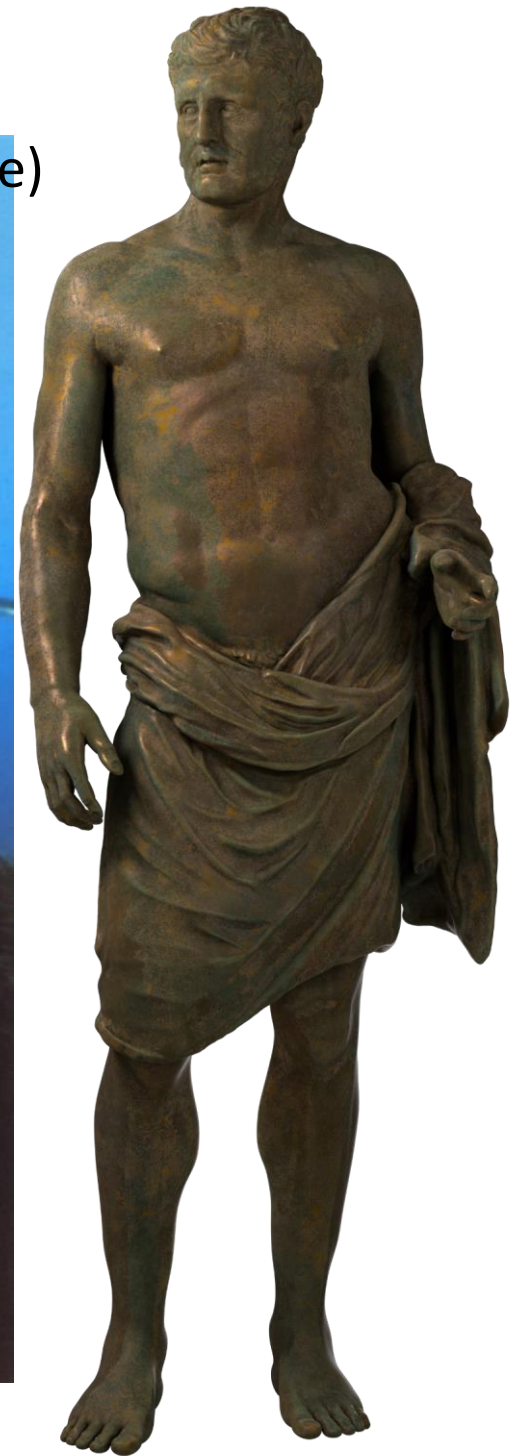
Shipwrecks: cargos

S. Pietro in Bevagna (Taranto) sarcophagi shipwreck
(2nd-3rd cent. AD)

Shipwrecks: cargos

Punta del Serrone (Brindisi)

Bronzi shipwreck (Late Imperial age)





The ships

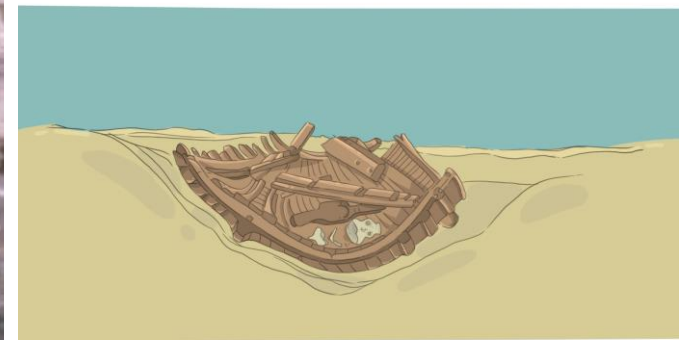
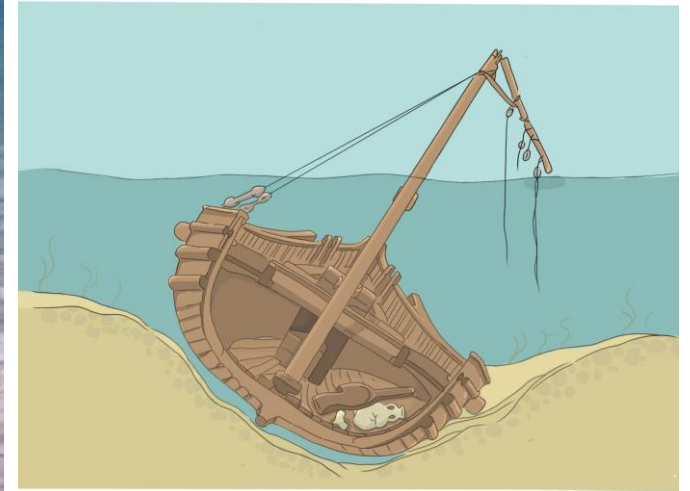
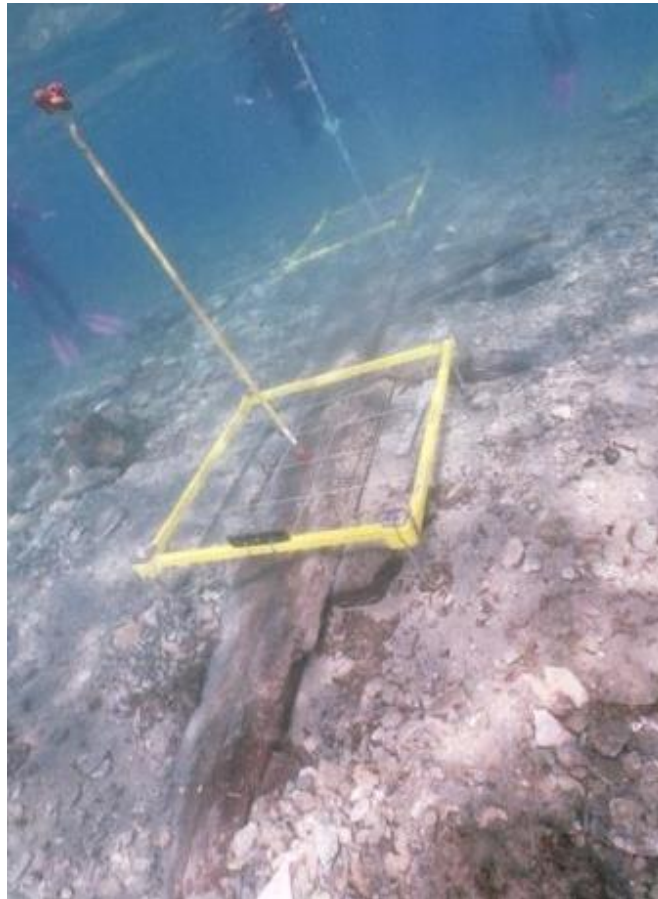
Porto Cesareo: Bacino Grande Byzantine shipwreck (9th-10th c. AD). The gold seal ring found in the neighborhood



Modern shipwrecks (Grado, Go)

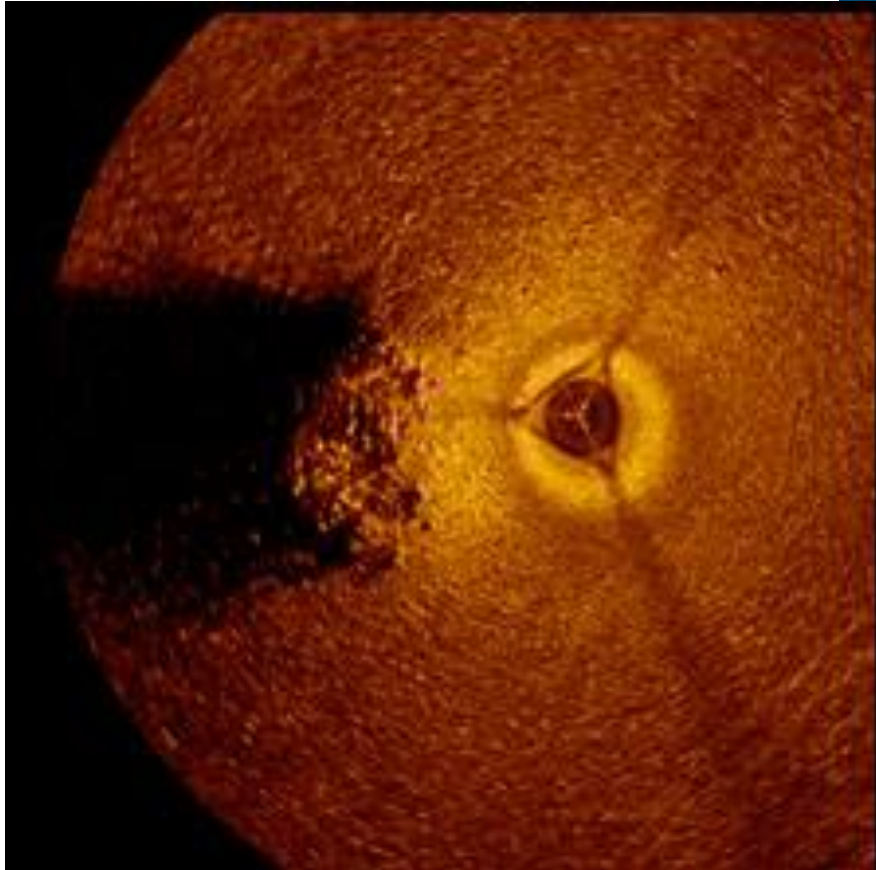


T. Chianca (Lecce) shipwreck



The ships
beached wrecks

The sea is the new frontier
of high depth



A forward-looking premise:

Unesco's Convention on the Protection of the Underwater Cultural Heritage 2001

Rule 1. In situ preservation as first option

Rule 7. Public access to in situ underwater cultural heritage shall be promoted, except where such access is incompatible with protection and management.

Public access . Economy, tourism and leisure diving

Access, is not only an important aim in itself; it also contributes to awareness and to joint support for protective approaches.

Experiencing the past under water is rapidly becoming a big asset in the leisure industry and the 'experience economy' > **risks and opportunities for protection**

(UCH Manual; Recommendation 3/STAB 5)

Involving diving operators

with a measure of responsibility and custodianship is an attractive option to solve the issue of supervision and control.

(UCH Manual)



Building awareness

Education, information and public awareness building are important aspects.

Active management: the actors

- the official agencies in charge of protecting the national cultural heritage (on land and under water);
- the official agencies in charge of protecting the environment and natural resources;
- the official agencies responsible for safe navigation;
- universities and research institutions;
- groups and stakeholders that identify with underwater cultural heritage;
- groups and stakeholders that are likely to profit from the proper management of the underwater cultural heritage; and
- groups and stakeholders that are likely to affect underwater cultural heritage and its management through their regular activities.



UNESCO Code of Ethics for Diving on Submerged Archaeological Sites

- Protect underwater cultural heritage for future generations.
- Leave wrecks and submerged ruins untouched.
- Obey legal protection of archaeological sites.
- Seek permission to dive on designated sites.
- Only archaeologists may remove objects.
- Do not take souvenirs.
- Respect measures that protect sites.
- Report discoveries to the responsible authorities.
- Hand over objects that you took.
- Do not sell our common heritage.
- Document discovered sites.
- Be careful when taking photographs.
- Stay safe.
- Be a role model.
- Support ratification and compliance with the UNESCO 2001 Convention

Convenzione quadro
del Consiglio d'Europa
sul valore
dell'eredità culturale
per la società



The new stage that strengthens the process: the Faro Convention

Council of Europe Framework Convention on the Value of
Cultural Heritage for Society * Faro, 27.X.2005

Preamble:

Convinced of the need to involve everyone in society in the ongoing process of defining and managing cultural heritage

Article 1 –Aims of the Convention

Goals of the conservation of cultural heritage and its sustainable use:

human development and quality of life

construction of a peaceful and democratic society

sustainable development

promotion of cultural diversity

greater synergy of competencies among all the public,
institutional and private actors concerned.

Article 10 –Cultural heritage and economic activity

raise awareness and utilise the economic potential
of the cultural heritage

ensure that economic policies respect the integrity of
the cultural heritage without compromising its inherent values



Archaeology and environment, “waterscapes” archaeology the best practice of the in situ preservation and enhancement



natural target of the global landscapes archaeology, in our case “waterscapes”, “an integrated way of understanding humans in dynamic landscapes”

The submerged archaeological site or park is a perfect mix between nature and culture.



“eco-museum” or “widespread museum”



the landscape becomes museum, as system in which good and objects are in connection and, because of this, understandable; a widespread museum, where the cultural heritage is preserved in the environment of which it is an integral part.

Archaeology and environment

In situ preservation and enhancement: legislations and regulations

- **Codice Urbani/framework Law on the Cultural Heritage:** the archaeological park is a territory characterized by important archaeological evidences and by the joined presence of historical, landscape and environmental values, equipped as an open-air museum;
- **framework law 394/1991 on the protected areas** aims at safeguarding together anthropological, archaeological, historical, architectonical values;
- **Faro Convention:**
 - Art. 2 - definition of cultural heritage: a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. **It includes all aspects of the environment resulting from the interaction between people and places through time;**
 - Art. 8 – Environment, heritage and quality of life
 - promote an integrated approach to policies concerning cultural, biological, geological and landscape diversity to achieve a balance between these elements;
 - reinforce social cohesion by fostering a sense of shared responsibility towards the places in which people live;
 - promote the objective of quality in contemporary additions to the environment without endangering its cultural values.

Archaeology and environment .

In situ preservation and enhancement: underwater tourism

The underwater tourism

- combines in a single activity leisure, sport, culture and ecology
- is highly sustainable, low or zero environmental impact
- is a “programmed alternative tourism”, at high regulation and low intensity of flows
- needs a local touristic system integrated, effective, diversified
- needs areas provided of a status of juridic protection of environmental type (MPA) and/or archaeological type (Parks) > “culture of the territory”,
- needs investment in protection policies and in making the territory more attractive with specific environmental brands (MPA),
- is very profitable

On the other side, the underwater archaeological tourism

- implies elevated costs for the users
- limits the fruition > “gentrification”.

Is it a tourism for all?

Is the UCH really an heritage for all?

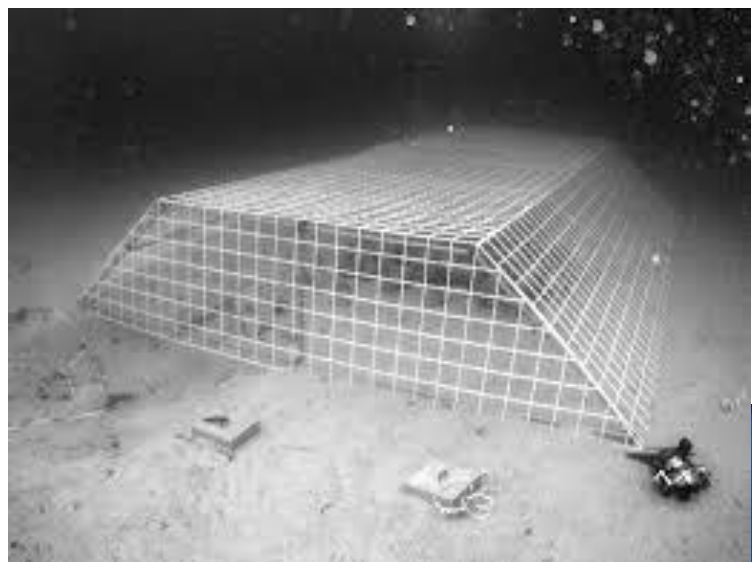


The Croatian experience.

Map of sites with protective cages



The Croatian experience.





SITES THAT CAN'T BE VISITED WITHOUT EXPERT SUPERVISION:

1. SHIPWRECK "CORIOLANUS"
2. SHIPWRECK "BARON GAUTSCH"
3. SHIPWRECK "SZENT ISTVAN"
4. PROTECTION ZONE ISLAND JABUKA
5. PROTECTION ZONE ISLAND LASTOVO
6. PROTECTION ZONE ISLAND VIS
7. PROTECTION ZONE ISLAND PALAGRUŽA
8. PROTECTION ZONE ISLAND MLJET
9. SHIPWRECK "S57"
10. SITE CAVTAT
11. SITE ŽIRJE

ARCHAEOLOGICAL UNDERWATER SITES

ROMAN ROUTE THROUGH THE ADRIATIC



SITE ISLAND RAB

ARCHAEOLOGICAL UNDERWATER SITES

ROMAN ROUTE THROUGH THE ADRIATIC



SITE ISLAND PAG

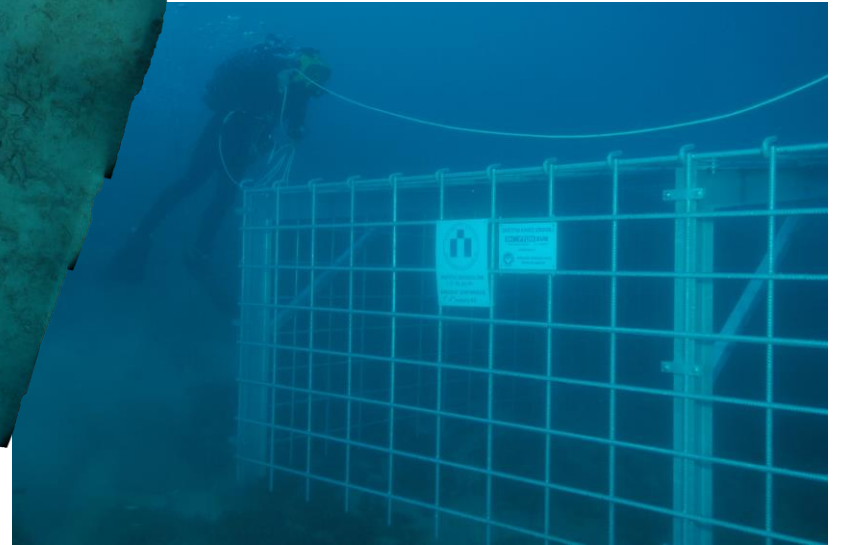
ARCHAEOLOGICAL UNDERWATER SITES

EAST MEDITERRAN ROUTE THROUGH THE ADRIATIC



SITE CAVTAT

ARCHAEOLOGICAL UNDERWATER SITES



SHIPWRECK "BARON GAUTSCH"



PROTECTION ZONE
ISLAND VIS



SHIPWRECK "CORIOLANUS"



SITE CAVTAT



7 000

6 000

3 000

3 000

VISITORS

ARCHAEOLOGICAL UNDERWATER SITES-VISITORS



UNDERWATERMUSE – FINAL EVENT | Lecce | June 3-5, 2022

General States of the bottom-up management of underwater heritage



SCIENTIFIC RESEARCH AND TOURISM: HOW ONE SUPPORTS

THE OTHER STRAON

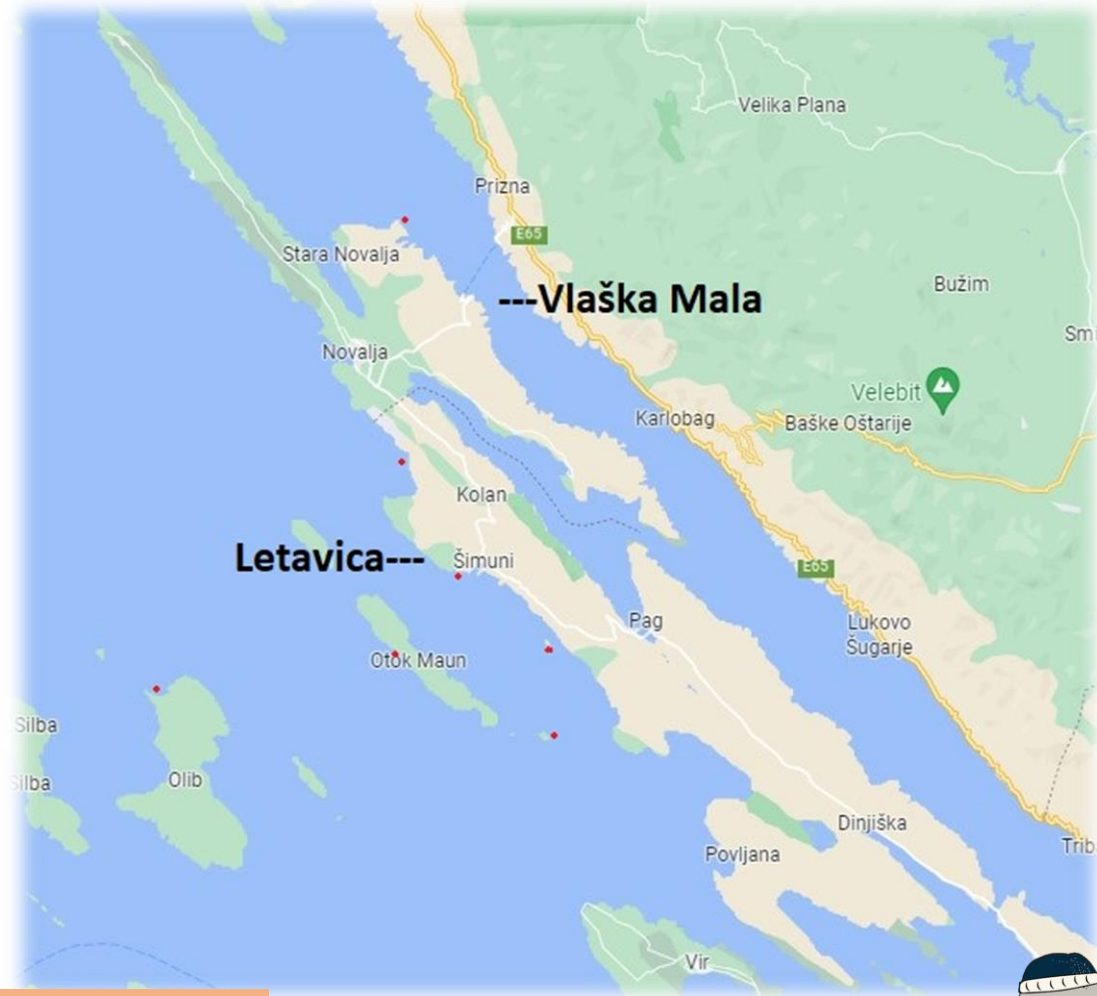
PROJECT

Foka diving center/ Vedran Dorušić
Nikolina Ćuk

Navalis center/



ONE ISLAND TWO APPROACHES



THE BIGGEST DIFFERENCE

*Images from google



VLAŠKA MALA



STRATON PROJECT (LETAVICA)



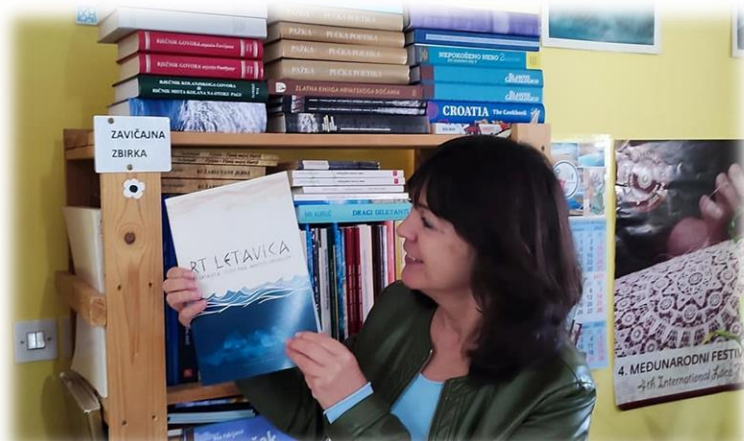
UNDERWATERMUSE – FINAL EVENT | Lecce | June 3-5, 2022

General States of the bottom-up management of underwater heritage



How scientific research helps tourism

- It is important to constantly emphasize that this is **OUR TREASURE** (the locals like to brag)
- Often present in various media
- Publish - as soon as a video or photo is transferred to a laptop



UNDERWATERMUSE – FINAL EVENT | Lecce | June 3-5, 2022

General States of the bottom-up management of underwater heritage

conclusion

- When science and tourism go hand in hand the results are great
- This example is quickly accepted by others
- The best way to protect - **constant presence**



Around the Mediterranean.

Caesarea: underwater archaeological park

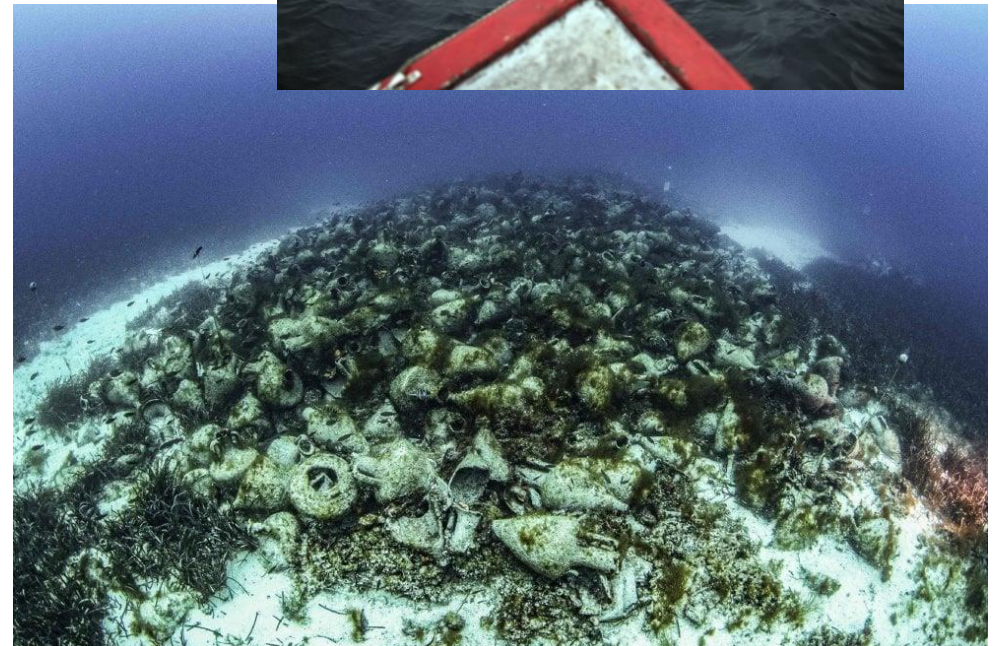


Around the Mediterranean. Greece and other projects

The first Greece underwater museum: the Peristera - Alonissos wreck

Located at the islet of Peristera near Alonissos, in the complex of the Northern Sporades islands, the Peristera wreck was not only a pioneer in ancient times but has paved the way for a new dimension of underwater archaeology in today's world.

In 2020 the shipwreck of Peristera opened to the public for divers and became the first underwater ancient archaeological museum in Greece



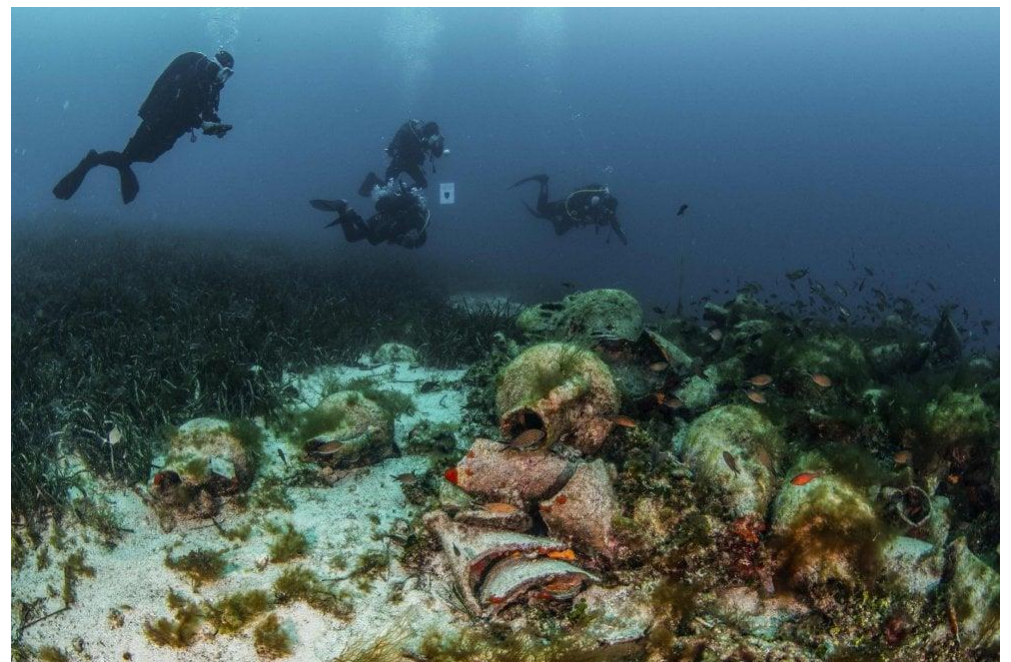
Alonissos Underwater Museum, Peristera

The Peristera merchant ship is estimated to have had the capacity to carry some 4,000 amphorae and effected a displacement of 120 tons.

Discovered accidentally by fishermen in 1985, extensive excavations occurred on this significant archaeological site in 1990. Its ongoing study has yielded valuable information to the study of Greek and Mediterranean underwater archaeology including the advanced understanding of shipbuilding and nautical engineering the classical Greeks possessed, far ahead of their time.

The shipwreck is now open to recreational divers who will have the opportunity to explore it under the guidance of experienced divers. The Museum operated in pilot mode until October 2020 and is now open to everyone during the summer season.

[museum.alonissos.gov.gr/en/about/
Peristera's ancient ship wreck – NOUS](https://museum.alonissos.gov.gr/en/about/Peristera%20s%20ancient%20ship%20wreck%20%E2%80%93%20NOUS)



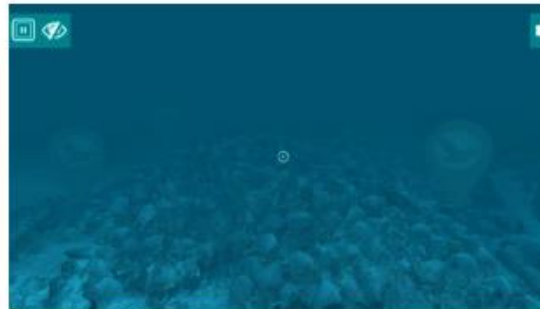


The operation of this museum was made possible by the technological innovations and successful implementation of the NOUS Undersea Vision Surveillance System: 5 submarine units fully equipped with cameras and windshield wipers fitted to the camera lenses. The underwater operation is controlled by multitasking computing units. The network of underwater cameras is powered by a 200 m long cable reaching to the shore, connected to a purpose-built solar power station at Peristera.

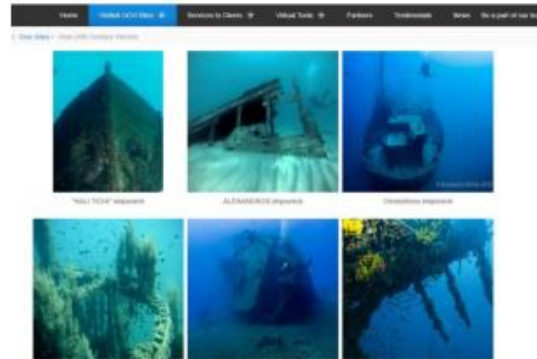




Knowledge Awareness Centers (KACs), Bluemed Project, 2017-2020

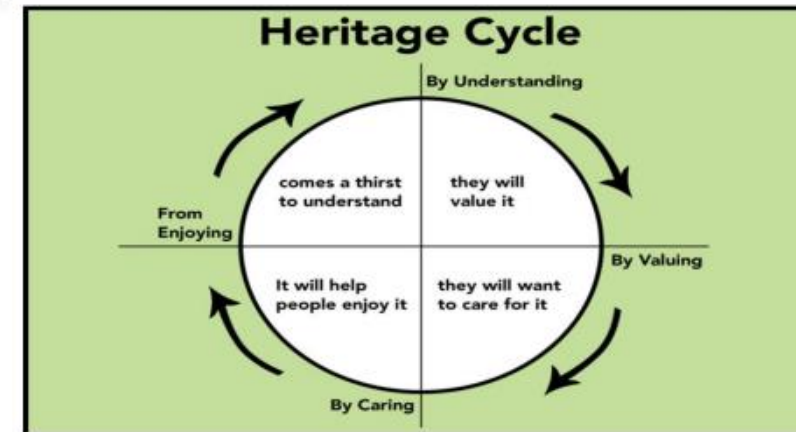


Dive Virtually: Peristera, Greece

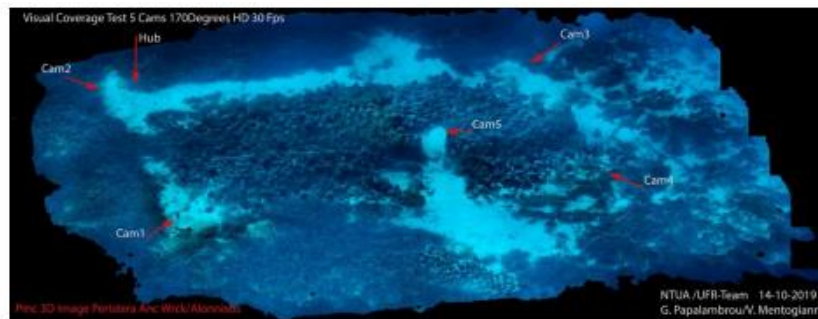


BLUEMED platform, <http://meddiveinthepast.eu/>

Accessibility of UCH for all via technology



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- Augmented and Virtual Reality technologies (VR/AR).
- Expand tourism development potentials through enhancing diving tourism.

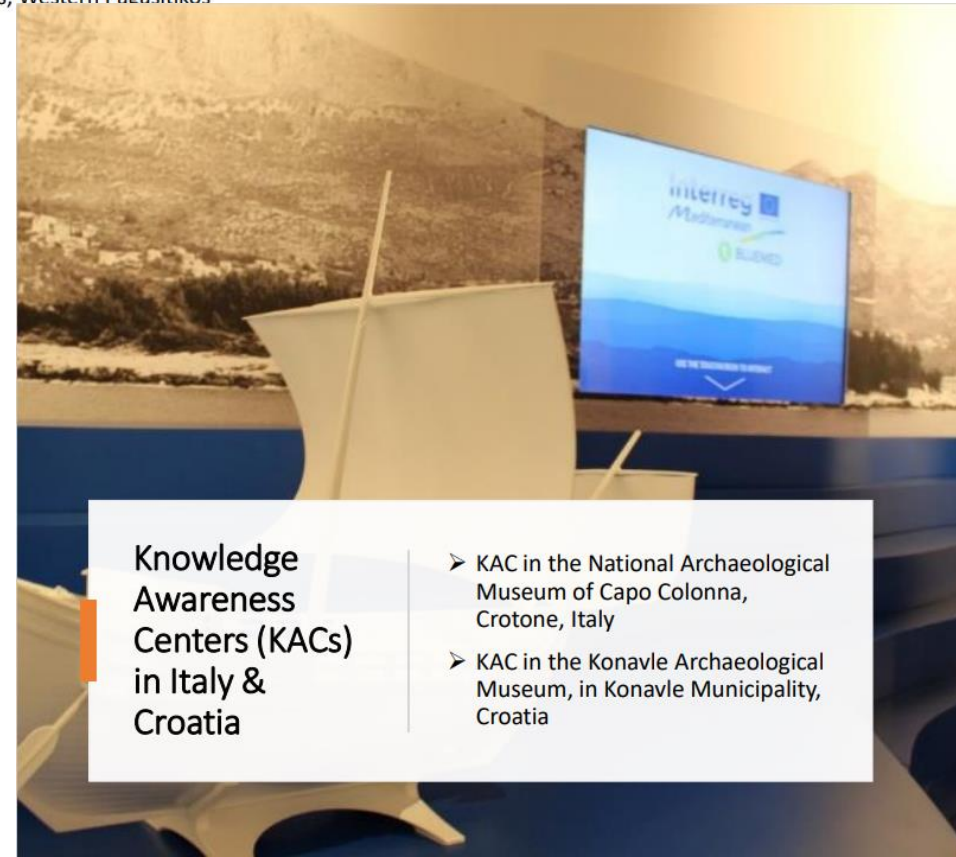
Around the Mediterranean. Greece, Croatia, Italy

BlueMed project



Knowledge Awareness Centers (KACs) in Greece

- Chora, Alonissos Island
- Amaliapolis, Western Pagasitikos



Knowledge Awareness Centers (KACs) in Italy & Croatia

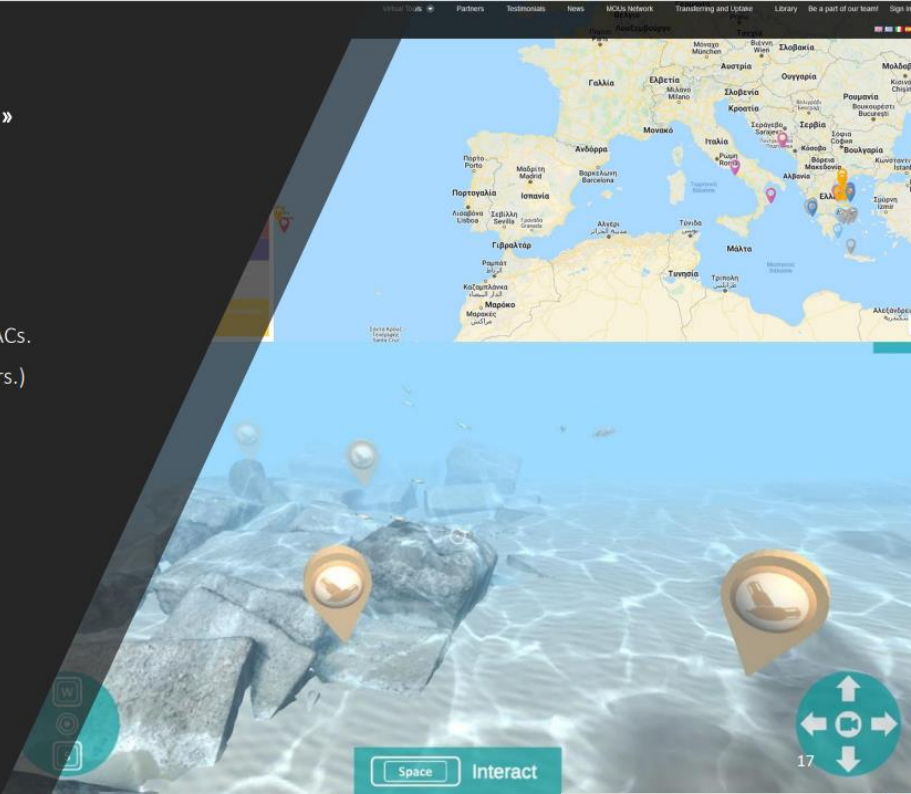
- KAC in the National Archaeological Museum of Capo Colonna, Crotona, Italy
- KAC in the Konavle Archaeological Museum, in Konavle Municipality, Croatia



BLUEMED web platform « MedDive in the Past »

<http://meddiveinthepast.eu/web/bluemed>

- Interactive map of accessible Underwater Cultural and Natural Heritage sites in the Mediterranean.
- Digital material and information of wrecks, submerged sites, diving parks, museums, KACs.
- Services for divers (diving parks, guided tours.)
- Virtual dive in selected sites.
- Network of stakeholders
- BLUEMED model roadmap.



Around the Mediterranean. Greece, Croatia, Italy

Various projects

Atlantis Consulting S.A.



MAREBOX
EACEA 06/201924
(01/01/2020 – 31/12/2021)
<https://www.marebox.eu/>



- Integration of cutting-edge technologies and outcomes:
- A Residency Programme for artwork creation that mingles the cultural with artistic and creative sector and technology.
- 3 Exhibitions in Europe (Berlin Germany, Thessaloniki Greece and Cosenza Italy) with over a thousand visitors in total.
- Virtual walkthrough of the Water Weighs exhibition.
- 2 georeferenced digital applications with virtual reality elements.
- Peristera dry diving AR app
- https://www.youtube.com/watch?time_continue=7&v=yWoXPHKAPk&feature=emb_logo

Co-funded by the Creative Europe Programme of the European Union

MeDryDive
(EASME/COSME)
<http://medrydive.eu>

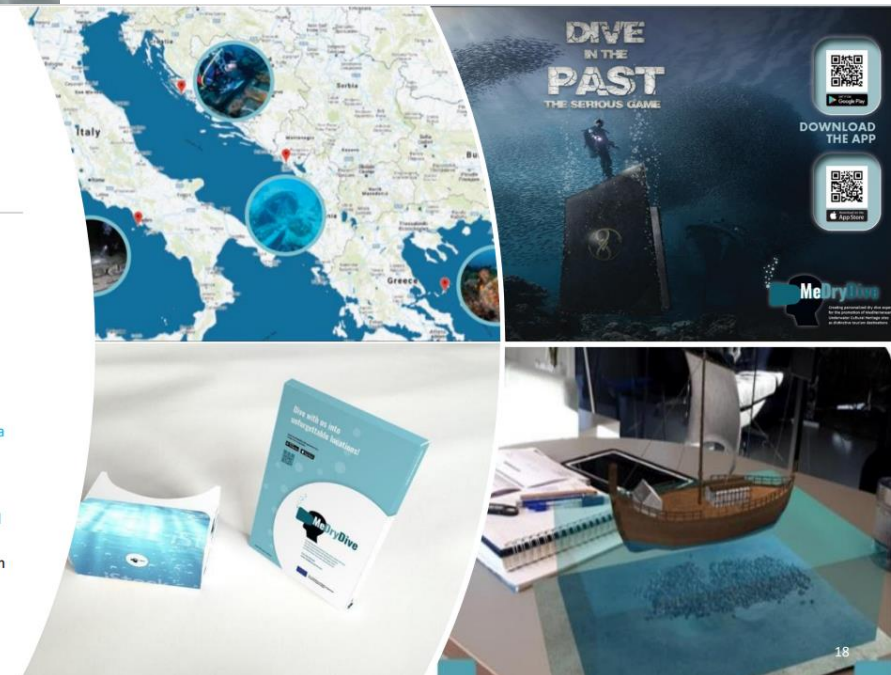
CCI downloadable apps

- Serious game
- AR leaflet
- VR carton glasses
- Videos

4 pilot sites:

- The ancient shipwreck of Peristera in Alonissos, Greece;
- The Underwater Archaeological Park of Baiae in Naples, Italy;
- The Gnalčić shipwreck at the island of Gnalčić near Pašman in Croatia;
- The modern shipwreck "Oreste" in Budva, Montenegro.

Co-funded by the COSME programme of the European Union



IL PROGETTO

IL PROGETTO

Il progetto MUSAS, ideato e diretto dall'archeologa dell'ICR Barbara Davidde, intende sperimentare su scala sovregionale un modello integrato di monitoraggio e valorizzazione del patrimonio archeologico sommerso, nelle collezioni museali e in situ, in modo da costituire una buona pratica da estendere e replicare su altri siti. Il progetto mira anche alla messa in rete di aree archeologiche sommerse e Musei che conservano reperti di provenienza subacquea attraverso l'adozione di soluzioni tecnologiche innovative.



GLI OBIETTIVI E I RISULTATI:

- 1) **Portale web** per la fruizione del **Museo Virtuale dell'Archeologia Subacquea**, nel quale sono illustrati attraverso immagini/schede e ricostruzioni 3D i reperti di provenienza subacquea presenti nei Musei.
- 2) Sistema di **esplorazione aumentata** e **ricostruzione dei siti archeologici sommersi** coinvolti nel progetto.
- 3) Una rete di **nodi sensori sottomarini** innovativi, dispiegabili in modo flessibile per il **monitoraggio ambientale**, funzionale alla verifica dello stato di conservazione dei siti, e alla localizzazione dei subacquei.
- 4) La definizione di **buone pratiche** per promuovere la conoscenza dell'archeologia subacquea, promuovere percorsi di visita sia reali che virtuali in ambiente sommerso e subaereo, promuovere il turismo archeologico subacqueo ampliandone le esperienze sensoriali, monitorare e proteggere i siti archeologici subacquei.



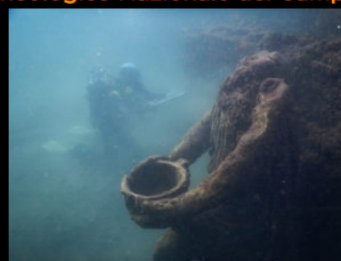
I SITI ARCHEOLOGICI E I MUSEI INTERESSATI DALL'INTERVENTO:

Baia (Bacoli, NA): **Parco Sommerso** (Villa dei Pisoni e Ninfeo di Punta Epitaffio) e **Museo Archeologico Nazionale dei Campi Flegrei**;

Egnazia (Fasano, BR): **porto sommerso** e **Museo Archeologico Nazionale Giuseppe Andreassi**;

Kaulonia (Monasterace, RC): **Parco archeologico sommerso** e **Museo Archeologico dell'antica Kaulon**;

Crotone: **Museo Archeologico Nazionale** e **Museo e Parco Archeologico di Capo Colonna**.



RICOSTRUZIONI VIRTUALI

Il Progetto MUSAS ha permesso di ricostruire virtualmente i siti di Baia - Villa dei Pisoni, Baia - Ninfeo imperiale sommerso di Punta Epitaffio, Egnazia - porto romano, unendo le ipotesi interpretative degli archeologi ai rilievi ottico-acustici eseguiti direttamente sul campo.



Progetto MUSAS - Il Ninfeo Imperiale Sommerso di Punta dell'Epitaffio a Baia



Guarda più...



Condividi



Around the Mediterranean. Spain

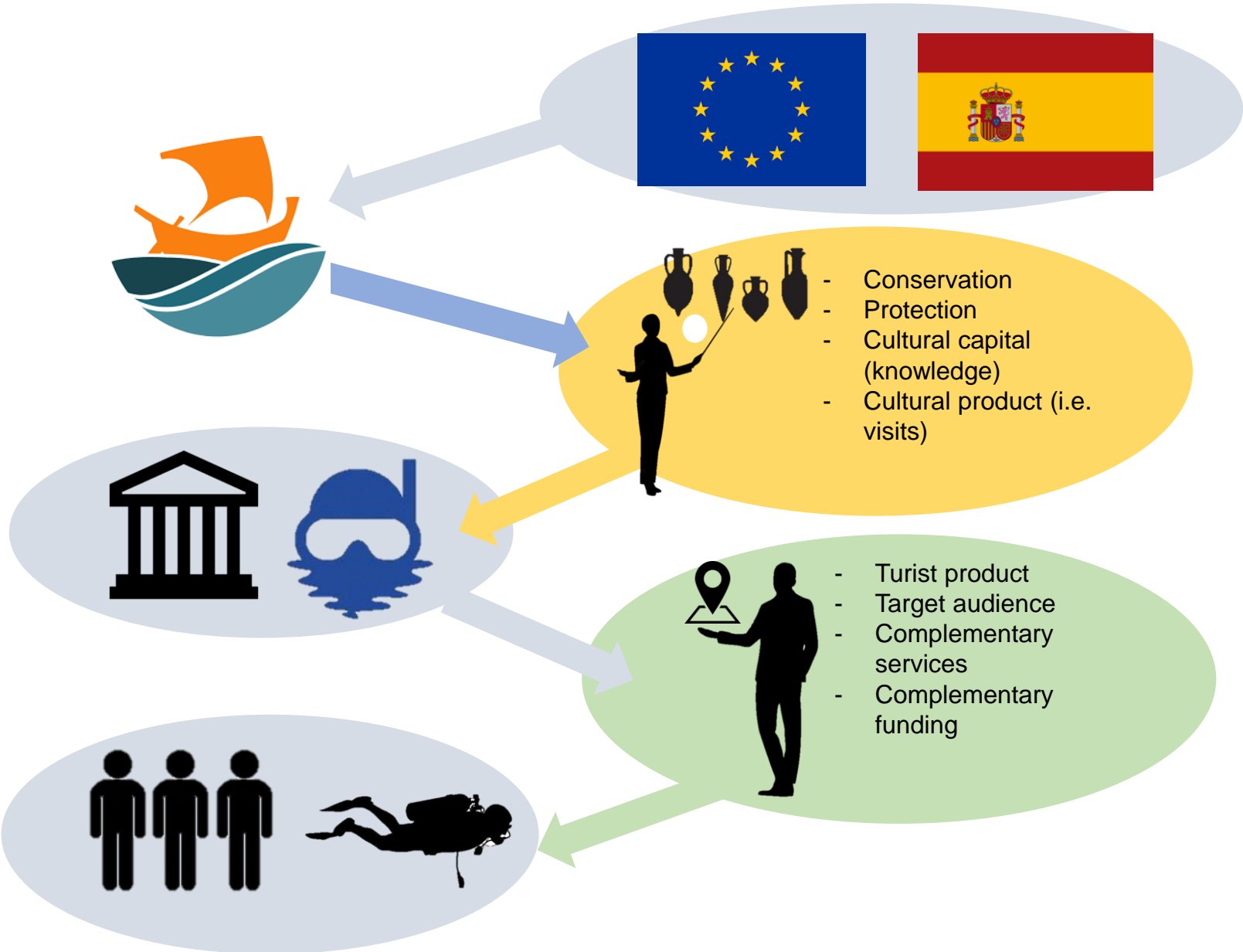
"A social and participatory underwater cultural heritage. Public-private collaboration for the enhancement of the underwater heritage of Algeciras (Spain)".

Carlota Pérez-Reverte Mañas & Felipe Cerezo Andreo (University of Cádiz)



Local Community
Oral History
Archives
Rov
Magnetometer
Sub bottom
profiler

Around the Mediterranean. Spain



The Italian experiences

Some marine parks and underwater trails, such the positive experiences of Baia and the Sicilian trails, contrast with the tens of coastal, intertidal 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.

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 Soprintendenza Archeologica has carried on some research and documentation works, while the Istituto Superiore per la Conservazione ed il Restauro 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.

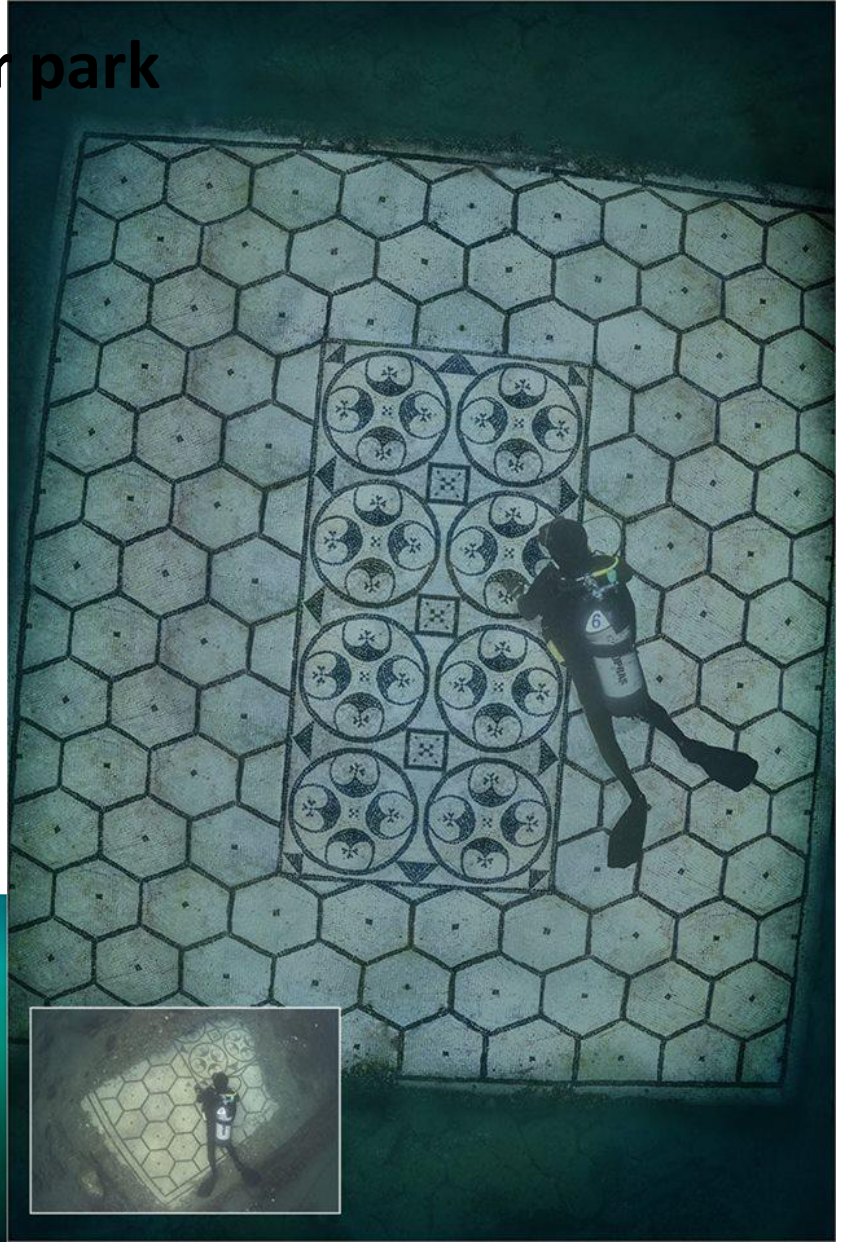
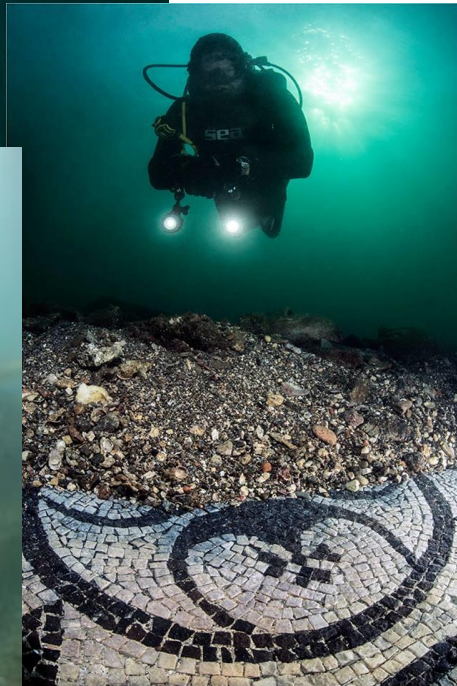


The Italian experiences



Ancient and current view of Phlegraen Fields

Phlegraean Fields: Baia MPA - underwater park



Phlegraean Fields: Baia MPA underwater park





a



b



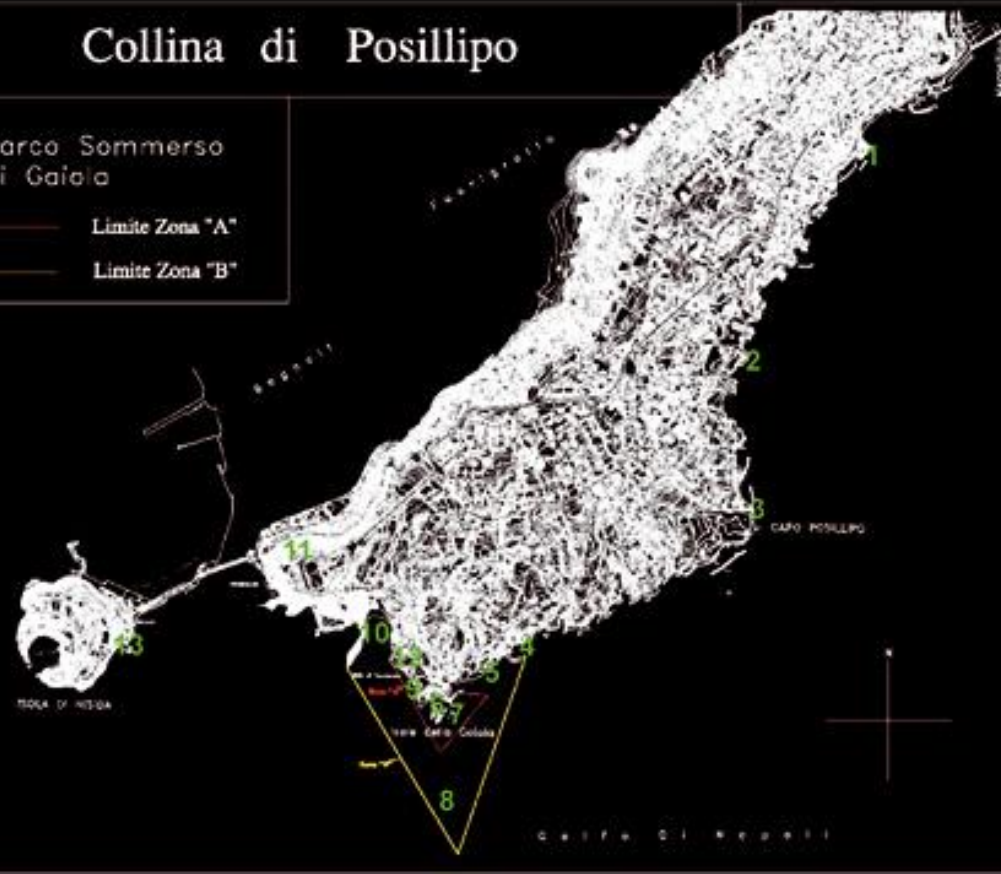
 by Matteo Collina

Collina di Posillipo

Parco Sommerso di Gaiola

— Limite Zona "A"

— Limite Zona "B"



© Centro Studi Interdisciplinari Gaiola



13



12



9

14



10



9



8



7



6



5



1



2



3



4

- 1. Palazzo Donn'Anna
- 2. Villa Pierce
- 3. Villa Volpicelli
- 4. Marechiaro
- 5. Casa degli Spiriti

- 6. Isolotti della Gaiola
- 7. Mura romane sommerse (Gaiola)
- 8. *Parazoanthus axinellae* (Secca Cavallara)
- 9. Grotte di Trentaremi

- 10. Baia di Trentaremi
- 11. Grotta di Seiano
- 12. Pausilypon: teatro romano
- 13. *Larus cachinnans michahellis* (Nisida)

Phlegraean Fields: Gaiola MPA - underwater park

On the Park seabottom, it is possible to enjoy the remains of landings, walkways, nymphaeums and fishponds currently submerged due to bradyseism, largely pertaining to the Imperial Villa of Pausilypon, which belonged to the Roman freedman Publius Vedio Pollio (1st century BC); after his death this luxurious complex became part of the imperial properties.


















Interministerial Decree 7 August 2002 n. 304 - Establishment of the submerged park located in the waters of "Baia", in the Gulf of Pozzuoli

Article 3 – finalities:

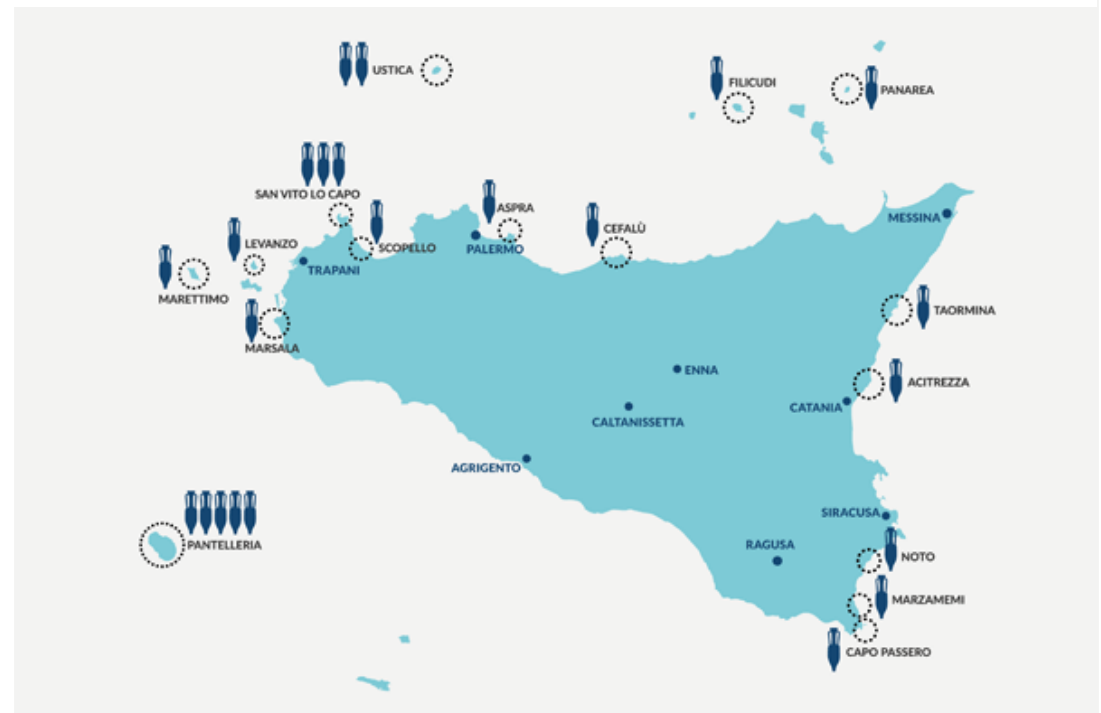
- environmental and archaeological protection of the area of interest
 - the valorization of environmental, historical, archaeological and cultural resources of the area, also for social and employment purposes;
 - the dissemination and communication of the knowledge of the maritime and coastal ecology and biology as well as the underwater archaeological heritage of the area;
 - the delivery of educational programs for the improvement of the general culture in the ecology, marine biology and archaeology;
 - the fulfillment of study and scientific research programs in the ecology, marine biology, environmental protection and archaeology sectors to assure the systematic knowledge of the area;
 - 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.
-
- https://www.ilsole24ore.com/art/baia-sommersa-modello-il-patrimonio-e-gestione-AEI8Cdm?refresh_ce=1

Sicily underwater trails

-  Ustica - Punta Falconiera
-  Ustica Punta Gavazzi
-  Aspra - Mongerbino
-  Cefalù - Kalura
-  Filicudi - Capo Graziano
-  Panarea - Basiluzzo
-  Taormina - Relitto delle colonne
-  Acitrezza - Isole dei Ciclopi
-  Noto - Relitto delle anfore
-  Marzamemi - Relitto delle colonne
-  Capo Passero - Relitto dei Marmi
-  Pantelleria - Cala Gadir
-  Pantelleria - Cala Tramontana
-  Pantelleria - Punta Li Marsi
-  Pantelleria - Punta Tracino

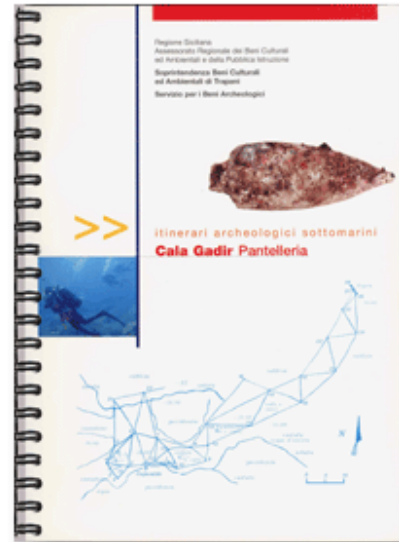


-  Pantelleria - Punta Tre Pietre
-  Marsala - Capo Boeo
-  Marettimo - Relitto dei Cannoni
-  Levanzo - Cala Minnola
-  San Vito Lo Capo - Relitto delle Anfore
-  San Vito Lo Capo - Relitto delle Macine
-  San Vito Lo Capo - Relitto del Kent
-  Scopello - Faraglioni
-  **ELENCO DIVING AUTORIZZATI**



Sicily underwater trails

Cala Gadir,
Pantelleria



Ustica

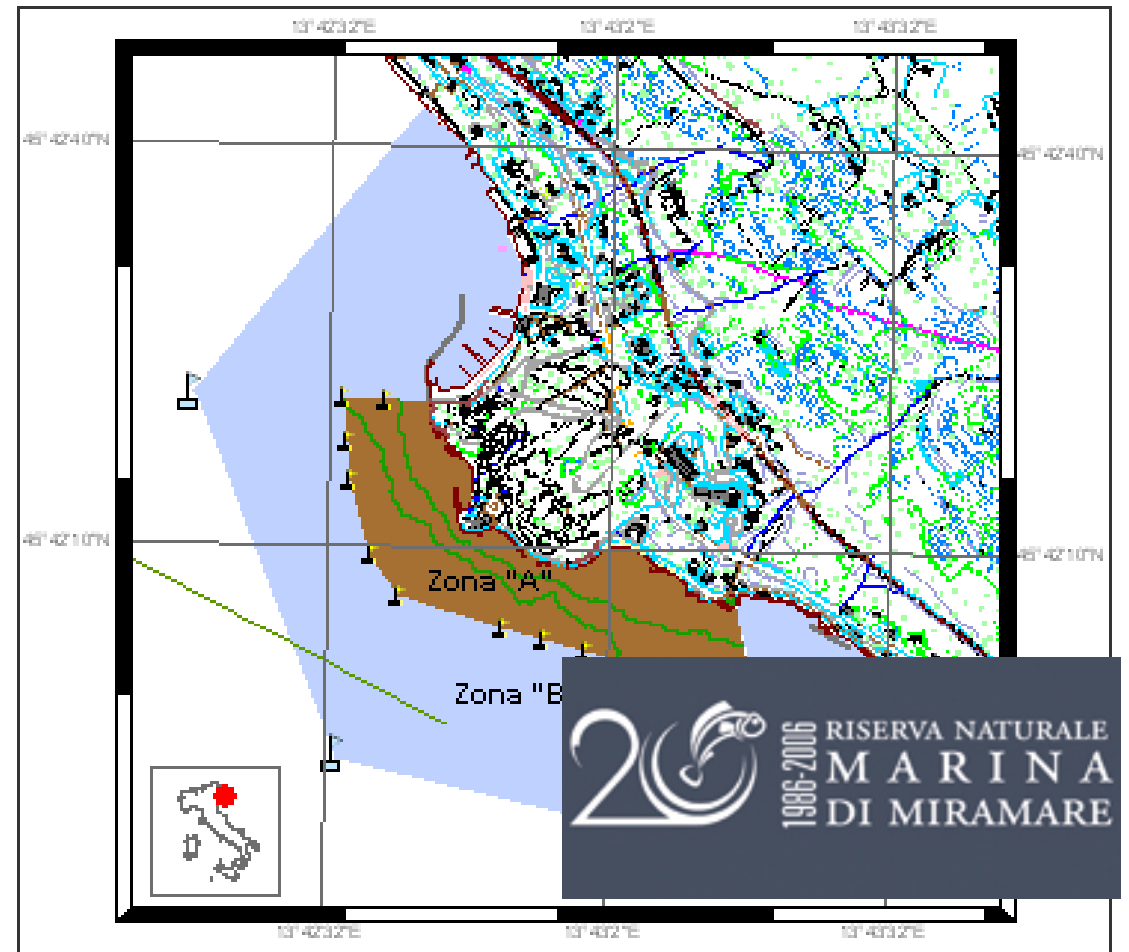
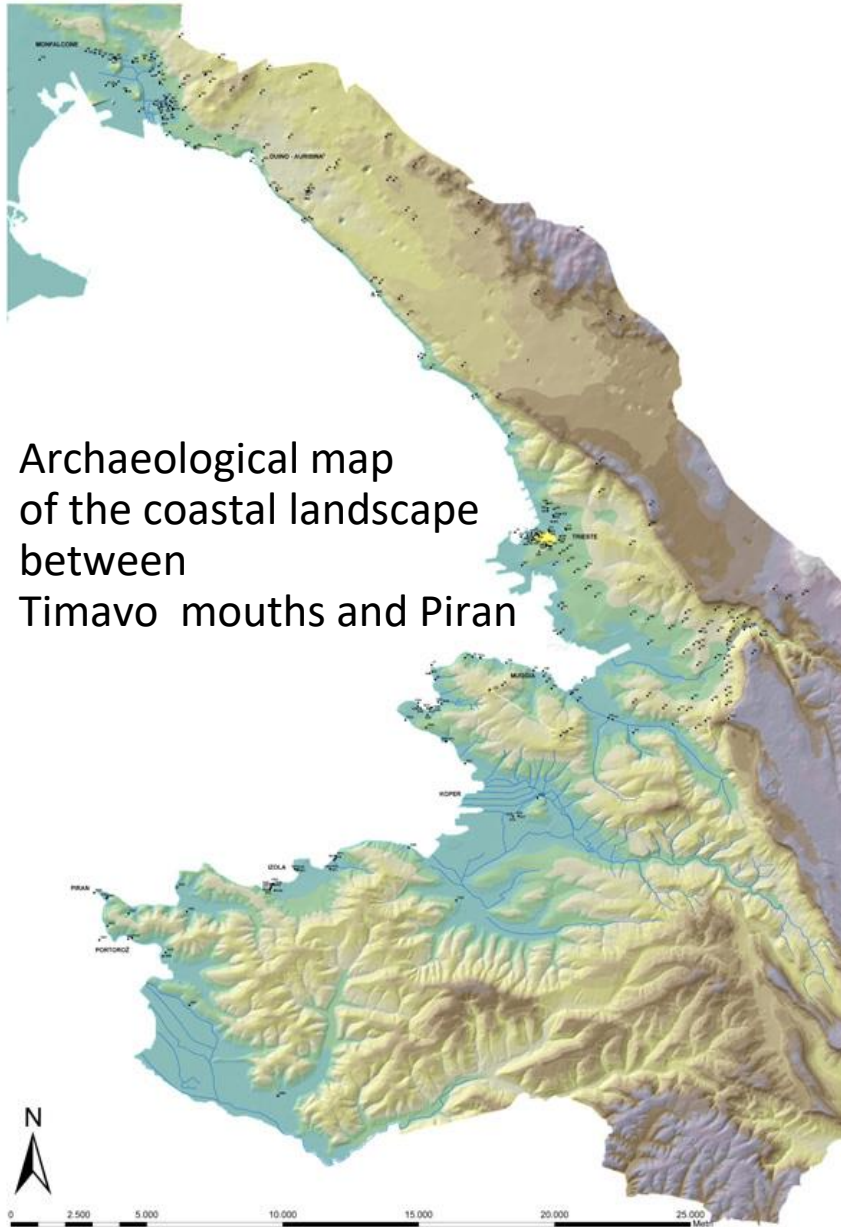




Case studies and projects in the Adriatic and Ionian sea

The Alto Adriatico case study.

Previous researches in MPA/CPA:
Project Interreg IIIa Italia – Slovenia Altoadriatico

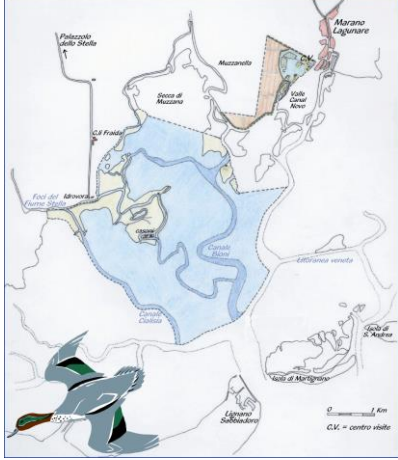


Previous researches in MPA/CPA



Storie dal mare Project The Marano Lagoon

Natural Parks
Valle Canal Novo
Foci dello Stella



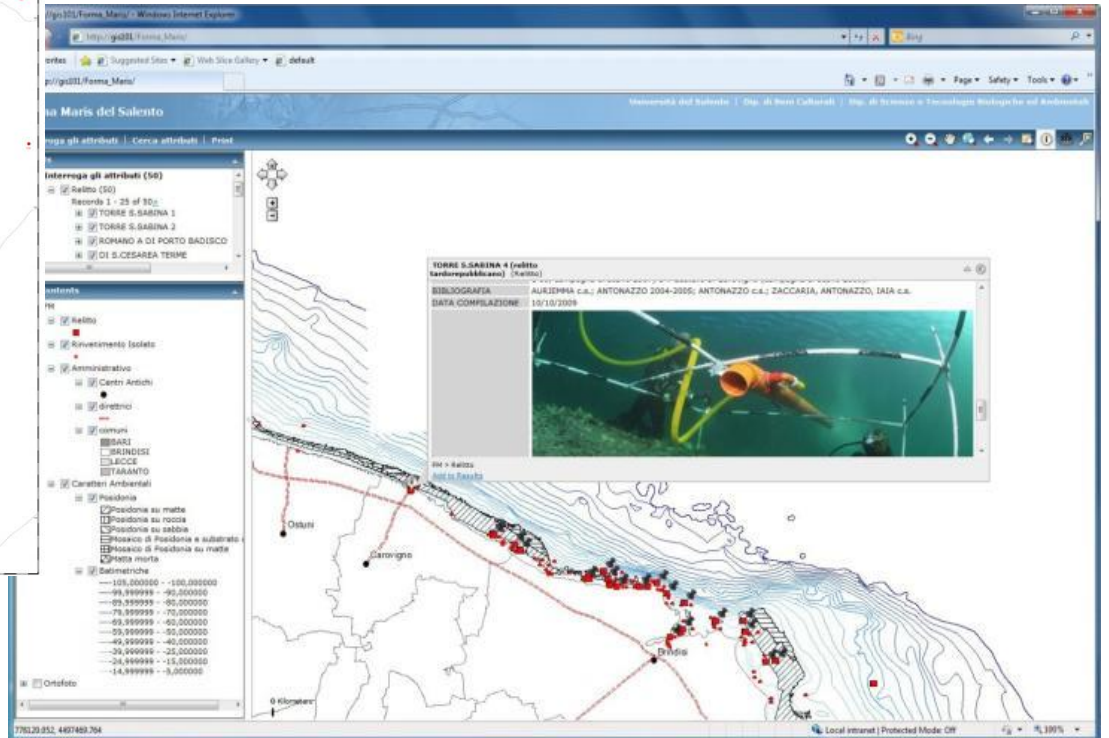
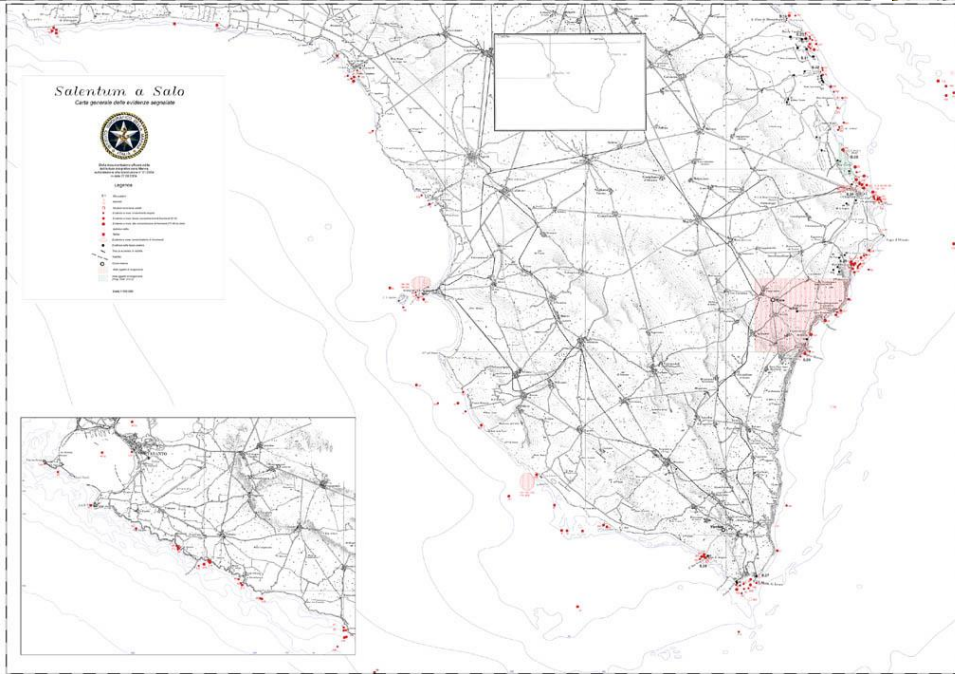
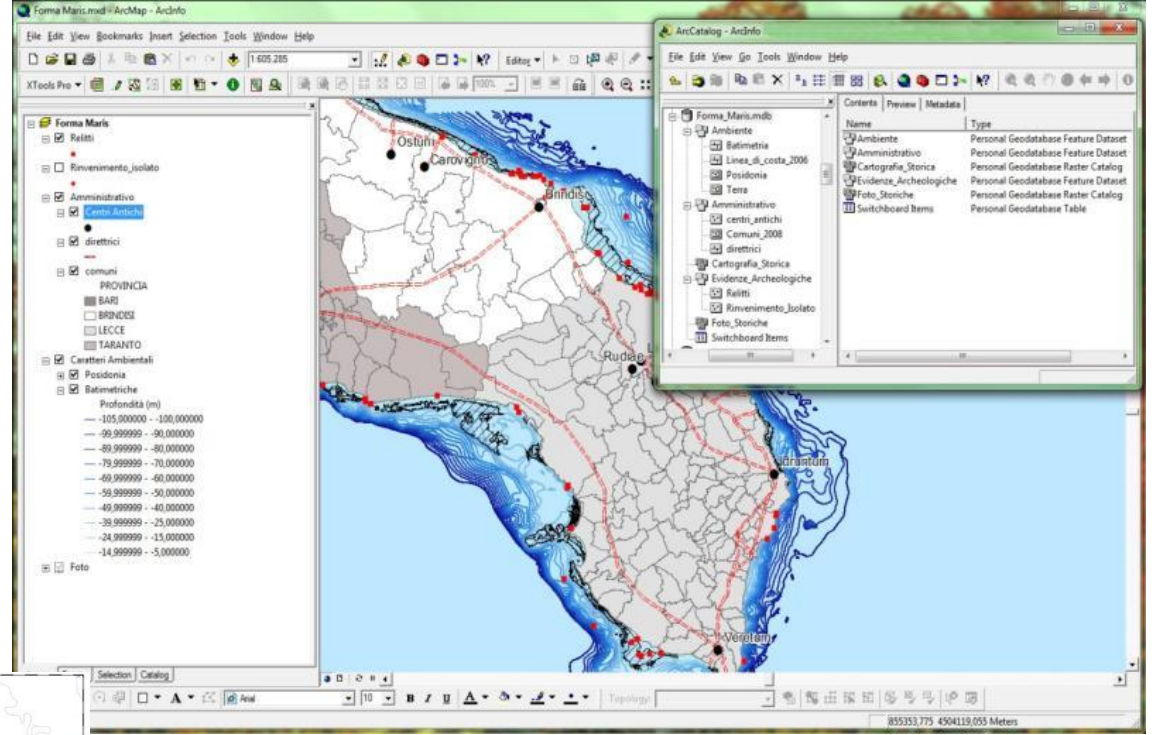
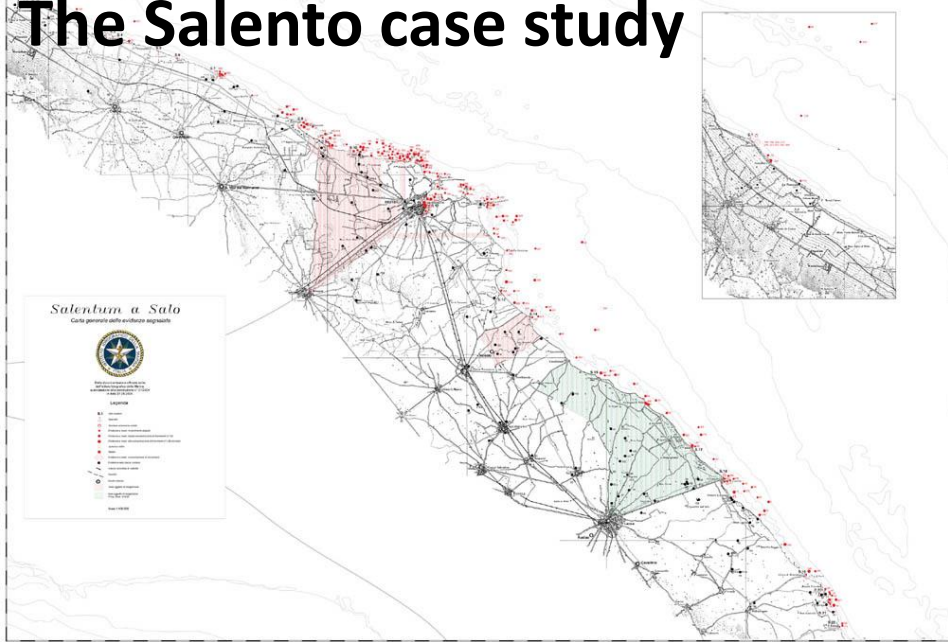


Alle porte del mare

Marano exhibition 2013



The Salento case study



Southern Puglia Underwater Archaeological Map

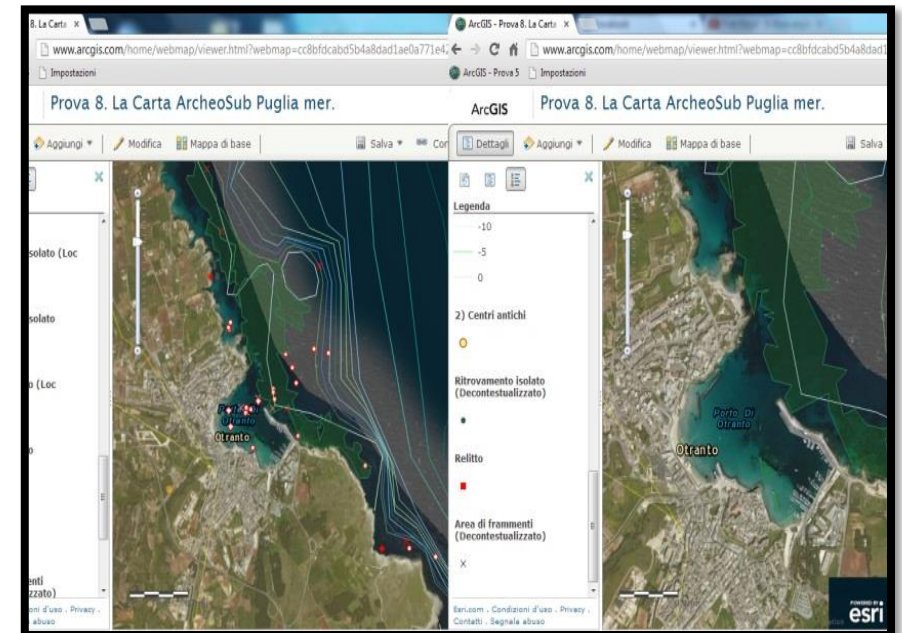
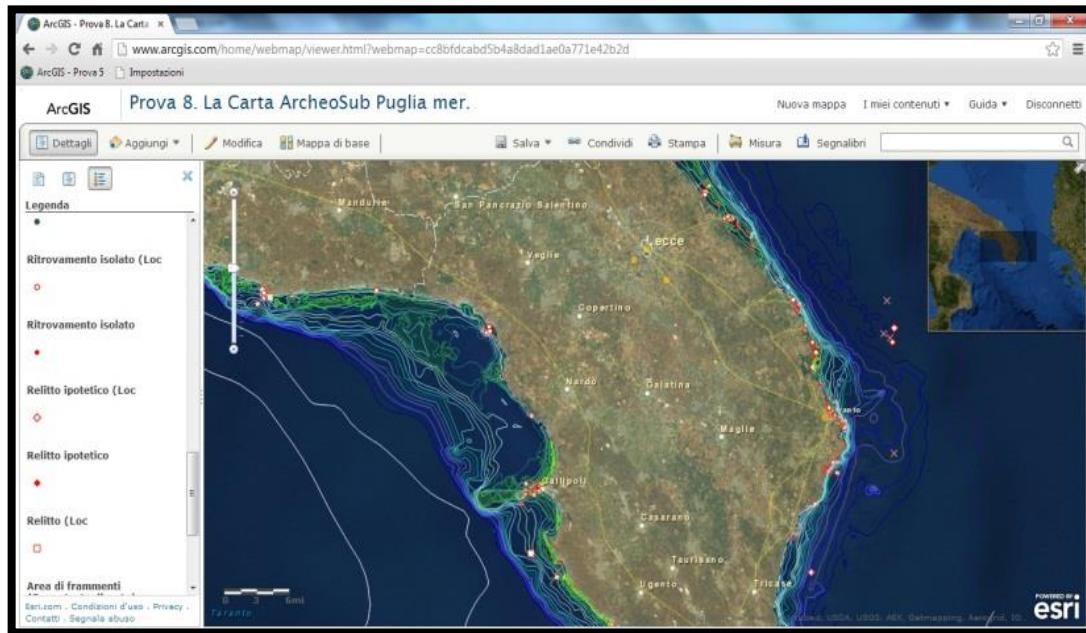
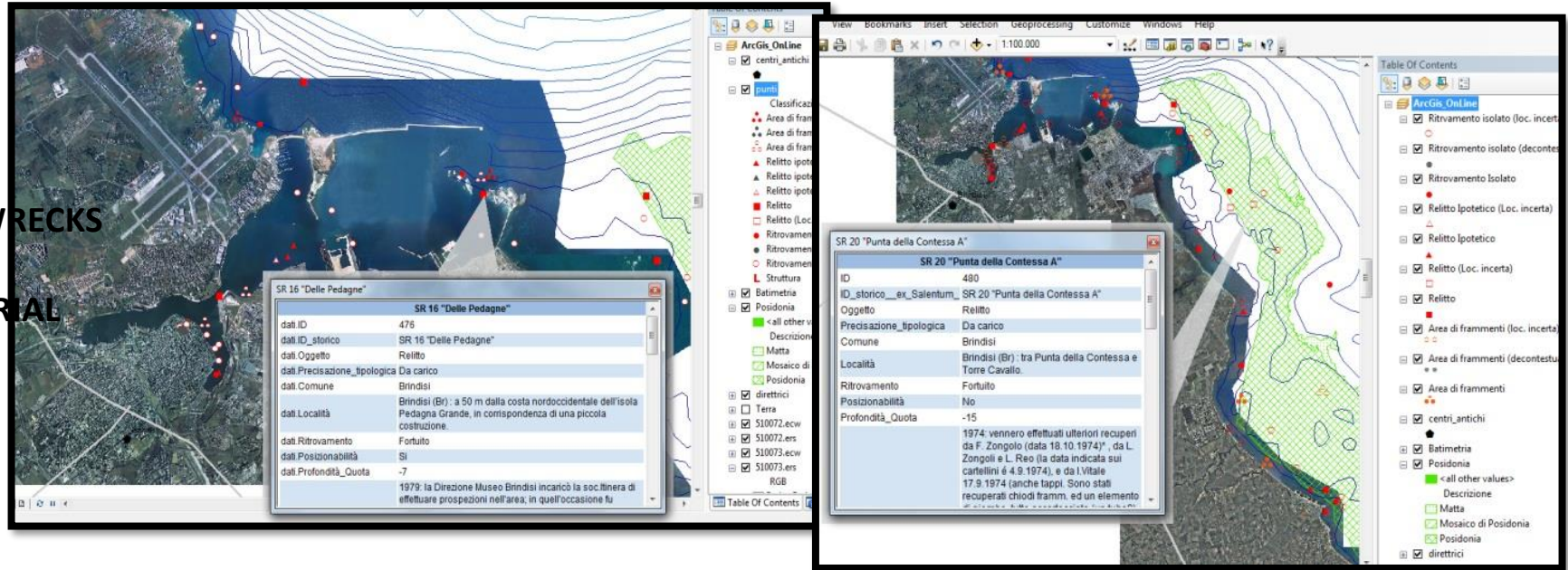
644 UNDERWATER
ARCHAEOLOGICAL
ITEMS

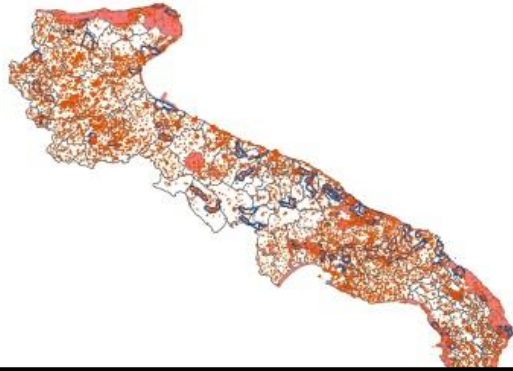
64 SHIPWRECKS/

50 PRESUMED SHIPWRECKS

14 SCATTERED MATERIAL
AREAS

516 ISOLATED/
DECONTEXTUALIZED
FINDS

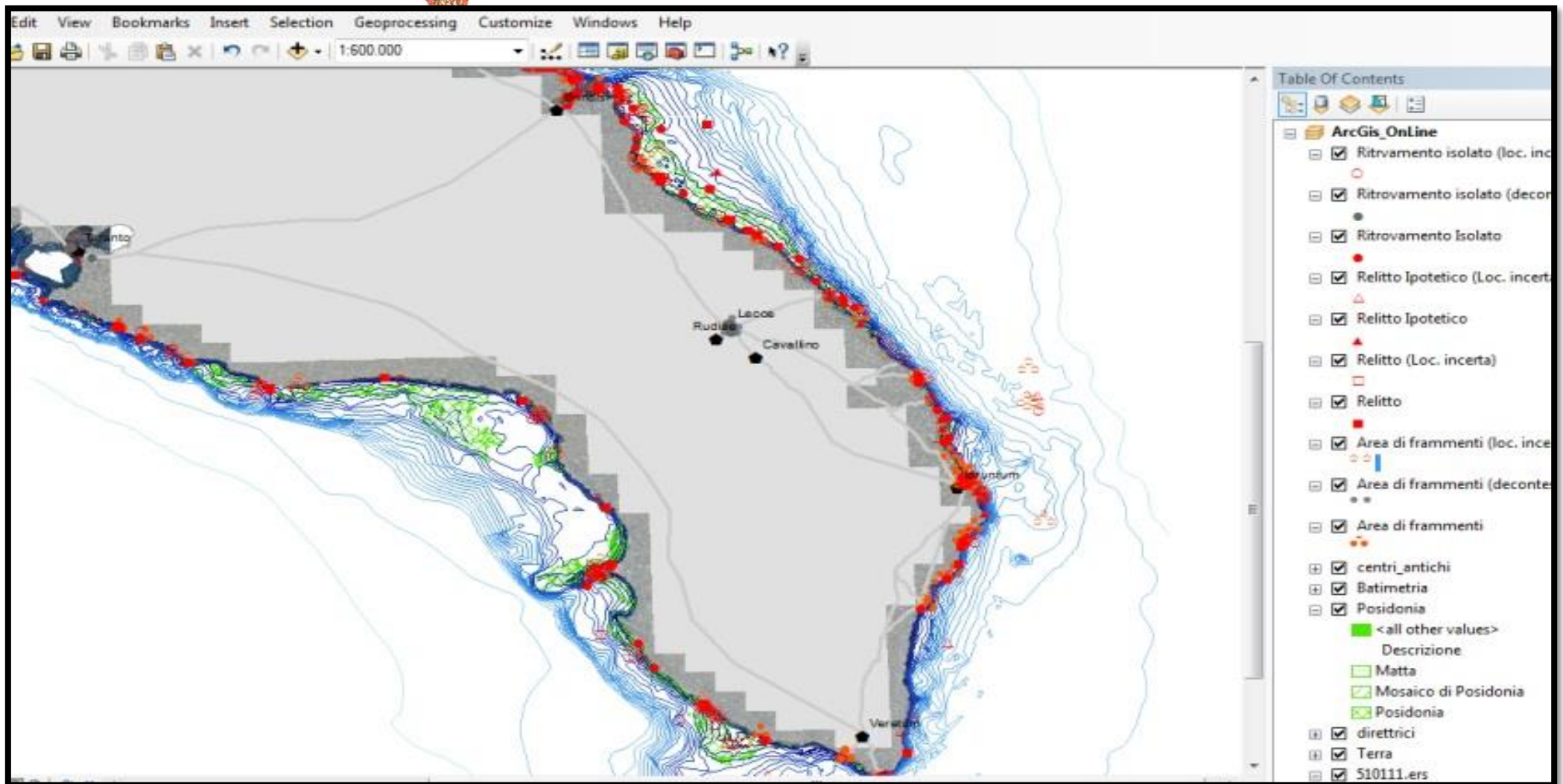




Puglia Cultural Heritage Map

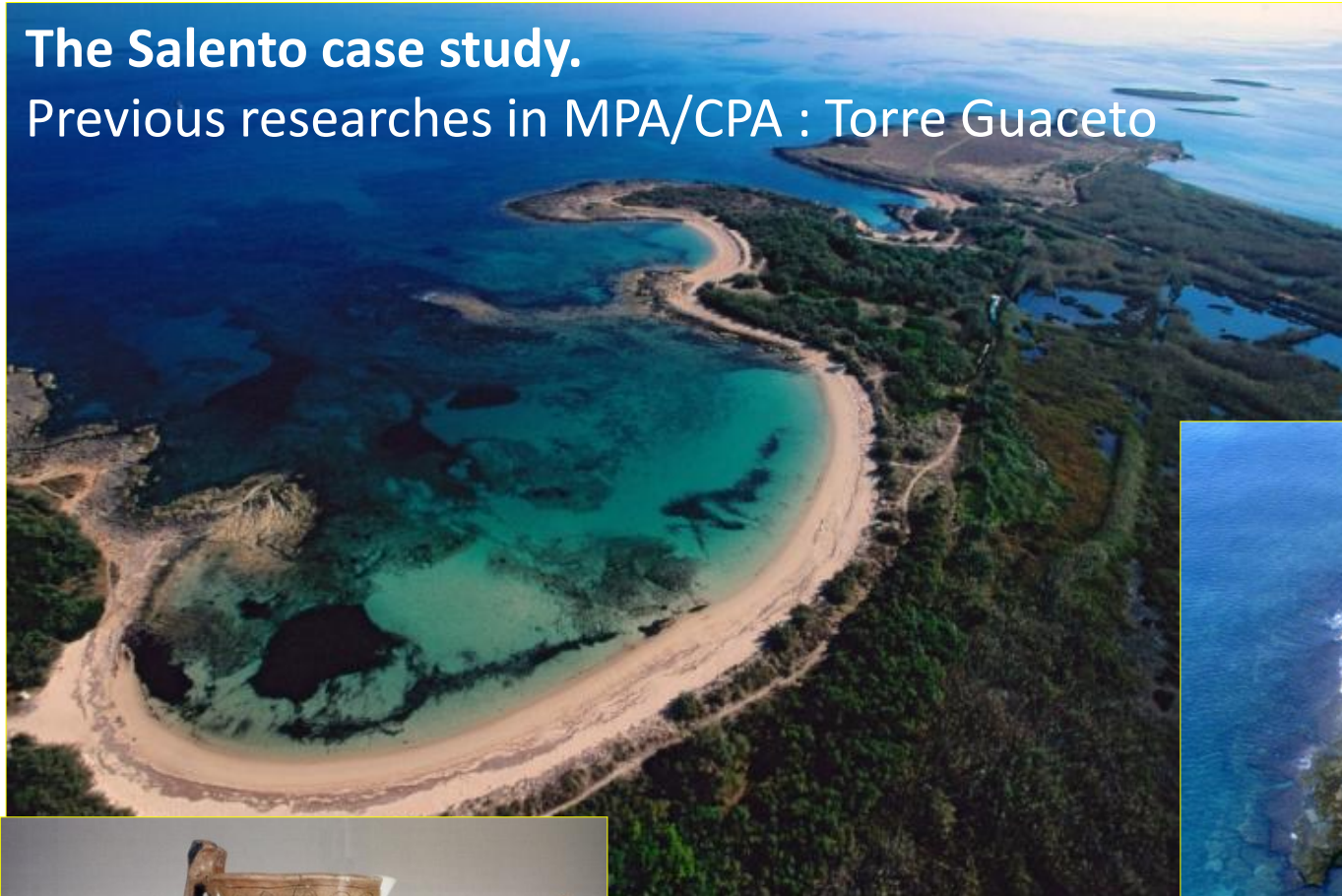
www.cartapuglia.it

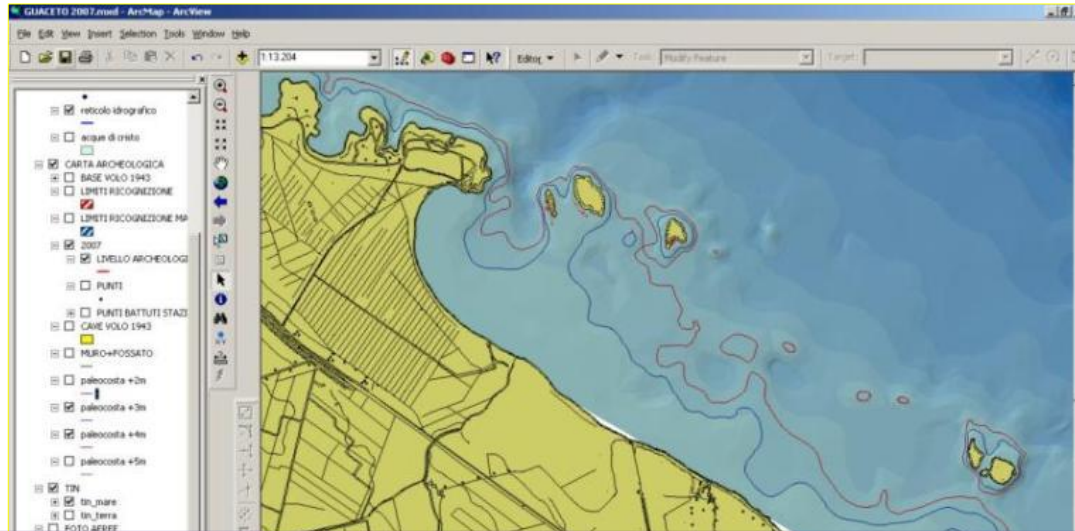
Underwater Cultural Heritage data implementation



The Salento case study.

Previous researches in MPA/CPA : Torre Guaceto

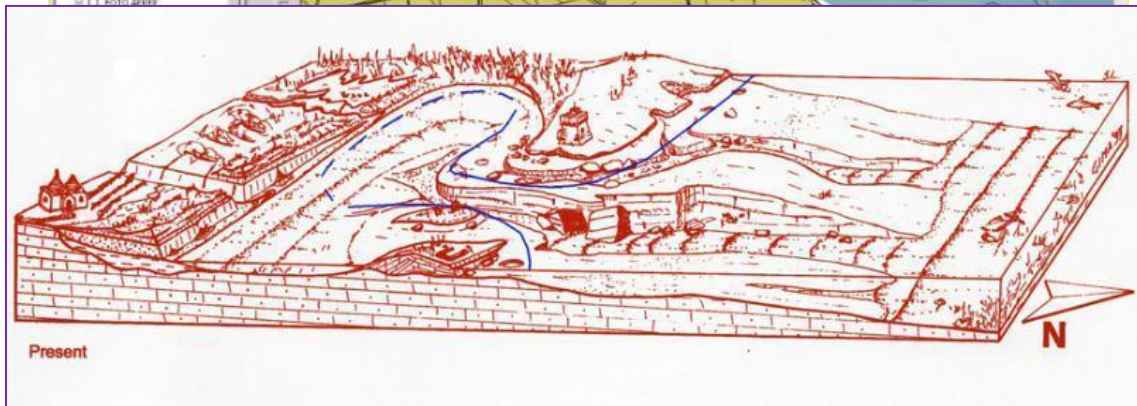




BRONZE AGE

-4 m m.s.l.

The inhabited areas are located on high terrains compared to a coastal plain (larger than the current one) characterized by abundant water flows (Canale Reale), widespread swamps and lush vegetation.

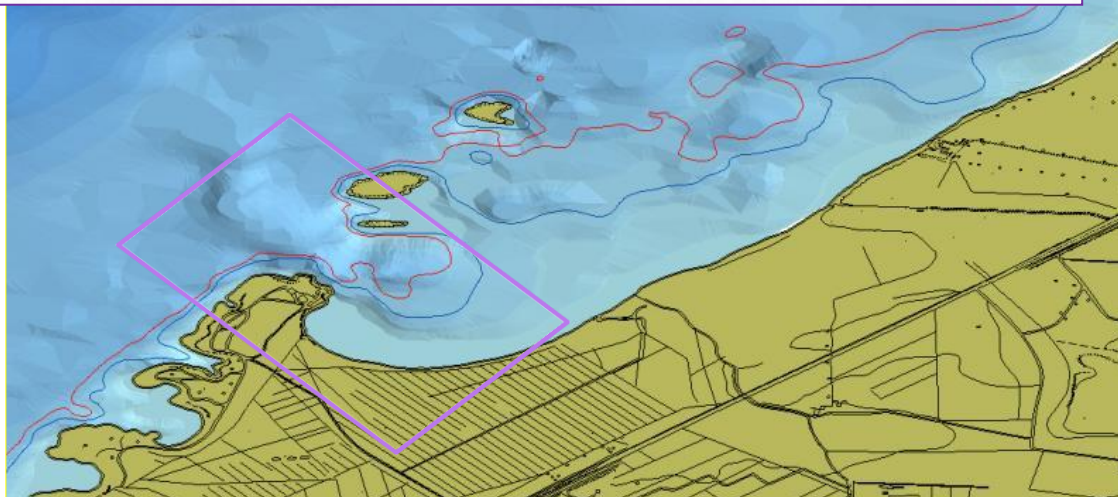


ROMAN AGE– LATE ANTIQUITY

-2.5/-3 m m.s.l.

In the Roman age the landing place coincides with a deep inlet, a sort of canal-harbour as shown by the deposits found on the 2nd islet.

The supposed tower / lighthouse and the wreck in front attest the marine ingression and the formation of the 3rd islet.



In situ preservation and enhancement project: Torre Guaceto permanent exhibition inside the Tower and VR

Il "caricatore" di Guaceto

Tra il secondo ed il primo secolo a. C. un piccolo insediamento lungo la costa permetteva l'attracco, il carico e lo scarico di piccole imbarcazioni che facevano la spola tra Guaceto ed il grande porto di Brindisi.



La merce veniva portata allo scaricatore con piccole chiatte trainate da buoi lungo i canali che scorrevano verso il mare.

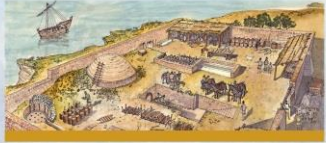
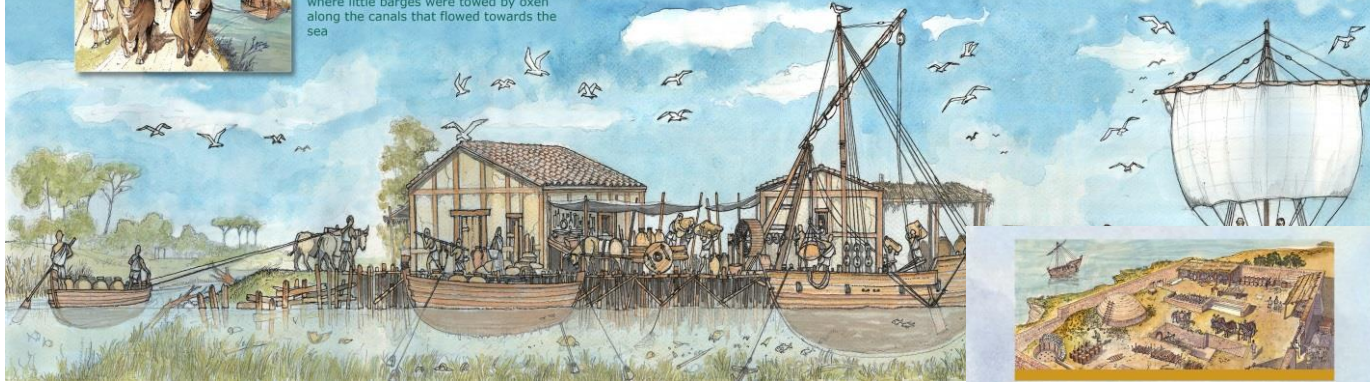
Goods were brought to the loading dock where little barges were towed by oxen along the canals that flowed towards the sea

Between the II and I centry BC there was a small settlement along the coast that allowed small boats from Torre Guaceto to Brindisi to dock, load and unload

Per caricare e scaricare la merce veniva usata la "capra", una sorta di piccola gru con un verricello al vertice dei pali. A small, wooden crane "capra" with a pulley at the top was used to load and unload goods



Guaceto's loading dock

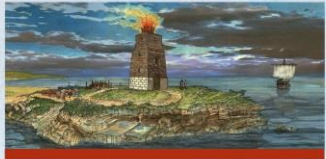


Le fornaci di Apani

Le fornaci erano poste in prossimità di cave di argilla e sorgenti di acqua dolce. La produzione principale riguardava almeno due tipi di anfore, destinate a contenere vino e olio. Queste anfore sono state rinvenute in tutto il Mediterraneo, a dimostrare la grande distribuzione e il successo di cui godevano i prodotti dell'agricoltura salentina.

Apani's furnaces

Furnaces were positioned near clay quarries and fresh water springs. Two types of amphorae were produced: for wine and oil. These amphorae were found throughout the Mediterranean area, which shows how widely used and successful agricultural products from Salento were.



Il faro romano

Sul versante meridionale del III isolotto di Guaceto è possibile riconoscere i resti di una struttura a grandi blocchi quadrati, dal perimetro quadrangolare. La sua posizione, nell'ipotesi di ricostruzione del paesaggio antico che qui si propone, evoca l'identificazione con una torre-faro, posta ad indicare l'ingresso della baia.

The Roman lookout tower

Big square blocks mark the remains of an ancient, quadrangular building on the south side of the III Guaceto Island. It is supposed that this was a lookout tower that marked the entrance to the bay.



Il caricatore di Guaceto

Tra il secondo ed il primo secolo a. C. un piccolo insediamento lungo la costa permetteva l'attracco, il carico e lo scarico di piccole imbarcazioni che facevano la spola tra Torre Guaceto ed il grande porto di Brindisi.

Guaceto's loading dock

Between the II and I centry BC there was a small settlement along the coast that allowed small boats from Torre Guaceto to Brindisi to dock, load and unload.



In situ preservation and enhancement project: Torre Guaceto

archaeological and naturalistic trails with reproductions of archaeological artefacts (amphoras, anchors, other cargo remains, etc.).

PERCORSI BLU NELLA RISERVA NATURALE DI TORRE GUACETO

6. Piccoli nuclei dispersi di riproduzioni di anfore e di altra ceramica di varia cronologia

5. Piccoli nuclei dispersi di riproduzioni di anfore e di altra ceramica di varia cronologia

4. Piccoli nuclei dispersi di riproduzioni di anfore e di altra ceramica di varia cronologia

3. Ceppo e contromarra di ancora lignea

2. Relitto con carico nordafricano, comprendente quindi varie riproduzioni di anfore tardoimperiali di produzione tunisina, integre e frammentate

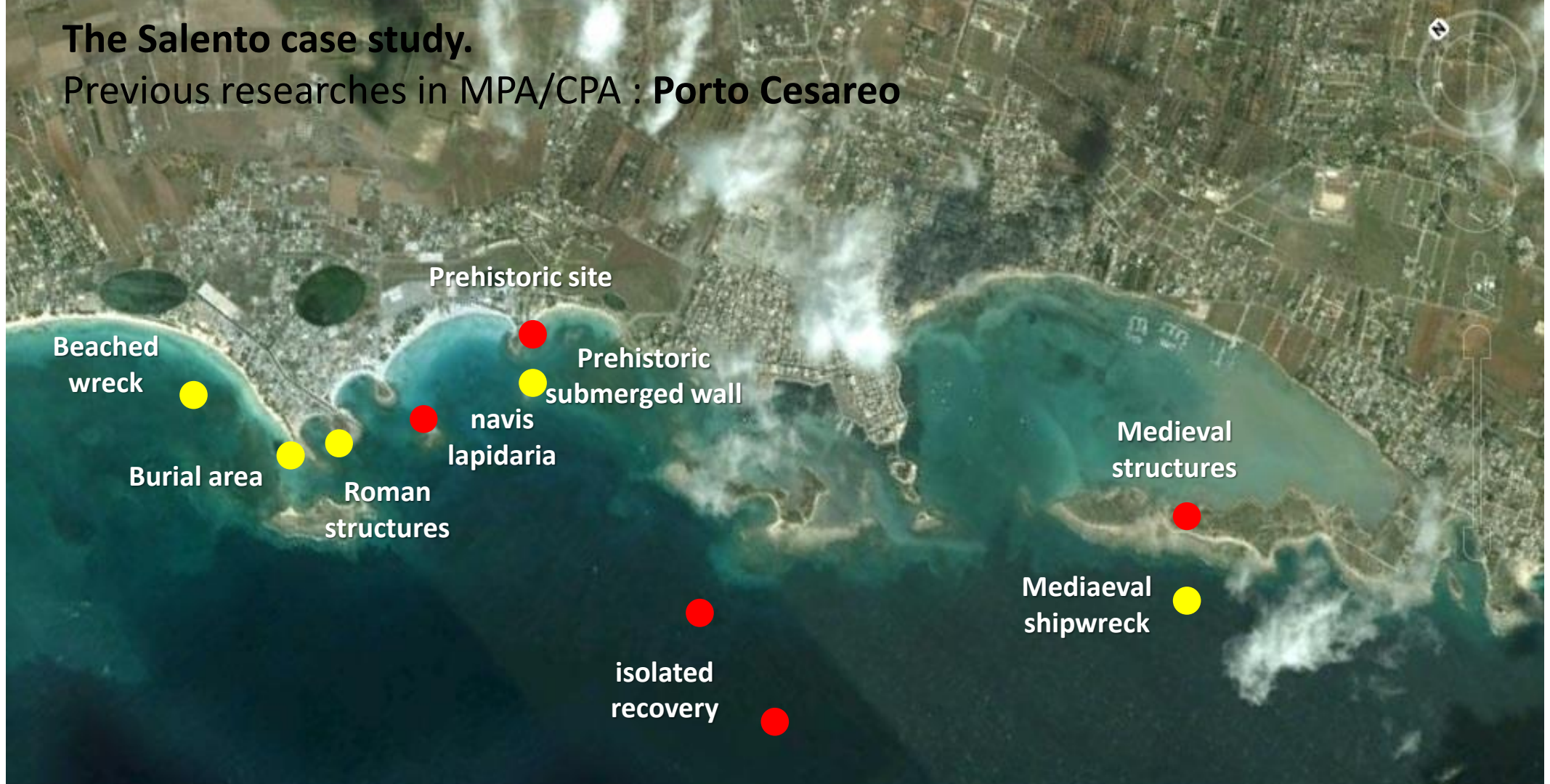
1. Relitto Torre Guaceto I con un cumulo di zavorra, varie riproduzioni di anfore tardoantiche integre e frammentate e di macine rotatorie manuali

Centro visite Torre Guaceto

Partenza per il percorso blu.

The Salento case study.

Previous researches in MPA/CPA : Porto Cesareo



● DOCUMENTED FINDS

● NEW FINDS

1413 m

Image © 2011 TerraMetrics
Image © 2011 DigitalGlobe
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2011 GeoEye

Area Marina Protetta Porto Cesareo

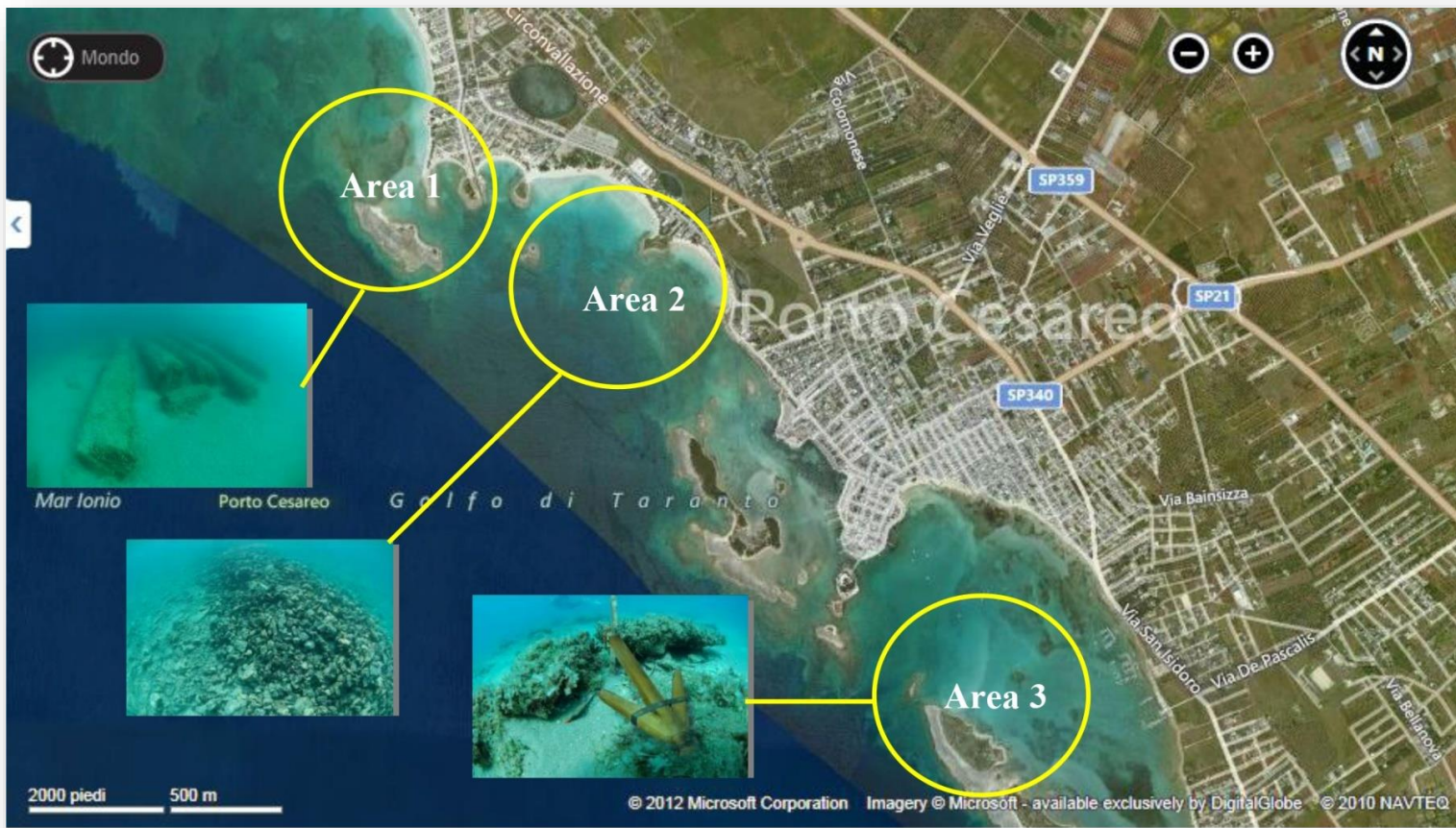
Ministero dell'Ambiente e della Tutela del Territorio e del Mare
DIREZIONE REGIONALE DELLA NATURA

ZONA A - RISERVA INTEGRALE (no man zone)
ATTIVITÀ PERmesse: ATTIVITÀ REGOLAMENTATE

ZONA B - RISERVA GENERALE (generally protected zone)
ATTIVITÀ PERmesse: ATTIVITÀ REGOLAMENTATE

ZONA C - RISERVA PARZIALE (partially protected zone)
ATTIVITÀ PERmesse: ATTIVITÀ REGOLAMENTATE

Area Marina Protetta istituita dal Ministero dell'Ambiente e della Tutela del Territorio e del Mare con D. M. del 12/12/1997
Marine Protected Area settled by the Ministero dell'Ambiente e delle Tutela del Territorio e del Mare, D. M. 12/12/1997



Porto Cesareo marble columns cargo 2nd – 3rd cent. AD

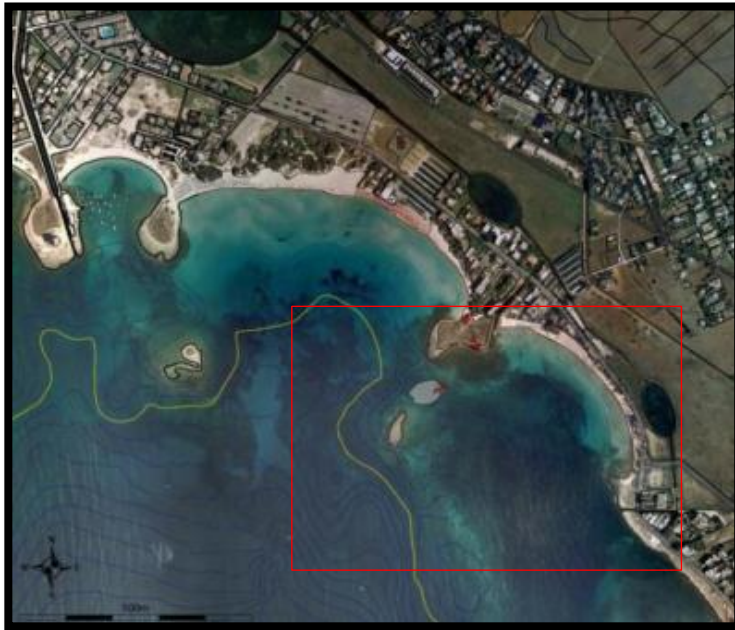
3D model – reconstructive hypothesis



Porto Cesareo underwater archaeological sites/finds



Previous researches in MPA/CPA : Porto Cesareo



Scalo di Furno: Bronze age settlement' s lower terrace with the now submerged fortification and stone pavement; the yellow line indicates the ancient coastline – 4.5m

Previous researches in MPA/CPA: Porto Selvaggio - Palude del Capitano Nature Regional Park (Nardò, Lecce)



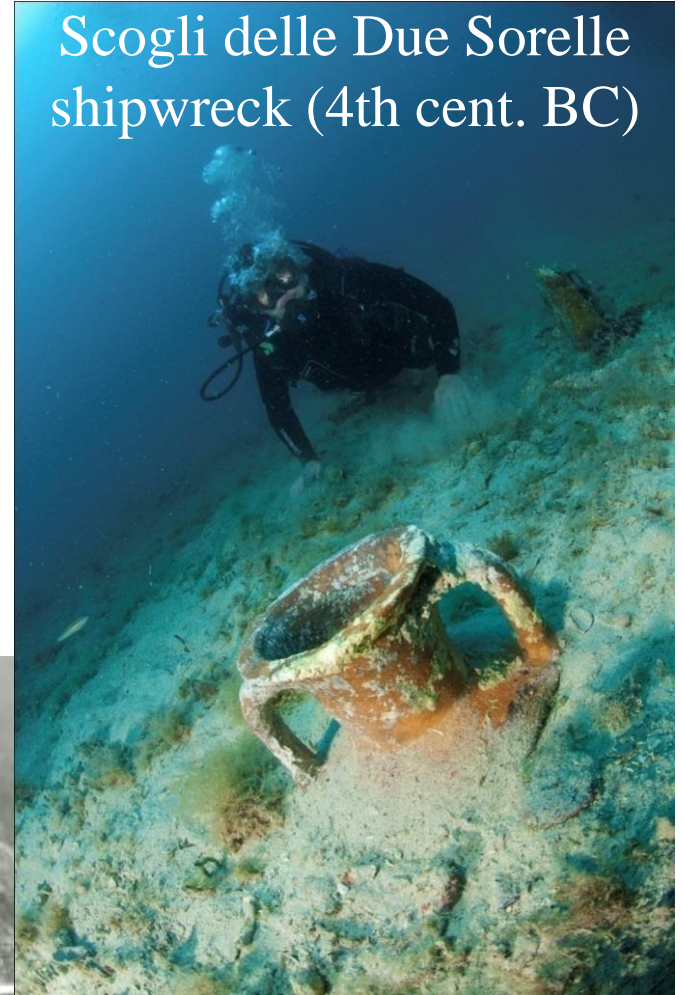
The coastal settlement of



In situ preservation and enhancement: the project MareMuseoSalento

Salento University – Puglia Region

Scogli delle Due Sorelle
shipwreck (4th cent. BC)



The Museum of the Ancient Sea Nardò, Lecce



The Museum-Aquarium of S. Maria al Bagno
(Nardò, Lecce)



Previous researches in MPA/CPA: Le Cesine
In situ preservation and enhancement: the project MareMuseoSalento
Salento University – Puglia Region



Le Cesine shipwreck
with cannons
18th – 19th cent.



www.visitaugento.it
www.parcollitoralediugento.it



Situato all'estremo lembo del Salento, il litorale di Ugento rappresenta una delle zone più suggestive da un punto di vista naturalistico, paesaggistico e storico-archeologico.

Fiore all'occhiello dell'intera area è sicuramente il Parco Naturale Regionale, istituito nel 2007, che, con i suoi circa 1600 ettari di estensione contribuisce a preservare la straordinaria biodiversità presente.

La fascia costiera ugentina presenta numerose evidenze archeologiche che coprono un arco cronologico molto ampio dall'età del Bronzo fino ai nostri giorni.

Ciò che caratterizza però il mare di Ugento sia dal punto di vista naturalistico che storico archeologico sono le "secche", cioè i bassi fondali che si estendono per molte miglia dalla costa.

Andiamo a scoprire nel cuore più profondo dei misteriosi spazi sommersi le preziosità nascoste in questo mare.

	Lingua	Audio	
4:3	Italiano Inglese Tedesco	Stereo	PAL ALL

Responsabili scientifici

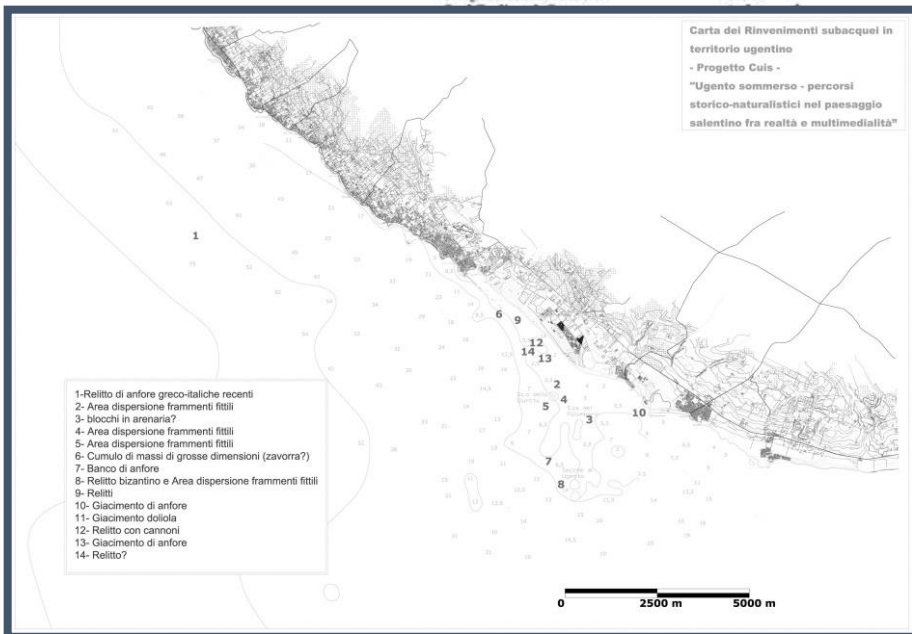
Testi

Regia video
Davide Poggiano

Produzione esecutiva
Genesi.tv

Supporto logistico
Costa del Sud - Diving service

© Carabinieri di Taranto per il supporto tecnico.

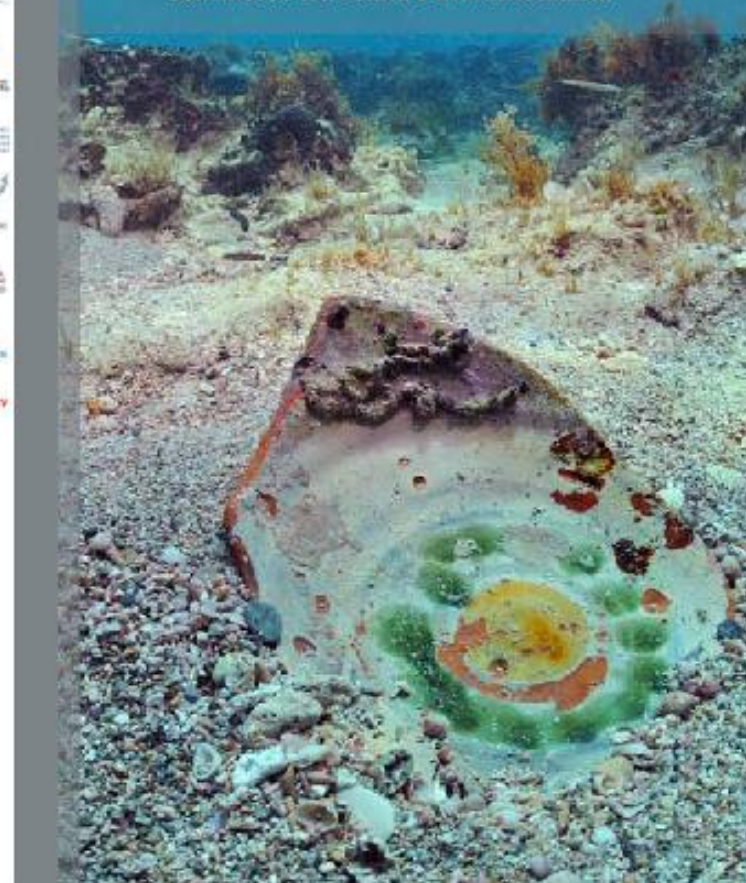


Ugento sommerso - Percorsi Storico-Naturalistici nel paesaggio sommerso tra realtà e multimedialità

DVD
VIDEO

UGENTO SOMMERSO

Percorsi Storico-Naturalistici nel paesaggio sommerso tra realtà e multimedialità



Ugento sommerso project
naturalistic and archaeological trails
multilingual video
other information and communication materials

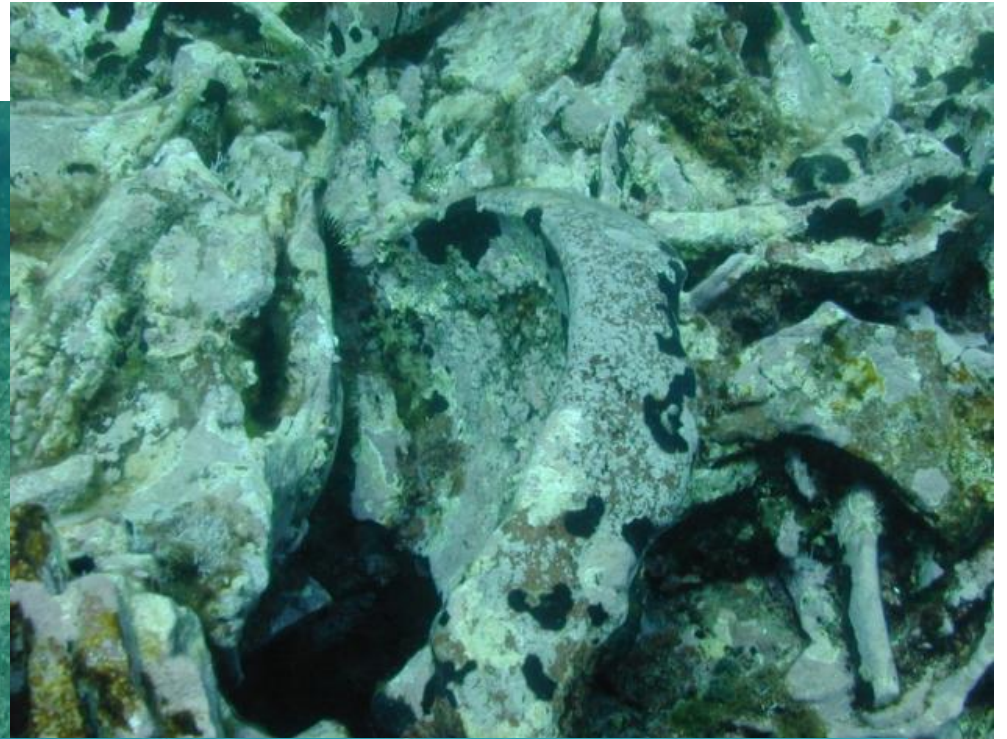


**In situ preservation and enhancement:
the project *Cammini del mare*
Salento University – Regione Puglia**

In situ preservation and enhancement: the project Cammini del mare

ESAC

Gallipoli harbor: Roman cargo remains



Mortaria and basins cargo
1 st. cent. AD

proposal of underwater trail

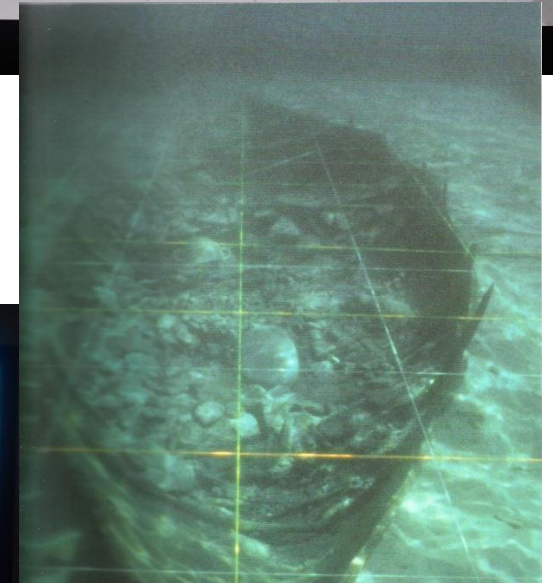
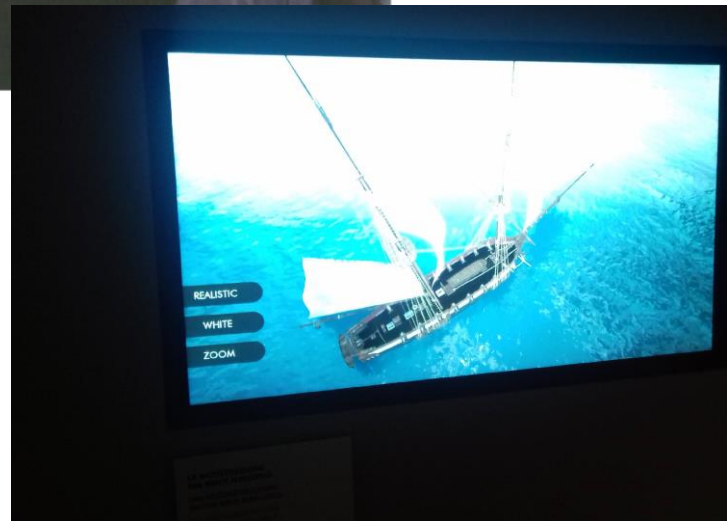
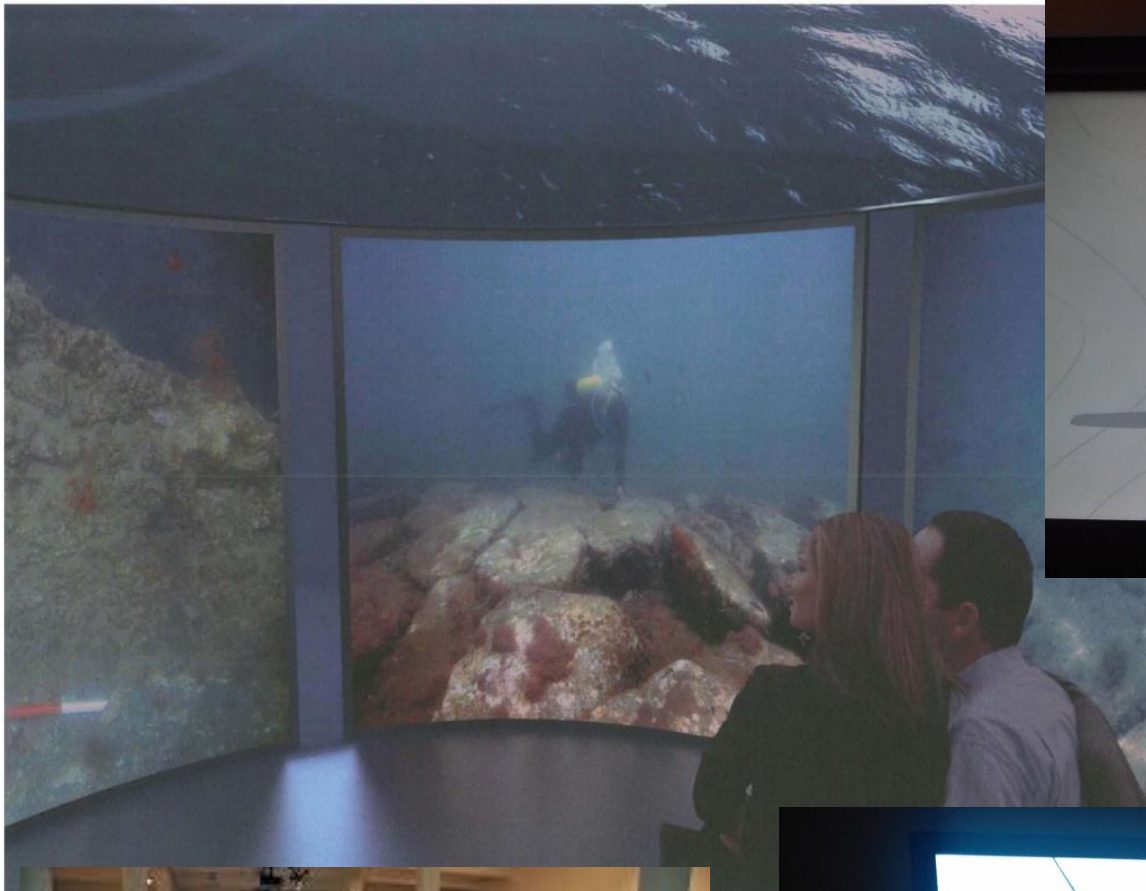
In situ preservation and enhancement: the project Cammini del mare
Salento University –Puglia Region



Torre Sinfonò wreck – 2° c. BC (ph CC Sub Bari)
proposal of in situ preservation

And for non divers?

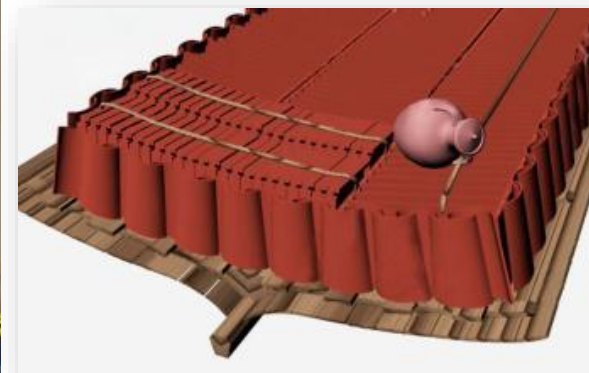
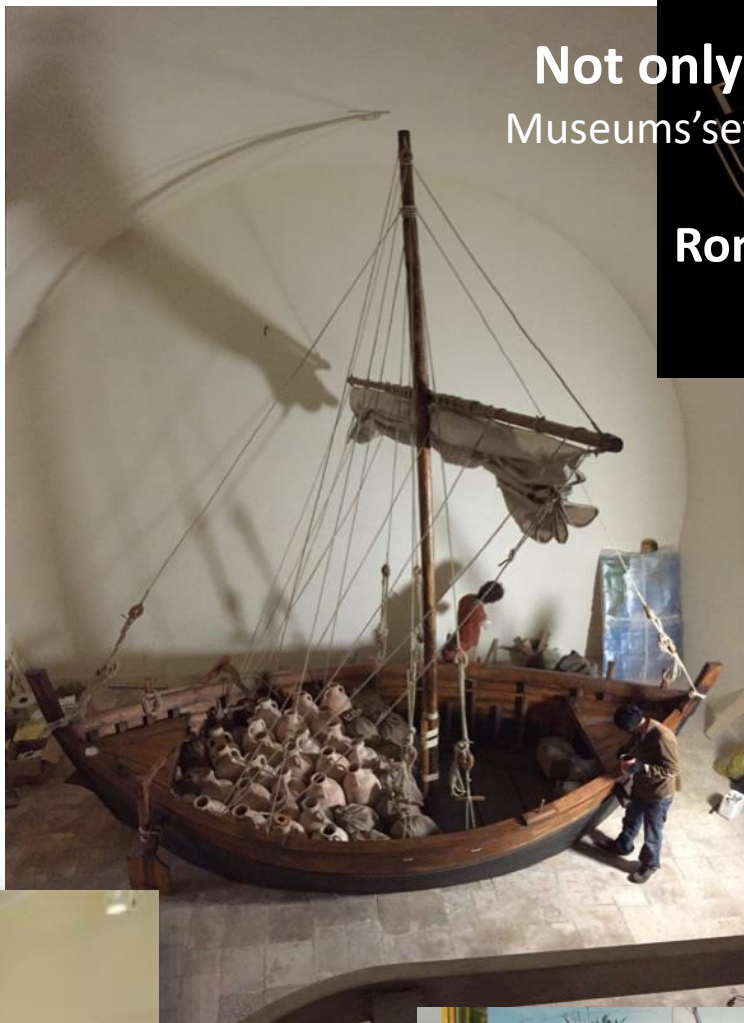
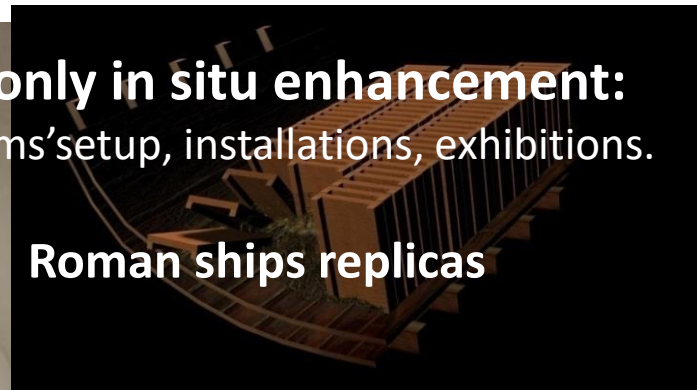
Not only in situ enhancement: the ICT for an alternative fruition





Not only in situ enhancement:
Museums' setup, installations, exhibitions.

Roman ships replicas



The dissemination and storytelling through cooperation: international exhibitions

*...The Atlantic and the Pacific are the seas of distance,
the Mediterranean the sea of propinquity,
the Adriatic the sea of intimacy...*





30 parallel events - conferences,
 plays and documentaries
 guided tours for single visitors
 and groups
 labs and didactic activities, night
 openings sold out for schools
 and the younger public
 traineeship projects
 Italian and English catalogue
 and e-book
 a twenty-minute movie, a
 docufilm directed by D.
 Cenetempo, available on
 Vimeo, Il Piccolo's website.
www.nelmaredellintimita.it

**the 2nd edition:
 the exhibition moved to
 Apulia!**

A great result for the exhibition dedicated to
 the memory of Pedrag Matvejević at the
 Salone degli Incanti in Trieste that closed on
 Tuesday, 1st May registering 24.000
 attendances

NEL MARE DELL'INTIMITÀ L'archeologia subacquea racconta l'Adriatico

IN VIAGGIO SUL REX SHIPYARD TOWN J
 LA BIG BAND DIRETTA DAL **MO DAVANZO** CON LA PARTECIPAZIONE DI **PIETRO SPIRITO** NELLA VESTI DI STORICO E GIORNALISTA NARRATI

MARTEDÌ 17 APRILE 2018 ORE 20.30
TRIESTE TEATRO MIELIA
 PIAZZA DUCA DEGLI ABRUZZI 3 - MIELIA

NEL MARE DELL'INTIMITÀ L'archeologia subacquea racconta l'Adriatico

IL MILIONE OVVERO IL LIBRO DELLE MERAVIGLIE
 CONCERTO SPETTACOLO CON **LA REVERDIE** E **DAVID RIORDINO**

SEGUENDO LE TRACCE DI MARCO POLO, L'ENSEMBLE DI MUSICA MEDIEVALE **LA REVERDIE** ALLESTISCE UN PROGRAMMA SU "IL MILIONE" CONTRAPPONENDO AGLI STRUMENTI MEDIEVALI IL KAMANCHI PERSIANO E IL TABLA INDIANO. **DAVID RIORDINO** NARRA DAL VIVO QUESTO STRAORDINARIO VIAGGIO.

VENERDÌ 9 MARZO 2018 ORE 20.30
TRIESTE TEATRO MIELIA
 PIAZZA DUCA DEGLI ABRUZZI 3 - MIELIA.IT

NEL MARE DELL'INTIMITÀ

LABORATORI LUDO-DIDATTICI GRATUITI!
 per bambini dai 6 ai 10 anni

OGNI DOMENICA ALLE 15

a cura dell'Immaginario Scientifico



NEL MARE DELL'INTIMITÀ L'archeologia subacquea racconta l'Adriatico

Patrimonio Culturale
 GANGEMI EDITORE INTERNAZIONALE

INTO THE SEA OF INTIMACY Underwater archaeology tells of the Adriatic

Patrimonio Culturale
 GANGEMI EDITORE INTERNAZIONALE

NEL MARE DELL'I NTIMI TÀ

L'ARCHEOLOGIA
SUBACQUEA
RACCONTA IL
SALENTO

05 | 05
LUGLIO | LUGLIO
2019 | 2020

BRINDISI

AEROPORTO
DEL SALENTO



Not only in situ enhancement:
Museums' setup, installations, exhibitions



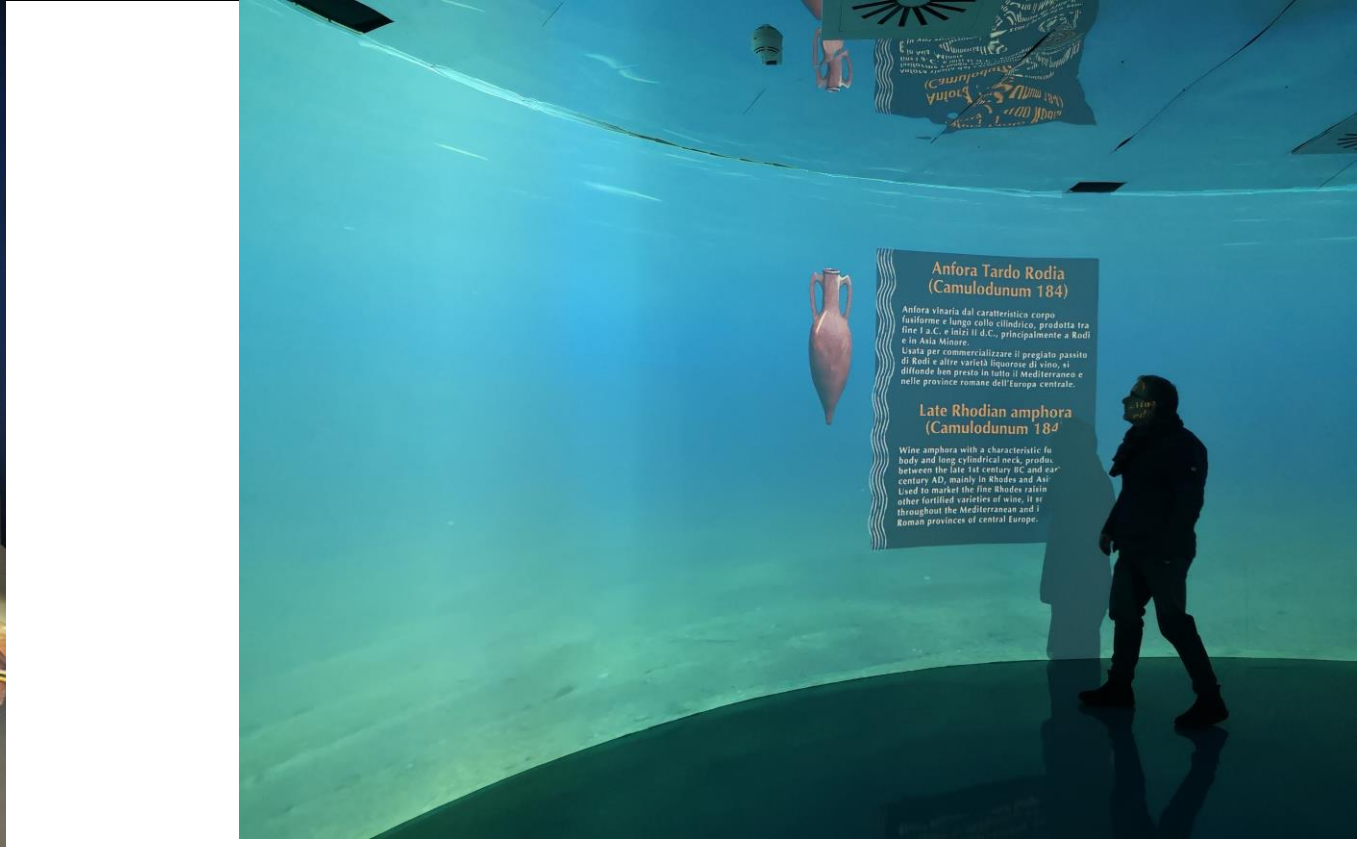
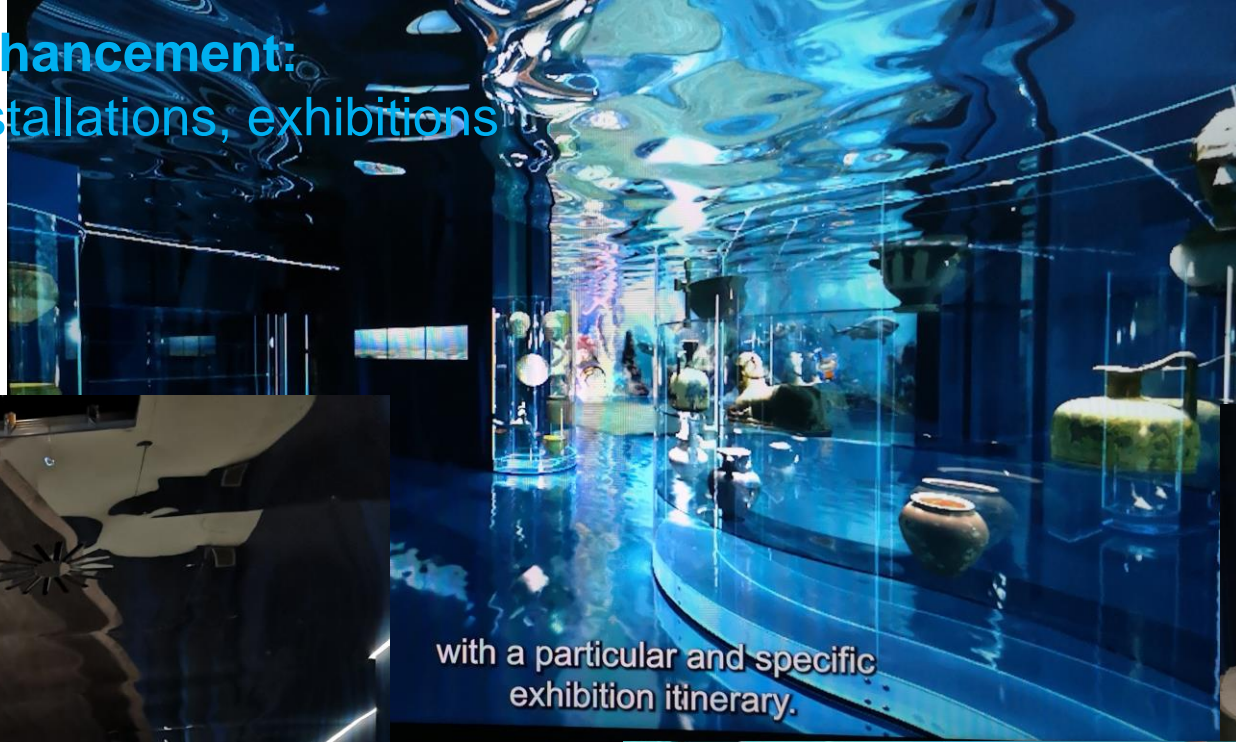
Not only in situ enhancement: Museums' setup, installations, exhibitions

Lecce Museum Castromediano



Not only in situ enhancement: Museums' setup, installations, exhibitions

Egnazia National
Museum
G. Andreassi



Proposals of innovative
valorization of the underwater
heritage of the Adriatic.
Activities and results of the
**Interreg UnderwaterMuse
Project**



UNDERWATERMUSE what's UM?

Programme	INTERREG V A Italy – Croatia CBC Programme Immersive Underwater Museum Experience for a wider inclusion
Priority	Investment Priority 6c – Conserving, protecting, promoting and developing the natural and cultural heritage
S.O.	3.1 Make natural and cultural heritage a leverage for sustainable and more balanced territorial development
Partners	<i>LP – ERPAC – Regional Authority for Cultural Heritage of Friuli Venezia Giulia</i> <i>PP21– University of Venice Ca’ Foscari</i> <i>PP2 – RERA – Public Institution for coordination and development of Split - Dalmatia County</i> <i>PP3 - Municipality of Kaštela</i> <i>PP4 – Puglia Region – Department of tourism, economy of culture and valorization of territory</i>
Duration	30 months (01.01.19 – 31.06.2022 – extension due to COVID 19)

UNDERWATERMUSE what's UM?

The international *UnderwaterMuse* project aims to enhance and make accessible the huge underwater heritage of the affected areas, otherwise invisible or reserved for a few, through the **creation of underwater archaeological parks / paths** and the **narrative and communicative use of virtual reality**.

The planned activities aim to implement

- widespread awareness-raising and **involvement actions of local actors**
- **training of diving guides** > to increase accessibility.
- public, geo-referenced **web portal** for the virtual exploration of submerged archaeological sites through voice and text information, images and animations.
- methodological protocol for the enhancement of the underwater heritage, through **pilot projects** conducted in the areas involved to transform the sites into **underwater archaeological parks or blue trails** or make them enjoyable with **the use of digital or virtual tools**; these experiences will produce a breviary of good practices for shared management models of accessible heritage.

UNDERWATERMUSE **why UM now?**

*Underwater archaeology, waterscapes archaeology.
In situ preservation and enhancement: the first option*

the key steps

1. Convention on the Protection of Underwater Cultural Heritage 2001

2. Faro Convention 2005

the key goals

- ✓ Building an archaeology community, building awareness
- ✓ Cultural heritage as common good and economic resource
- ✓ Archaeology for the territory, archeology for the environment
- ✓ Research, conservation, protection, management and valorization as links of the same chain

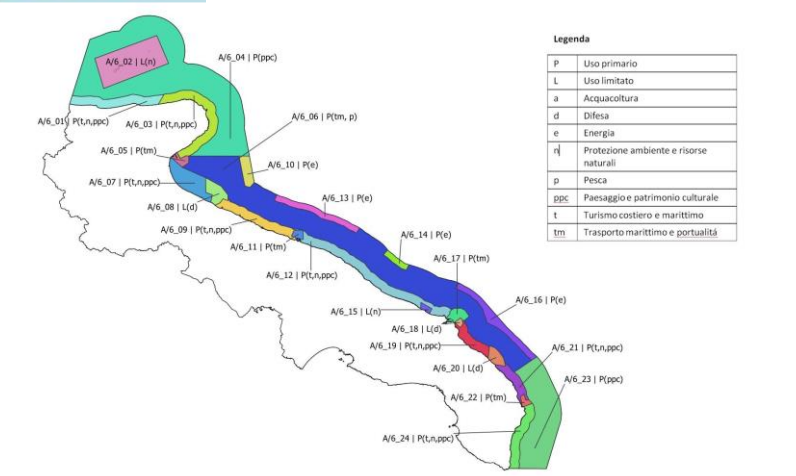
UNDERWATERMUSE

The Project is also coherent with

- **Blue Growth long term Strategy** (s3platform.jrc.ec.europa.eu/blue-growth)
- **Maritime Spatial Planning (MSP) process:** *understanding, recognising, and utilising Underwater Cultural Heritage (UCH) as a sensitive asset in the marine space and reconciling its preservation and promotion within the sustainable blue economy perspective is a real challenge*
- **UN Sustainable Development Goal 14 (Life under water)**

Puglia Region in the Management Plans of the maritime Ionian-Adriatic area) has implemented the indications of the Tourism and Culture Department

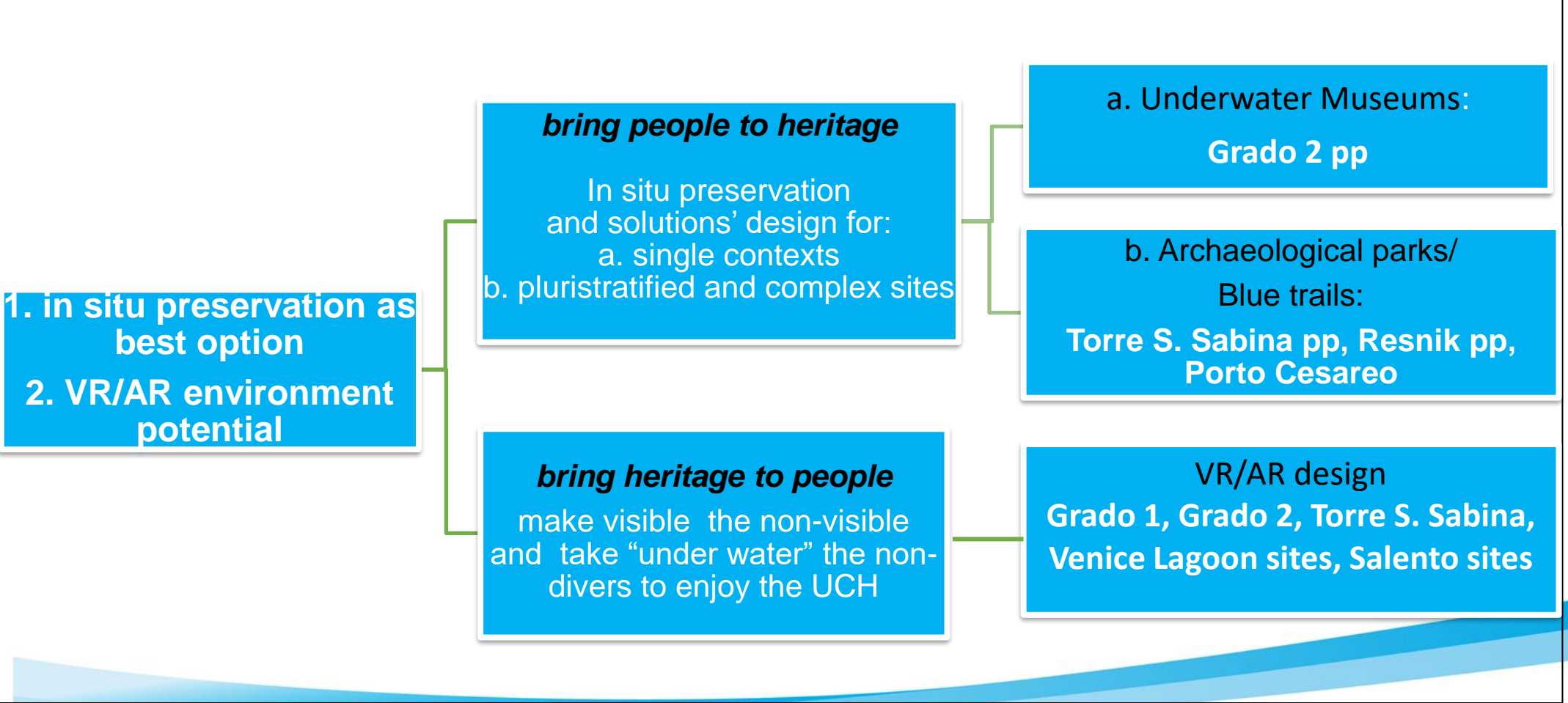
< cartapulia and UnderwaterMuseMap



UNDERWATERMUSE

WP 5: TOOLKIT FOR REGIONAL ACTION PLANNING IN UCH VALORISATION

action plans on the valorisation of underwater archaeological sites and the increased accessibility



UNDERWATERMUSE communication

Project UnderwaterMuse

erreg - Croatia waterMuse

Ti piace Segui già Condividi

Project UnderwaterMuse
19 maggio · 🌐

Torre Santa Sabina - La storia del luogo di atterraggio

Le tracce archeologiche trovate lungo la costa e sulle profondità di Torre Santa Sabina, 30 km a nord di Brindisi, raccontano la lunga storia di questo molo, dalla preistoria all'epoca moderna.

La piccola baia " dei Camerini che prende il nome dalla presenza di un località spiaggia in passato, ha affascinato i pionieri dell'archeologia subacquea in Italia dagli anni ' 1960

Le più antiche aree popolate erano a nord e a e... Altro...

🔗 Vedi l'originale · Valuta questa traduzione

Tu, Marina Nuovo, Lab Simone e altri 49

Condivisioi: 59

Mi piace Commenta Condividi

Project UnderwaterMuse

erreg - Croatia waterMuse

Ti piace Segui già Condividi

Scrivi un commento...

Project UnderwaterMuse
7 agosto · 🌐

Il #museo dell'antico mare Nardò è uno dei musei più legati alla #cultura e alla #storia della pugliese. #ProgettoMusaSott'acqua #InterregItaliaCroazia #Italia #Croazia #Nardò #mare #ispirazione 🏠💡

Leggi altri fatti interessanti sul #mare cliccando su questo link:
<https://www.italy-croatia.eu/web/underwatermuse/-/underwatermuse-123>

🔗 Vedi l'originale · Valuta questa traduzione

Angelo E Letizia Colucci, Alessio e altri 16

Condivisioi: 4

Mi piace Commenta Condividi

Scrivi un commento...

UNDERWATERMUSE

<https://mizar.unive.it/underwatermuseumap/>



EN

- Underwater Structures (27)
- Wrecks (48)
- Other Points (3)
- Museums (22)

MONACO

HRVATSKA

BOSNA I HERCEGOVINA

SRBIJA

SAN MARINO

ITALIA

CRNA GORA

KOSOVO - KOSOVO

SEVERNA MAKEDONIJA

SHQIPËRIA

ROMÂNIA

BULGARIA

Interreg Italy - Croatia UnderwaterMuse

EUROPEAN UNION



Media Library

15 assets

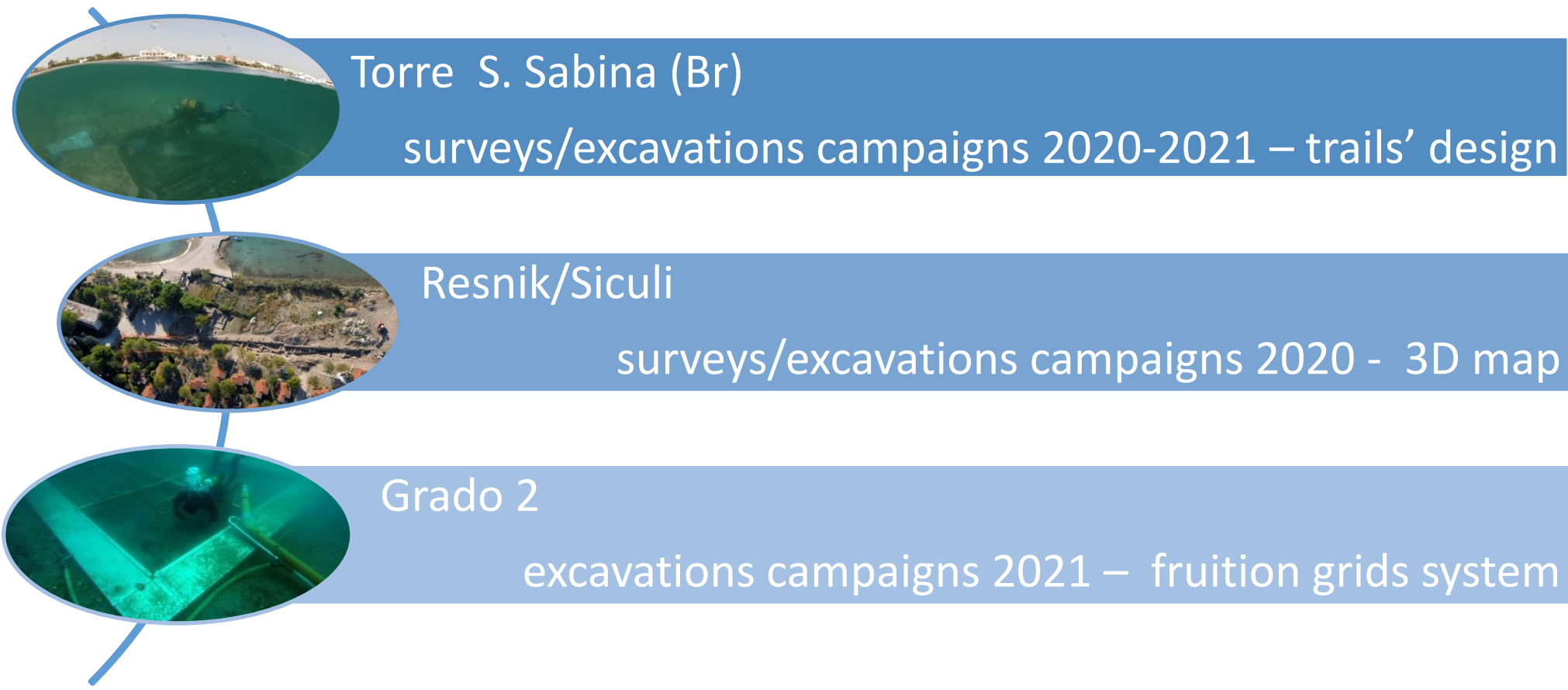
Sort by

Filtri

- Fig.1-Sabina foto aerea.jpg IMAGE (1024x742 - 230KB)
- Fig.8-TorreSantaSabina3-4... IMAGE (4318x2621 - 1MB)
- Fig.6-TorreSantaSabina3-... IMAGE (3533x2366 - 850KB)
- Fig.2-Torre S.Sabina_S2 A b... IMAGE (4296x2290 - 381KB)
- Fig.3-TorreSantaSabina3_D... IMAGE (2592x3872 - 1MB)
- Fig.5-TorreSantaSabina3-T... IMAGE (817x552 - 87KB)
- Fig.4-TorreSantaSabina3-T... IMAGE (4288x2848 - 2MB)
- Fig.5 - DSC0018.JPG IMAGE (3872x2592 - 1MB)
- Fig.9 - DSC0012.JPG IMAGE (3872x2592 - 776KB)
- Fig.8-TorreSantaSabina1_D... IMAGE (2592x3872 - 960KB)

10 elementi per pagina

UNDERWATERMUSE *The pilot projects and the heritage's chain*



The heritage chain



UNDERWATERMUSE *The methodological approach*

WP 5: TOOLKIT FOR REGIONAL ACTION PLANNING IN UCH VALORISATION

tool development and action planning

Seascapes archaeology
methodologies and tools
used in the pilot projects

areal mapping
Topographic survey
UAV/drone

underwater survey
Direct/autoptic survey
Metal detector survey
Photogrammetric survey
ROV
Multibeam Side Scan
Sonar
Sub bottom profiler
Video-photo

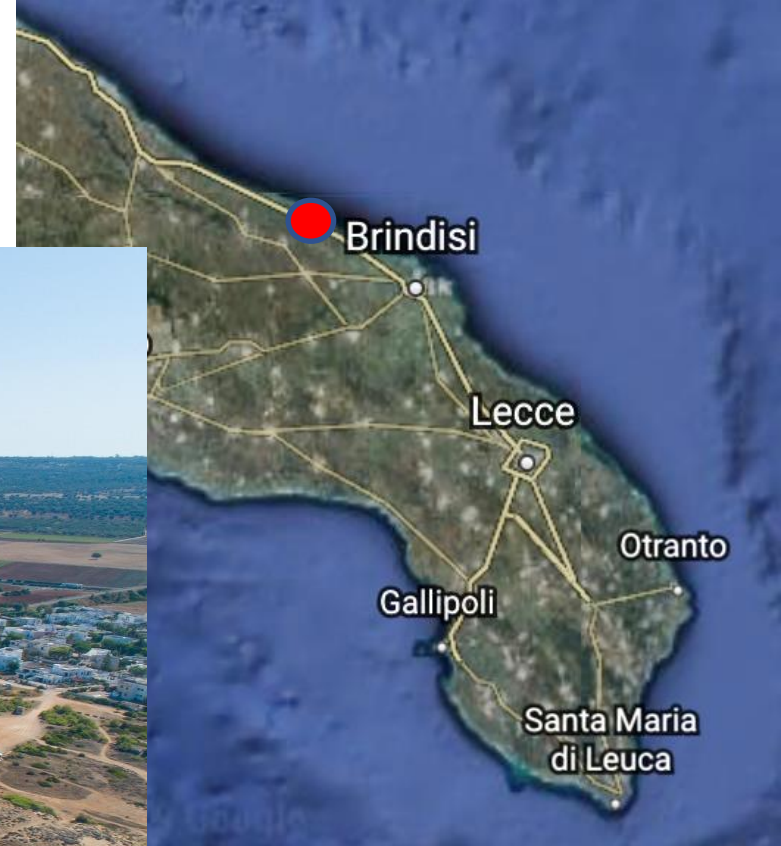
Excavations
Stratigraphic excavation, documentation and analysis
Finds recovery
Sampling, flotation and sieving
Archeometric analyses
Washing, consolidation and restoration

GIS implementation
UM portal
Interoperability with SIRPaC FVG, CartApulia
SIGECweb/VIR
etc..

Data/metadata implementation and elaboration
Cataloguing
Study of the materials
Spatial and regressive analysis
Periodization and interpretation

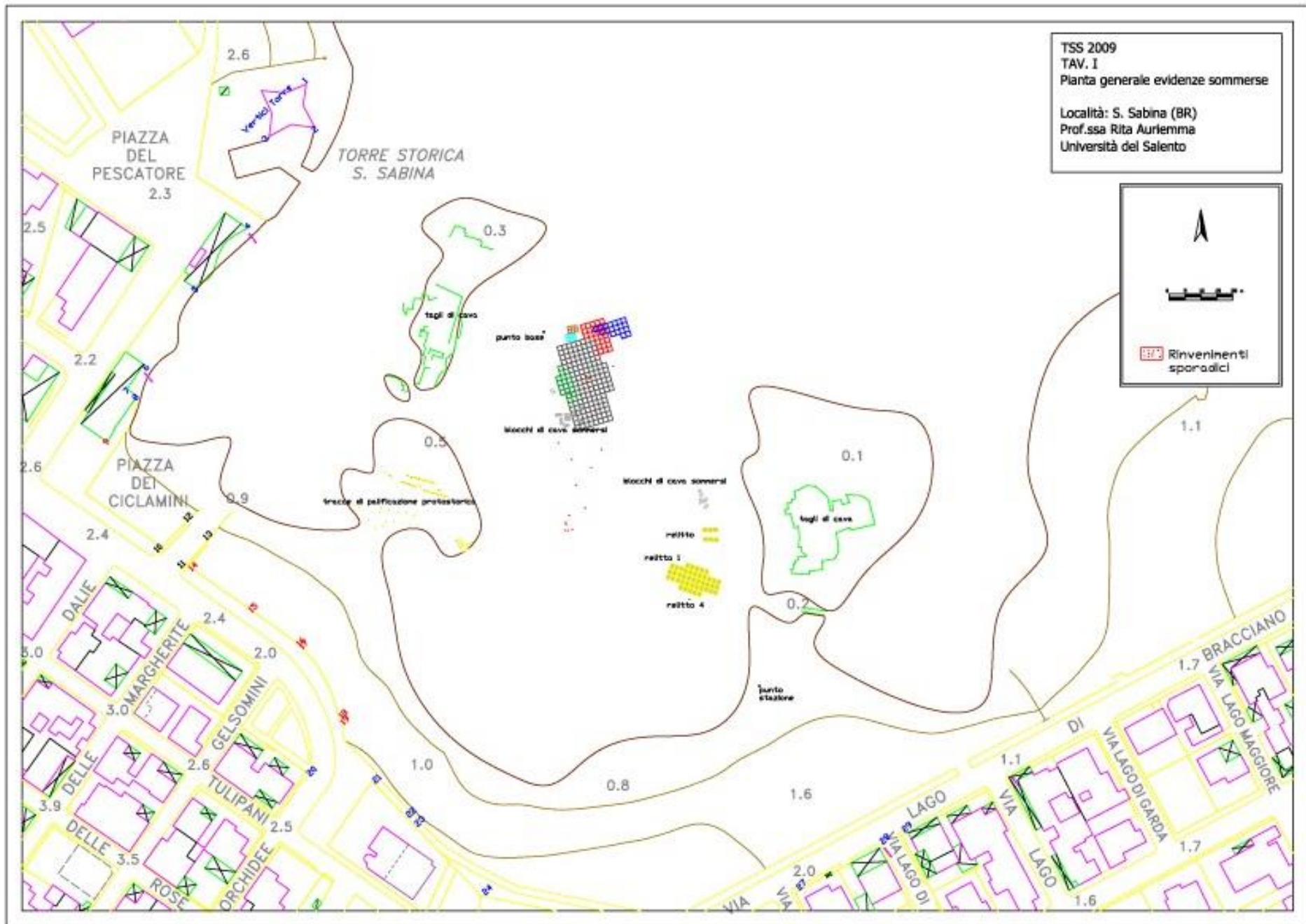
Torre S. Sabina pilot action

Case study: pluristratified and complex site



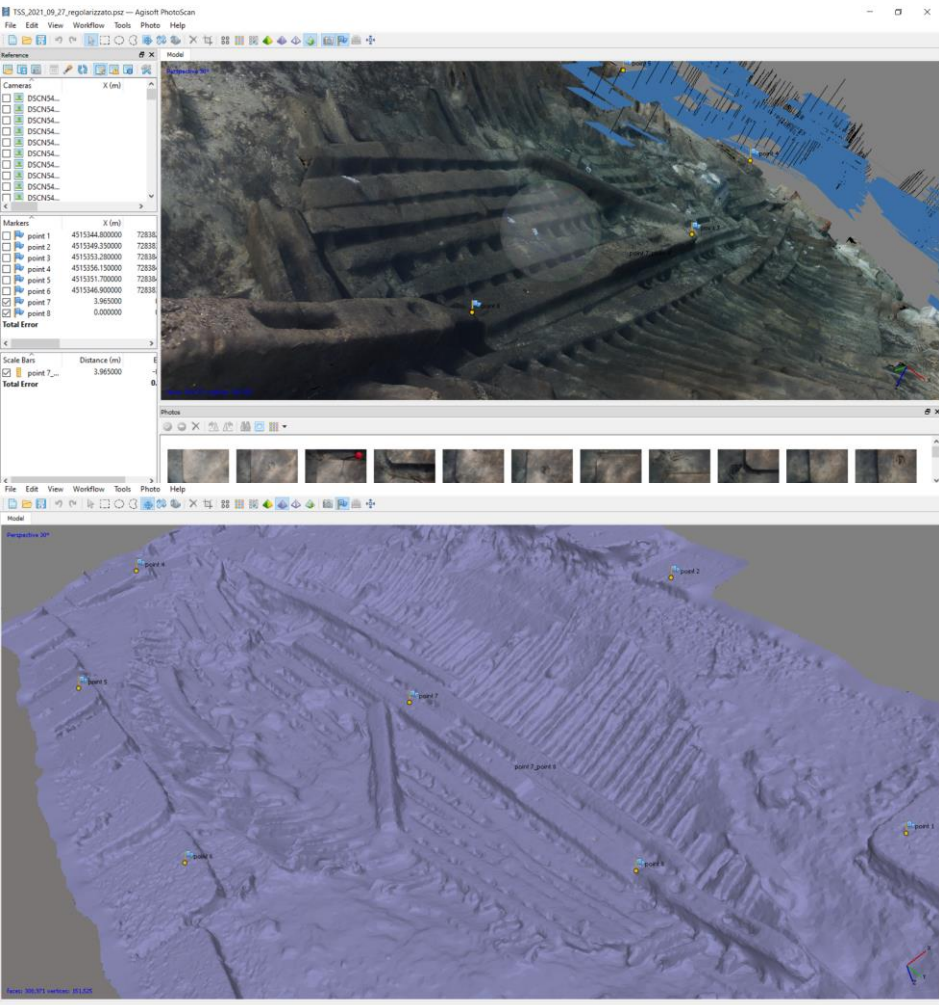


In Puglia, the choice of Torre S. Sabina (Carovigno, Brindisi) as the setting for a pilot intervention within the *UnderwaterMuse* Project stems from the quality and variety of the archaeological sites in the bay. The exceptional potential of this millenary landing place is an ideal scenario for a holistic 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.



Pilot project 2021: TSS 1 complete excavations

Techniques and technologies: photogrammetry, remote sensing, ROV, multibeam



Agisoft PhotoScan
Processing Report
21 October 2021

Survey Data

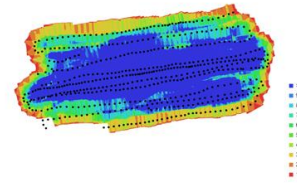


Fig. 1. Camera locations and image overlap.

Number of Images: 549 Camera stations: 536
Flying altitude: 1.61547 m Tie-points: 112100
Ground resolution: 0.000339312 m/pix Projections: 376147
Coverage area: 0.67801e+005 sq km Error: 1.80615 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
COOLPIX W300 (4.3 mm)	4608 x 3456	4.3 mm	1.34582 x 1.34582 µm	No

Table 1. Cameras.

Camera Calibration

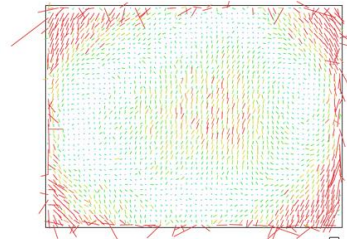
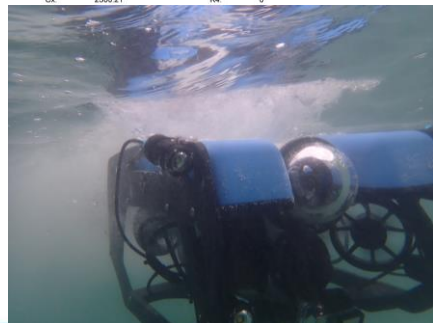
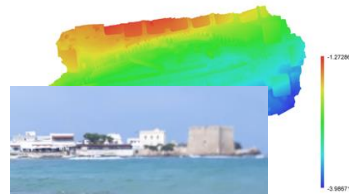


Fig. 2. Image residuals for COOLPIX W300 (4.3 mm).

COOLPIX W300 (4.3 mm)
Type: Frame K1: 0.0469912
Fx: 4562.46 K2: 0.0391277
Fy: 4562.46 K3: -0.141901
Cx: 2300.21 K4: 0

Digital Elevation Model



POLITECNICO
DI TORINO
Dipartimento di
Architettura e Design

Lab G4CH



GEOMATICS
ab

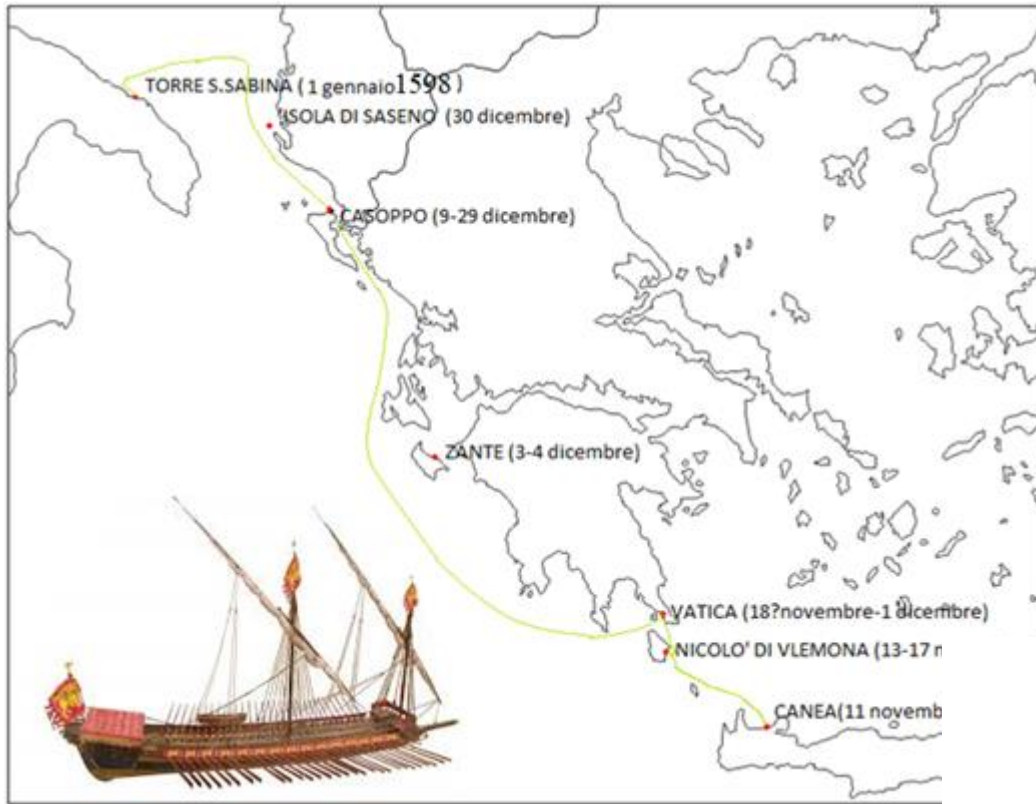


European Regional Development Fund

Pilot action 2021: the ghost ship *Galea Magna*

7 weeks of navigation, a journey started on 11 November 1597 from Canea/Chanià harbour (Candia/Crete), and ended on 1 January 1598 due to the shipwreck in Torre S. Sabina trap bay

The Provveditore Generale of Candia, Nicolò DONA', coming back to Venice onboard of the *Galea Magna*, castaway and guest in the Carovigno Castle, wrote to Serenissima Government to inform it about the accident



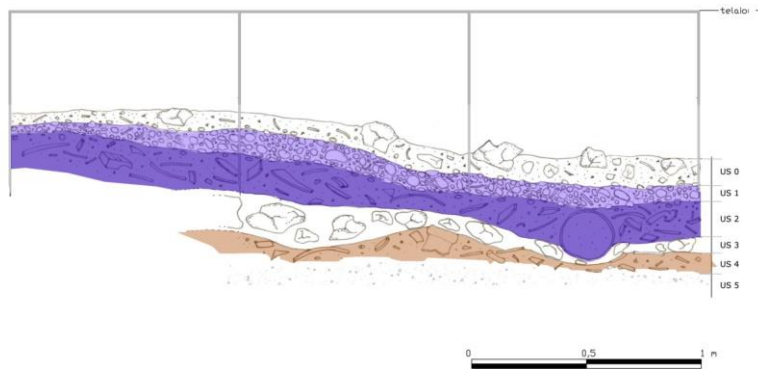
...mano dalla Salera per ho tenuto
6 uomini al primo del mese di Gennaio a 24 ore naufragato
per la colpa d'ignoranti o cattivi marittimi sopra la costa
di questa ...

Di Caravigna a 13 Gennaio 1597
Nicolò Dona' Provved. Gen.



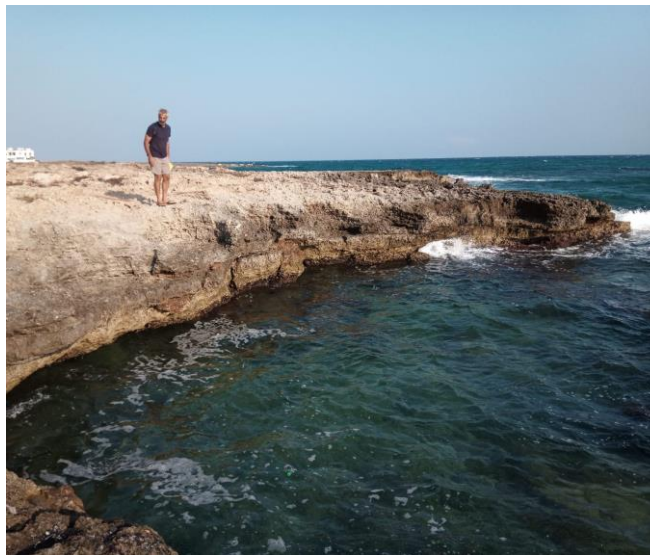
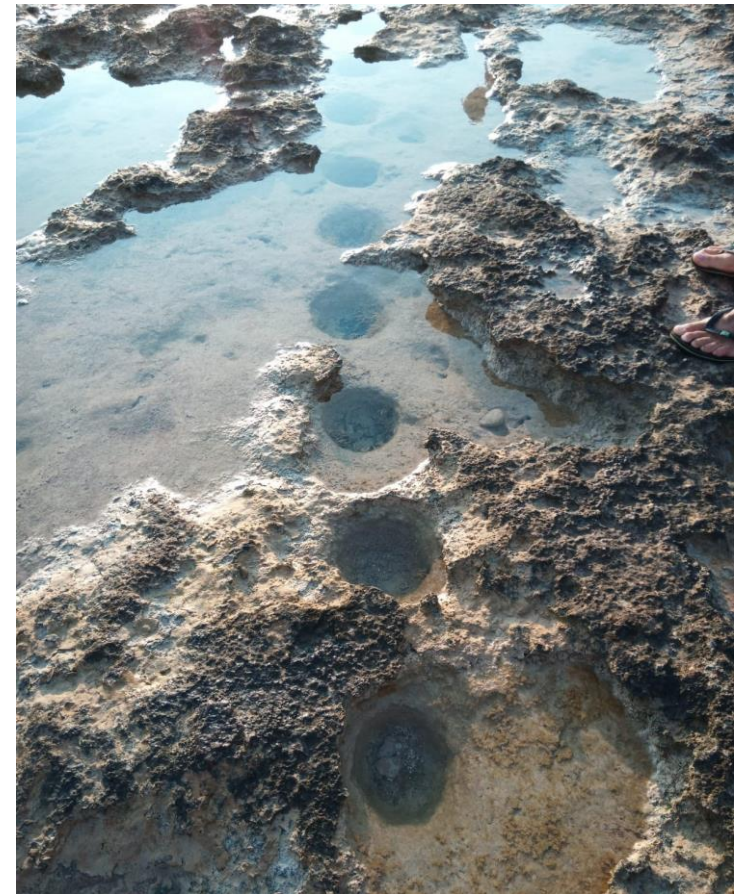
Pilot action 2020-2021: the cargos overlapping (area B)

Archaeological stratigraphy excavation

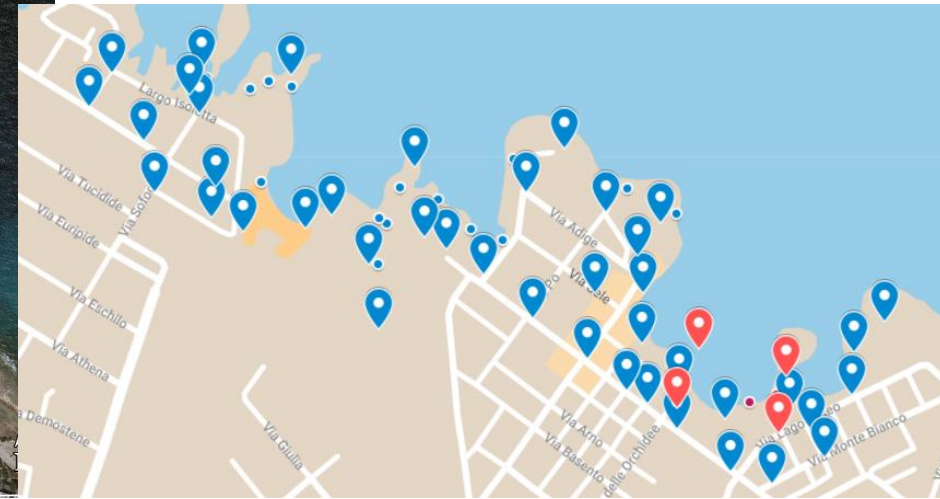
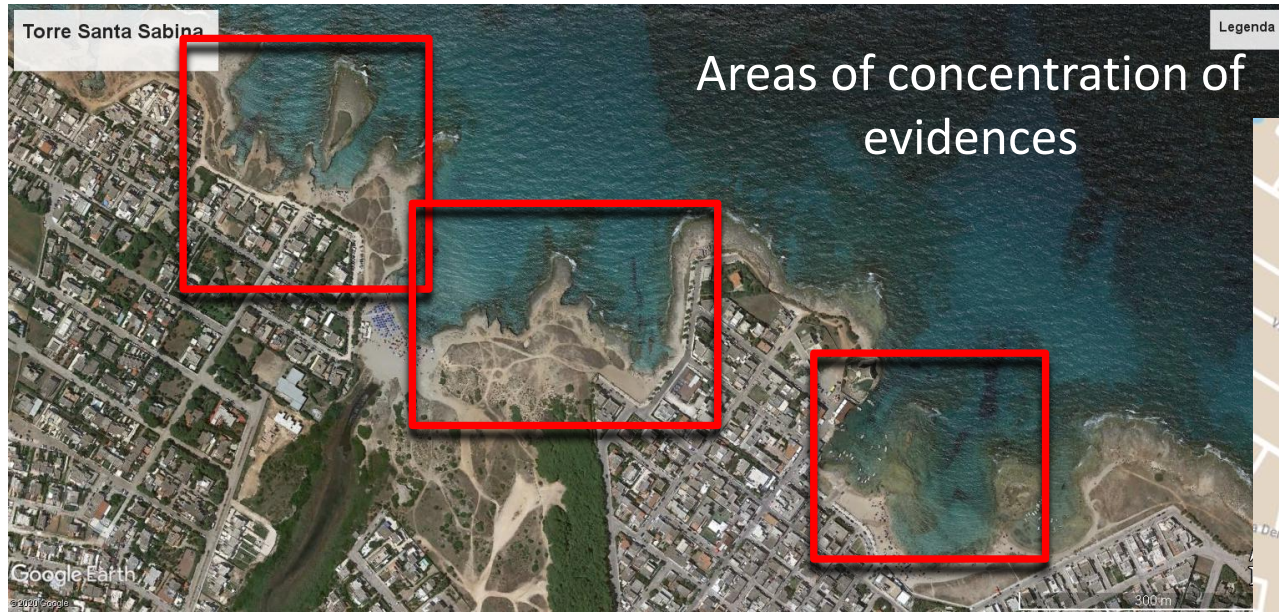


Pilot action 2020-2021: the coastal stretch mapping

Coastal and submerged traces of Bronze age settlements



Pilot action 2020-2021: the coastal stretch mapping



350 x 1200 m COASTAL AREA

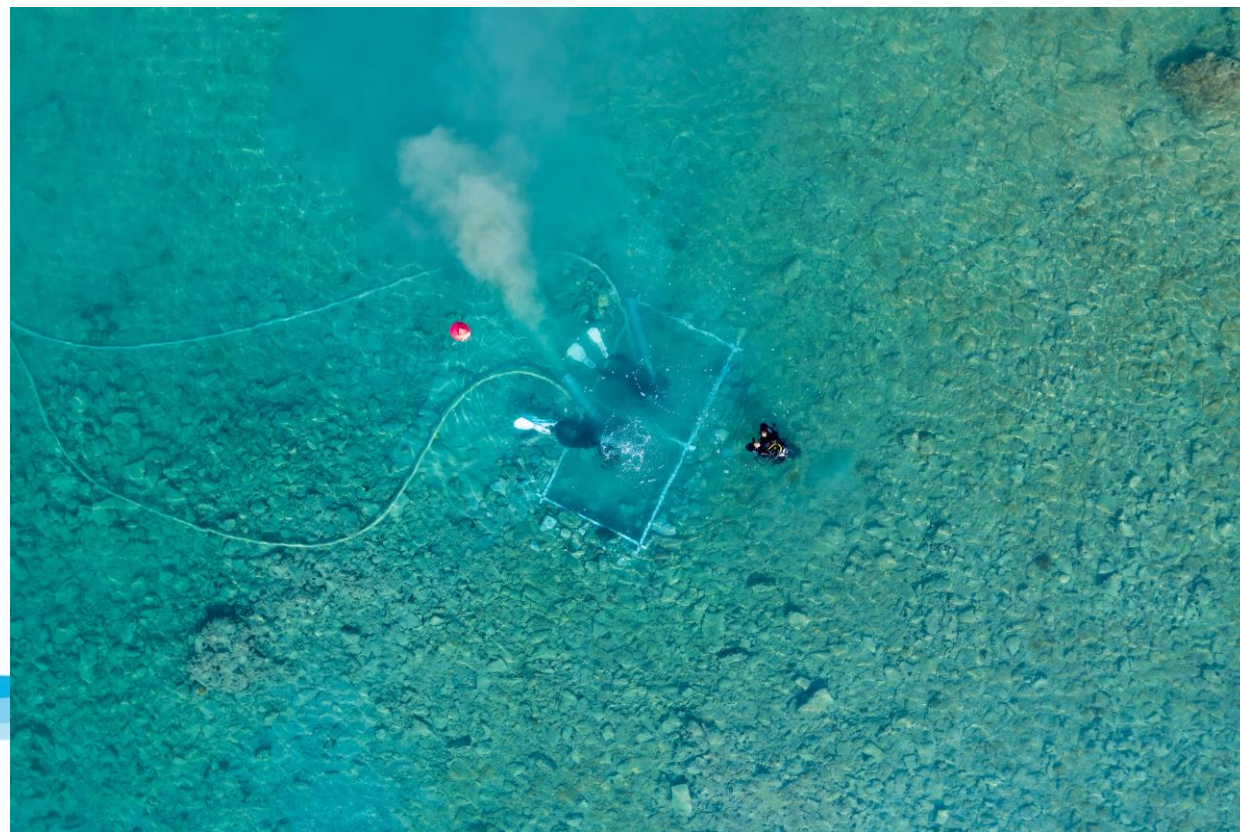
georeferencing

EbeeX (SenseFly)
Phantom 4 Pro RTK
Mavic 2 PRO



UNDERWATERMUSE

2. *Resnik pilot action*. Case study: pluristratified and complex site



UNDERWATERMUSE

3. Grado 2 shipwreck pilot action

Case study: single context



A frame of the Adriatic history (3rd cent. BC)

Wine amphoras of Adriatic production

A small cabotatore engaged in a regional trade along small-medium range routes

UNDERWATERMUSE

3. *Grado 2 shipwreck pilot action.* Case study: single context

1. Removal and cleaning of the protective cages 2012-2015

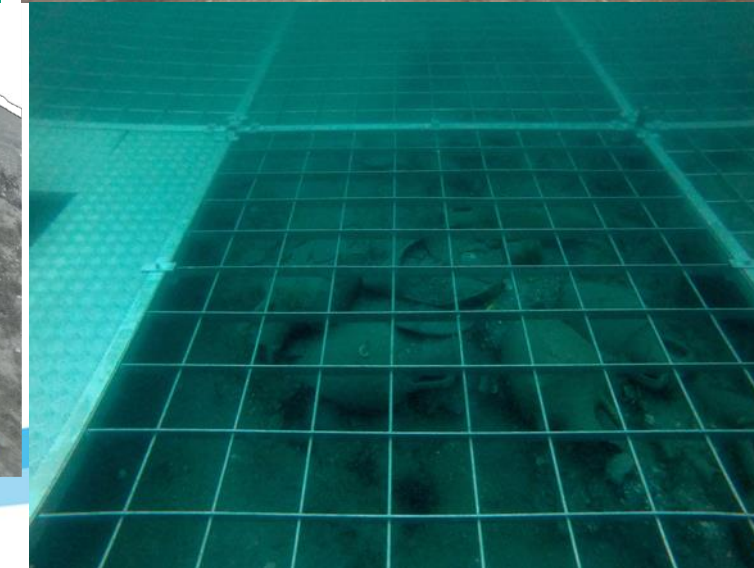
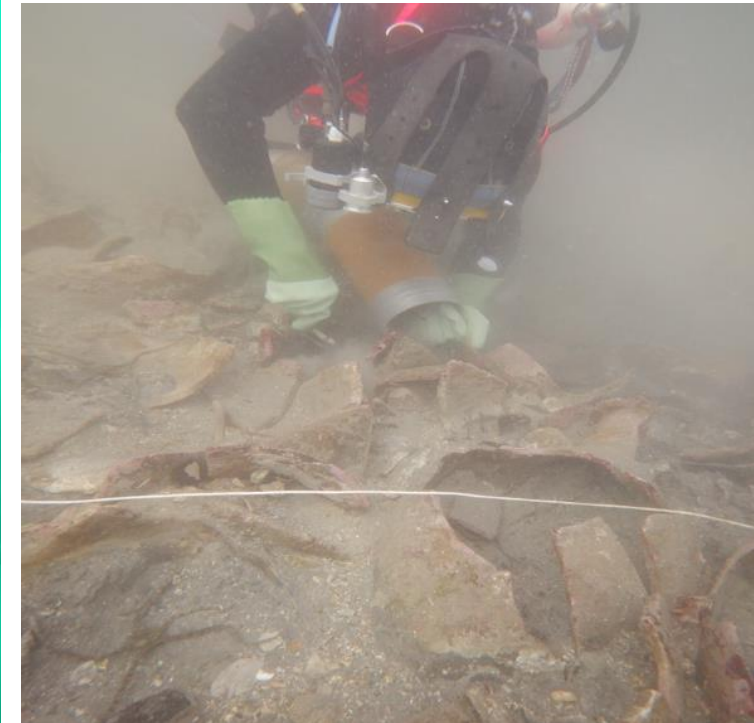
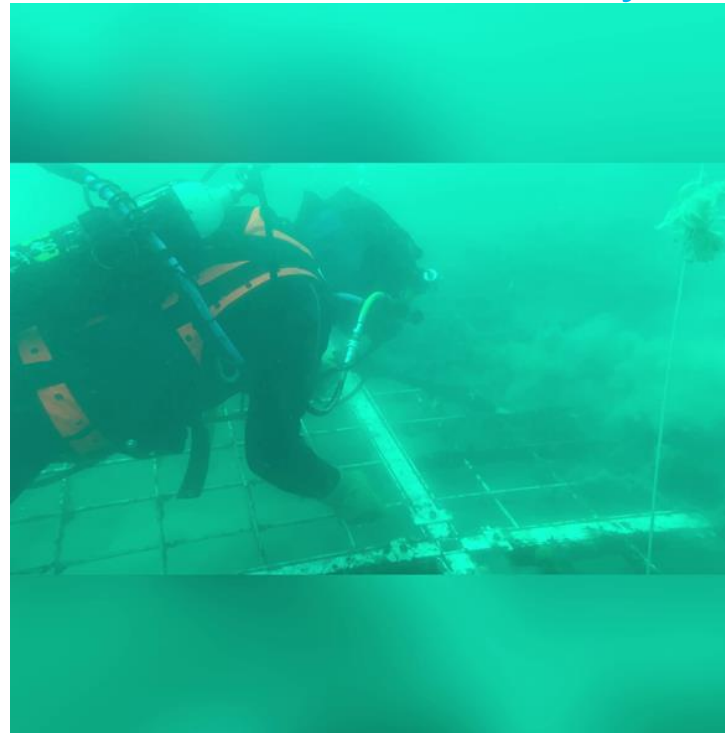
2. Cleaning of the upper layer aimed at identifying the edges of the site

3. Accurate cleaning of the cargo

4. Photogrammetry and other documentation

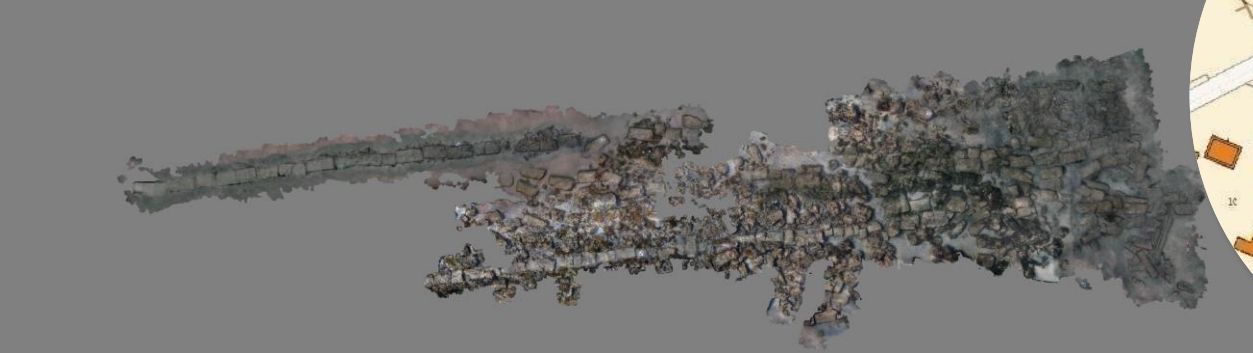
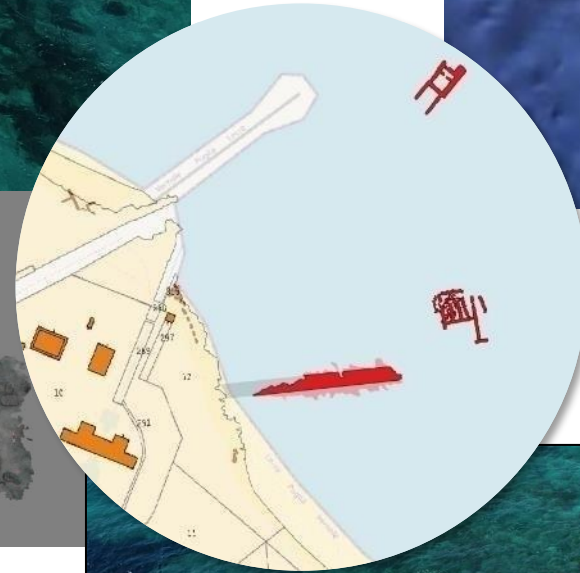
5. Test pits aimed at verifying the entity of the cargo and the eventual presence of the hull

6. Repositioning and extension of the cages

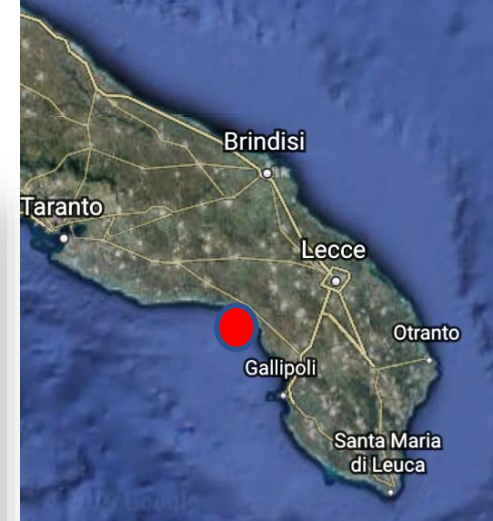


Puglia other case-studies: pluristratified sites

Le Cesine - San Giovanni: the big port complex of *Lupiae*



The other case-studies: pluristratified sites: Porto Cesareo



...submerged steles and tombs...

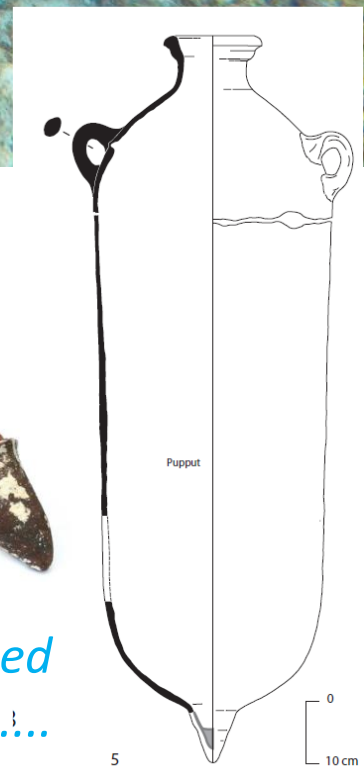


The project of an Underwater Archaeological Park in the MPA: coastal and partially submerged settlements, necropolises....





PC_2019_10_20



5

....the cargo of Tripolitanian amphoras, transformed in gigantic concretions that rise on the seabed.!



...the cargo of the column shipwreck



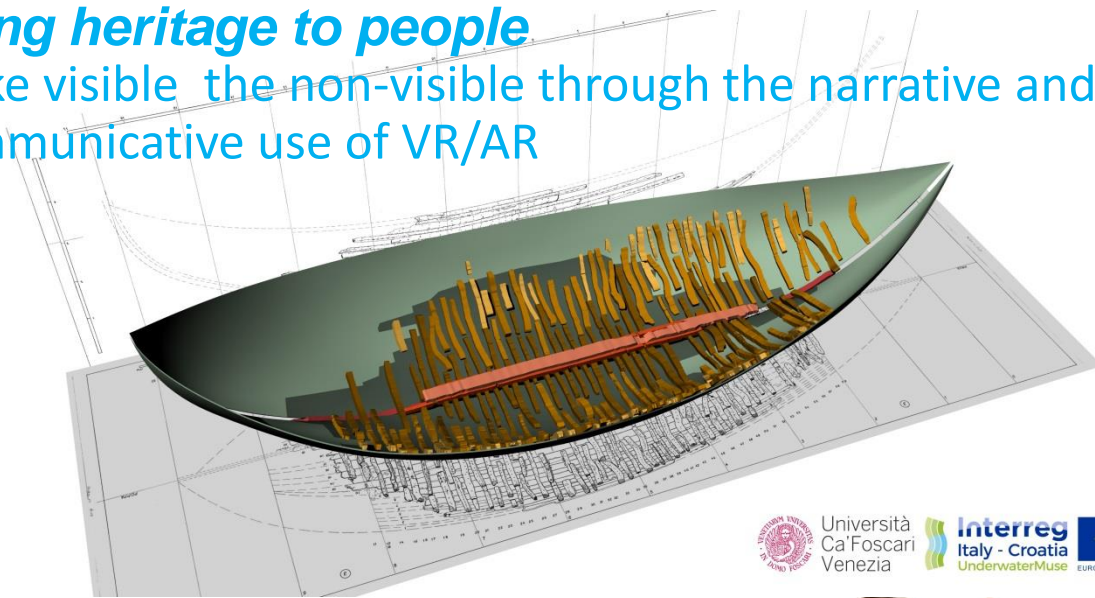
Photogrammetry and 3D modelling



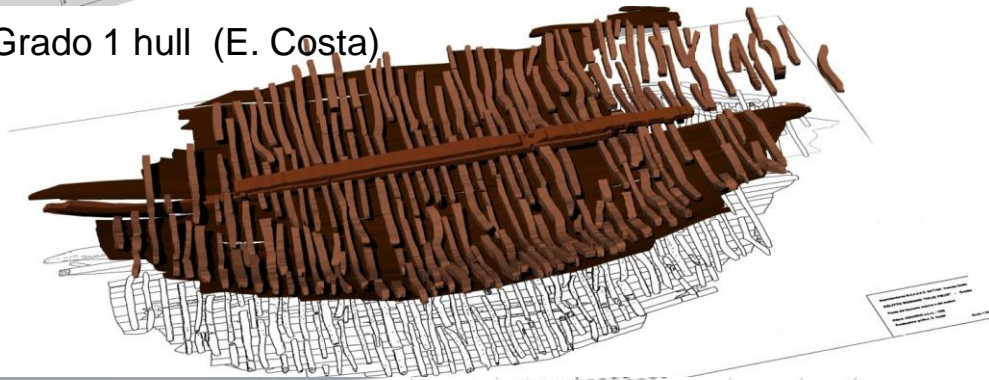
...the Bizantine wreck and the intriguing story of a golden ring-seal from Costantinople...



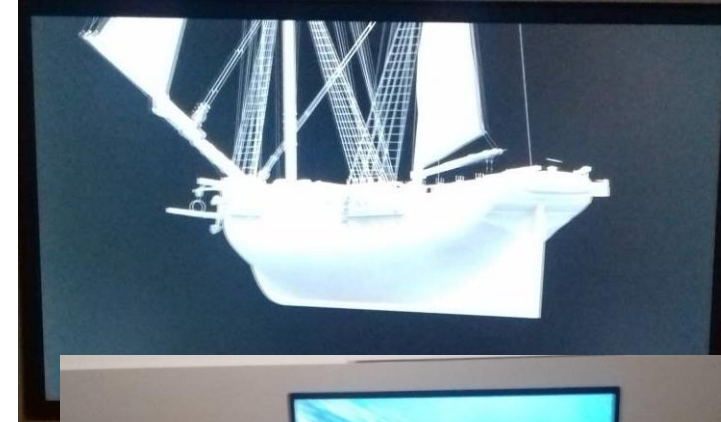
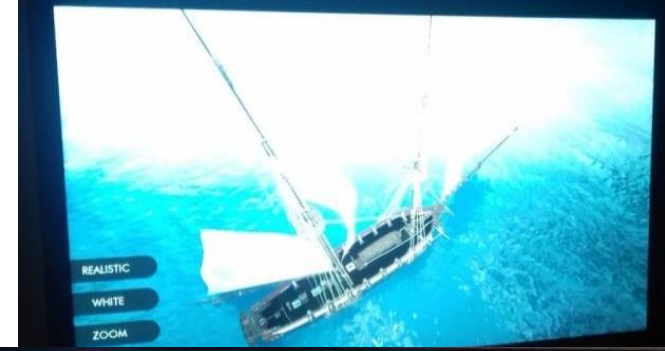
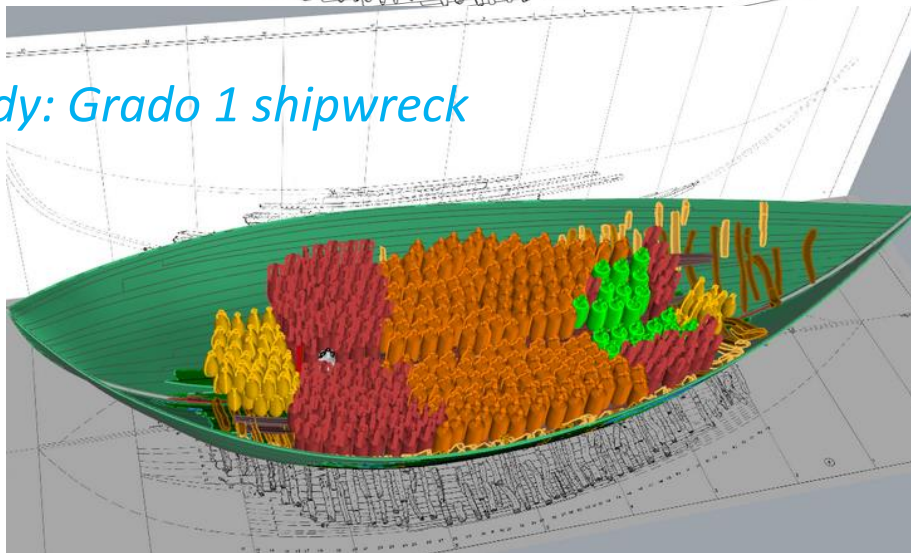
Bring heritage to people
make visible the non-visible through the narrative and communicative use of VR/AR



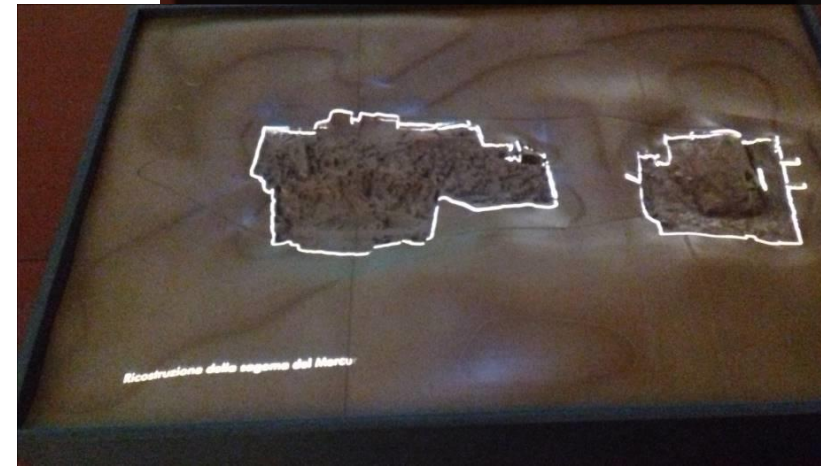
3D model of the Grado 1 hull (E. Costa)



Case study: Grado 1 shipwreck



OculusQuest
Caorle Museum



UNDERWATERMUSE 2. VR/AR environment potential

bring heritage to people

make visible the non-visible through the narrative and communicative use of VR/AR



Case study: Grado 2 shipwreck

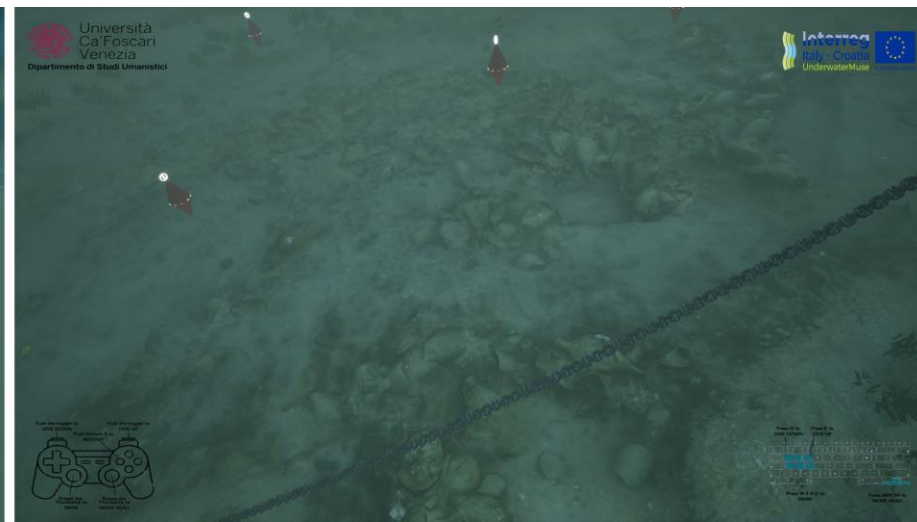
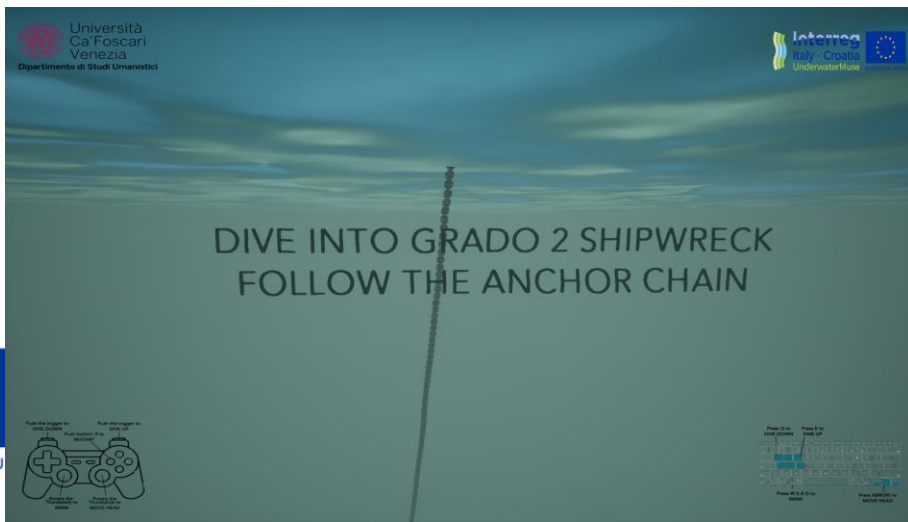


La rotta della nave

Da dove proveniva e dov'era diretta la nave che trasportava queste anfore? A oggi non abbiamo elementi sufficienti per dirlo. Sappiamo però che anfore simili erano numerose nei grandi empori etruschi posti nel delta del Po, come Adria (da cui l'Adriatico prende il nome) e Spina, e sono state prodotte lungo la costa romagnola, a Cattolica. La presenza di una nave carica di anfore greco-italiche, forse prodotte nell'alto Adriatico e contenenti quindi vino locale, potrebbe essere un altro segnale dell'avanzata di Roma verso est (che già aveva fondato le colonie di Rimini nel 268 a.C. e Brindisi nel 244 a.C.), per lo sfruttamento dei fertili territori agricoli di questo versante e il controllo delle rotte dirette a Oriente.

The ship's route

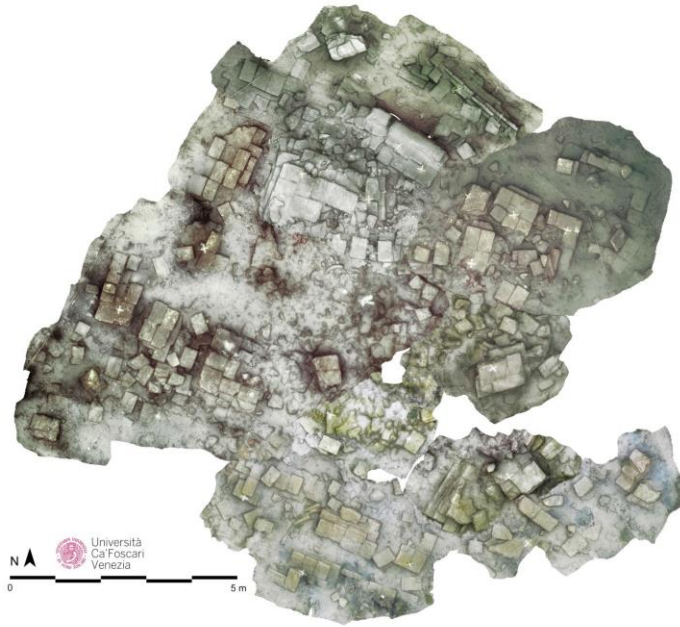
Where did this ship come from and where was it headed? To date, we do not have sufficient elements to say this. However, we know that similar amphoras were numerous in the large Etruscan emporiums located in the Po delta, such as Adria (from which the Adriatic takes its name) and Spina, and were produced along the Romagna coast, Cattolica. The presence of a ship with Greek-Italic amphoras, perhaps produced in the upper Adriatic and therefore containing local wine, could be another sign of the advance of Rome towards the east (which had already founded the colonies of Rimini in 268 BC and Brindisi in 244 BC), for the exploitation of the fertile agricultural territories of this side and the control of the routes to the East.



UNDERWATERMUSE 2. VR/AR environment potential

bring heritage to people

make visible the non-visible and take “under water” the non-divers to enjoy the UCH



Case study:
**'Roman tower' of
Canale San Felice**



Explore the virtual reality and dive by yourself into Grado 2 shipwreck or Brick's shipwreck.

Click on the download button, follow the link and download the file. Unzip the folder and play Grado2.exe from a personal computer.

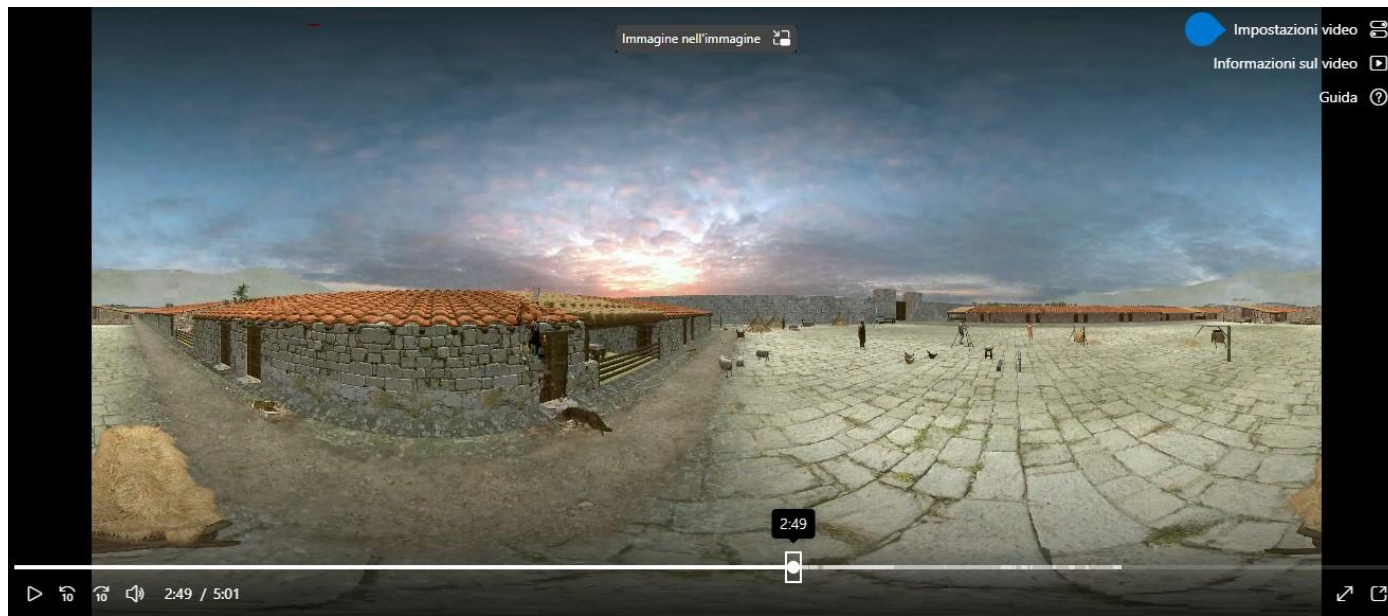
Enjoy the dive !



UNDERWATERMUSE 2. VR/AR environment potential

bring heritage to people

make visible the non-visible and take “under water” the non-divers to enjoy the UCH



*Case study:
Resnik/Siculi, Split County*



UNDERWATERMUSE *increasing awareness*

Heritage community & target groups' involvement

Grado 2 pilot action

Underwater Museum. A model for shared and participatory management

to ensure that diving centers, diving clubs and other regional realities can assist the protection bodies, as already happens in neighboring Croatia, in the enhancement, protection and maintenance of the site.



UNDERWATERMUSE
increasing awareness
Heritage community &
target groups' involvement

Torre S. Sabina pilot action
Public archaeology
and heritage communication
open day



UNDERWATERMUSE *increasing awareness*

Public archaeology and heritage communication

Festival «Roads of sand»



ARCHEO LIVE Network

**GIOVEDÌ
9 Settembre
ore 21.00**

STRADE DI SABBIA
Suoni e parole dal Mediterraneo

La Cantiga de la Serena con Andrea De Siena
La Mar
Atrio del Castello CAROVIGNO (BR)

Direzione artistica GIORGIA SANTORO | Coordinamento scientifico RITA AURIEMMA e DANILÒ LEONE | Produzione ZERO NOVE NOVE

Tutte le iniziative sono gratuite con prenotazione obbligatoria info e prenotazioni concerti @antonella.antonazzo@libero.it Tel. 3476546787



ARCHEO LIVE Network

**GIOVEDÌ
23 Settembre
ore 21.00**

STRADE DI SABBIA
Suoni e parole dal Mediterraneo

Fabrizio Piepoli
Il cedro e la rosa
Atrio del Castello CAROVIGNO (BR)

Direzione artistica GIORGIA SANTORO | Coordinamento scientifico RITA AURIEMMA e DANILÒ LEONE | Produzione ZERO NOVE NOVE

Tutte le iniziative sono gratuite con prenotazione obbligatoria info e prenotazioni concerti @antonella.antonazzo@libero.it Tel. 3476546787

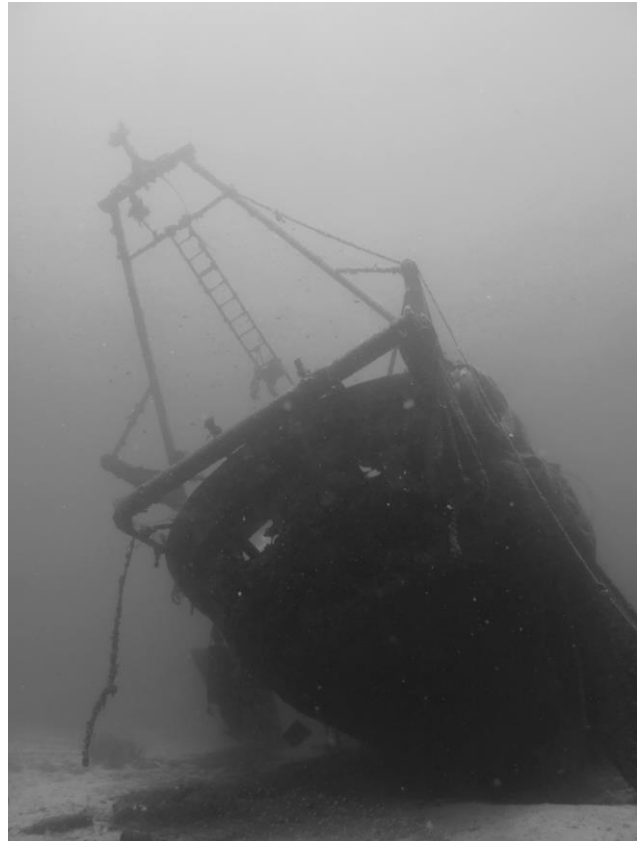


UNDERWATERMUSE *increasing awareness*

the community active involvement: the photographic contest



Božidar Vukićević winner photo



Loriana Marović winner photo

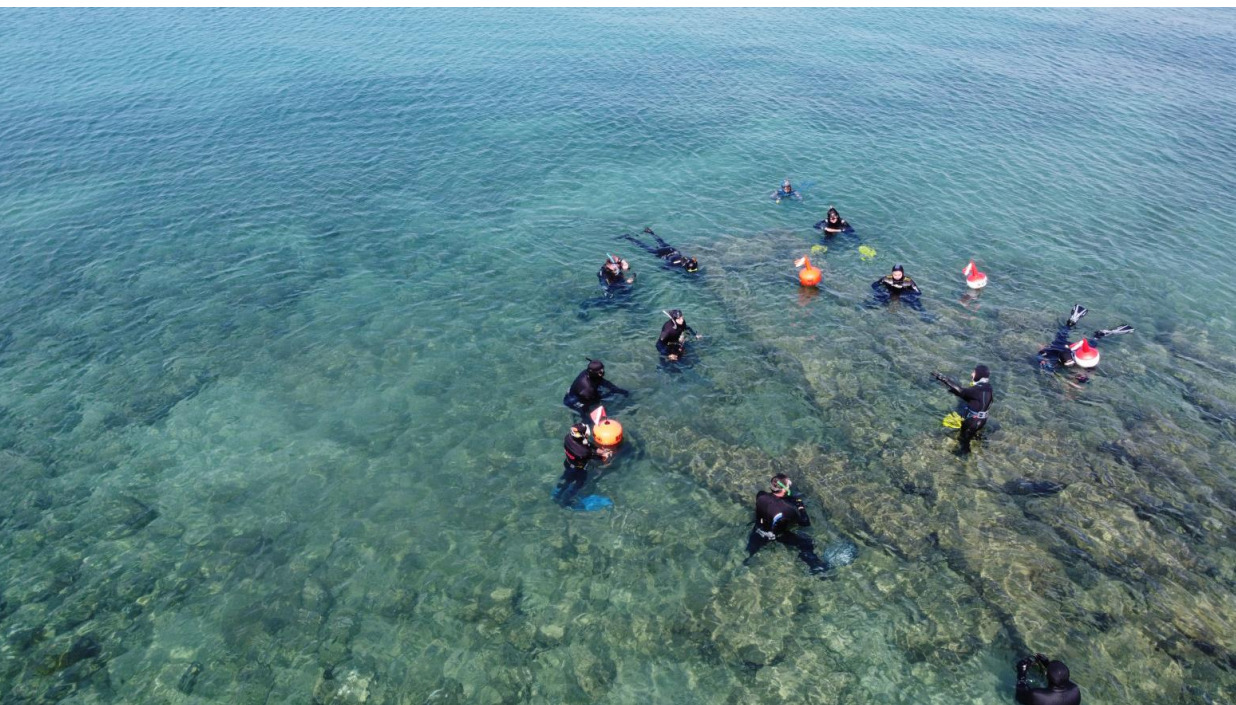
the photographic exhibitions
Kaštela Museum
Catromediano Museum



UNDERWATERMUSE *increasing awareness*

heritage community & stakeholders' specific training

diving clubs & centers' training in FVG



UNDERWATERMUSE *increasing awareness* *heritage community & stakeholders' specific training* *Training for diving guides and tourist guides in Salento, Puglia*

REGIONE PUGLIA - COMUNE DI PORTO CESAREO
UNIVERSITÀ DEL SALENTO
interreg Italy - Croatia
COORDINAMENTO AMBIENTALISTI
A-Mare
AVISO PUBBLICO
COORDINAMENTO AMBIENTALISTI PRO
PILIL CULTURA
CALASANZIO cultura formazione e gusto
LEGAMBIENTE PORTO CESAREO
Presidenza del Consiglio dei Ministri
DIPARTIMENTO PER LE POLITICHE GIOVANILI E IL SERVIZIO CIVILE UNIVERSITARIO



UNDERWATERMUSE *Final event (Lecce-Porto Cesareo, 3-5 June 2022)*



Interreg
Italy - Croatia
UnderwaterMuse
European Regional Development Fund

FINAL EVENT

APPUNTAMENTI
LECCE - PORTO CESAREO
3/4/5 GIUGNO 2022

CONVEGNO
STATI GENERALI DELLA GESTIONE DAL BASSO DEL PATRIMONIO SUBACQUEO



VENERDÌ 3 • 9:00/19:30
SABATO 4 • 16:00/19:30
DOMENICA 5 • 9:00/13:00
MUSEO CASTROMEDIANO - LECCE

Interreg
Italy - Croatia
UnderwaterMuse
European Regional Development Fund

FINAL EVENT

APPUNTAMENTI
LECCE - PORTO CESAREO
3/4/5 GIUGNO 2022

FRUIZIONE IMMERSIVA APP 3D

*LA NAVE DELLE COLONNE DI PORTO CESAREO: IL VIAGGIO INCOMPIUTO
LA NAVE FANTASMA DI TORRE GUACETO
SICULI SOMMERSA*



VENERDÌ 3 • 17:00/19:30
SABATO 4 • 17:00/19:30
DOMENICA 5 • 10:30/12:30
MUSEO CASTROMEDIANO - LECCE

Interreg
Italy - Croatia
UnderwaterMuse
European Regional Development Fund

FINAL EVENT

APPUNTAMENTI
LECCE - PORTO CESAREO
3/4/5 GIUGNO 2022

SNORKELING VISITA GUIDATA TORRE E MOSTRA ARCHEOLOGICA FRUIZIONE IMMERSIVA APP 3D



SABATO 4 • 10:00/13:00
AREA MARINA PROTETTA PORTO CESAREO - TORRE CHIANKA

UNDERWATERMUSE developments: *regional action plans in Puglia*

PUGLIA REGION

The foundation of a Euro-Mediterranean Center for the Seascapes Archeology
Puglia Region, UCH National Superintendency, 3 Universities

within the objectives of the UnderwaterMuse Project and in particular in the regional action plan aimed at enhancing the underwater cultural heritage

research
cataloguing

conservation
restoration

education
training

dissemination
communication

fundraising
international
projects

valorization
tourist
enjoyment



VALORIZZA

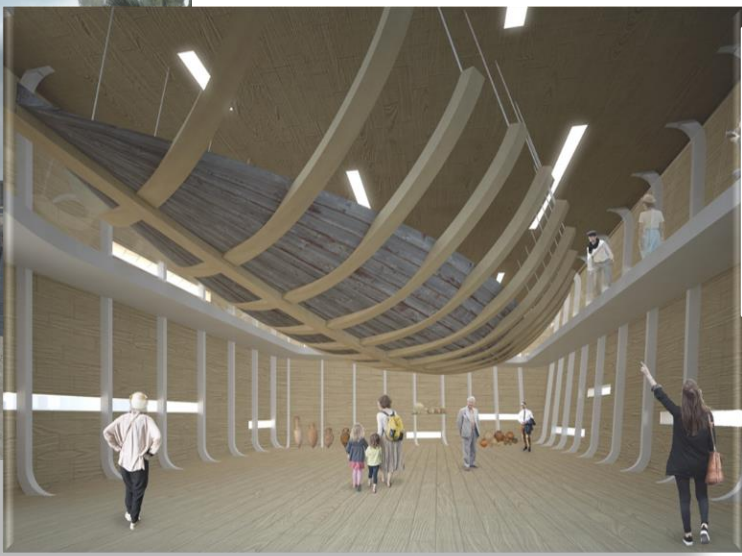
il patrimonio culturale sommerso e la cultura del mare attraverso progetti di conoscenza, comunicazione e accessibilità

- / **UnderwaterMuse**
Programma Interreg Italia-Croazia
- / **FISH.&C.H.I.P.S**
Programma Interreg Italia-Grecia
- / **Puglia Seascapes**
Progetto Destinazione Puglia



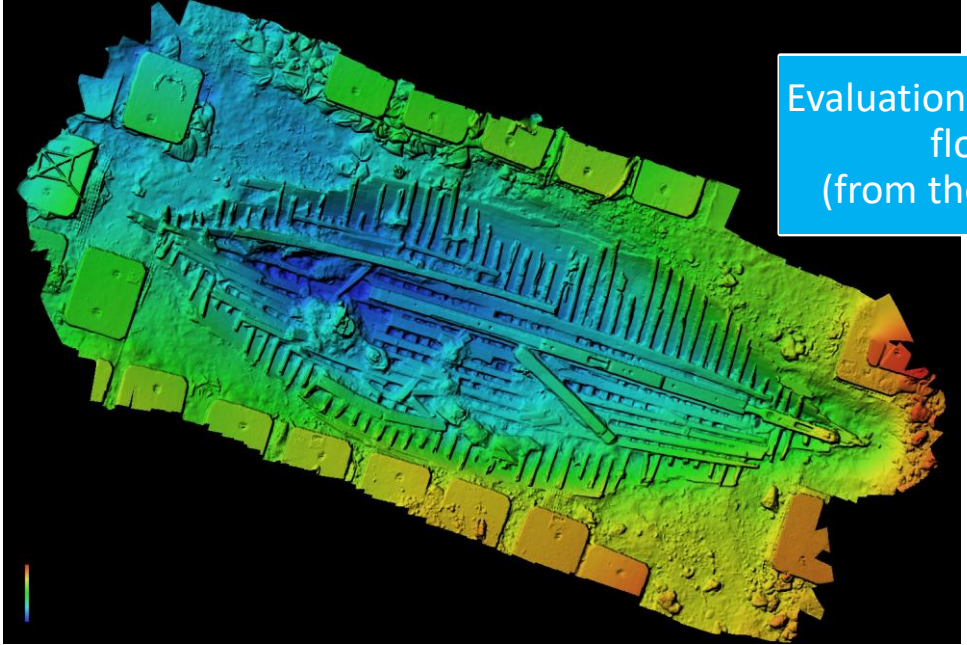
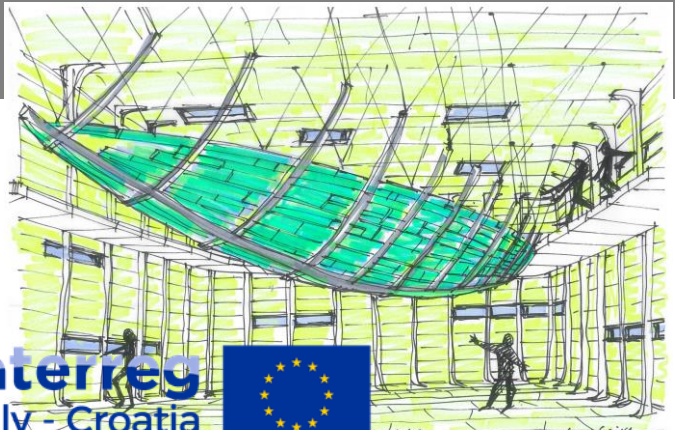
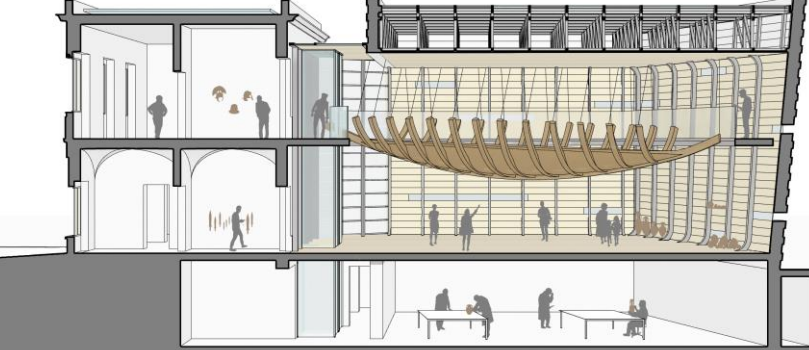
UNDERWATERMUSE developments: *regional action plans in Puglia*

a feasibility study for Torre S. Sabina



Design of the waterfront maritime museum connected to the archaeological park/blue trails

Evaluation of the TSS1 ship recovery and restoration (open lab)

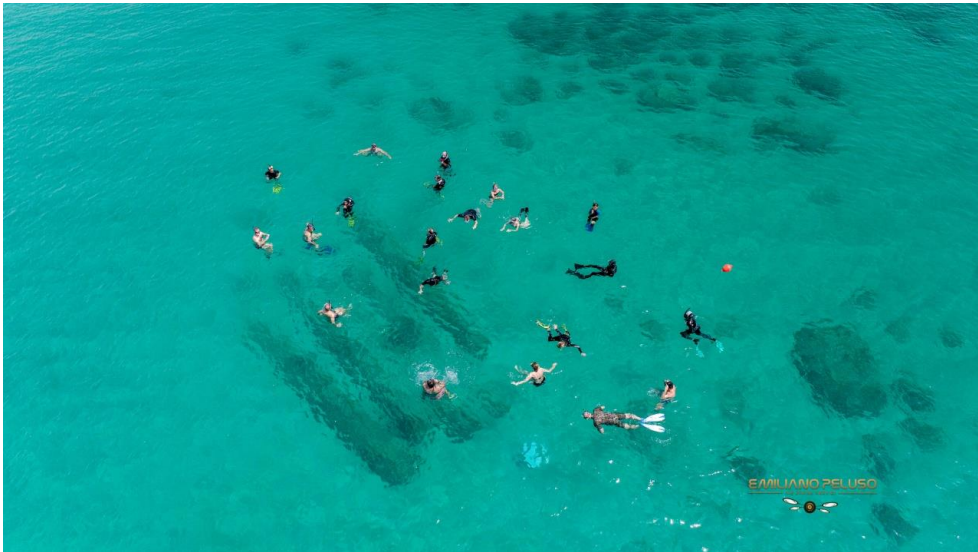


Evaluation of TSS1 ship physical floating replica (from the virtual 3D model)

UNDERWATERMUSE developments: *regional action plans in Puglia*

PORTO CESAREO

Coastal and Underwater Archaeological Park Project



Snorkeling tour experimentation

UNDERWATERMUSE developments: *regional action plans in Puglia*

PORTO CESAREO

Coastal and Underwater Archaeological Park Project

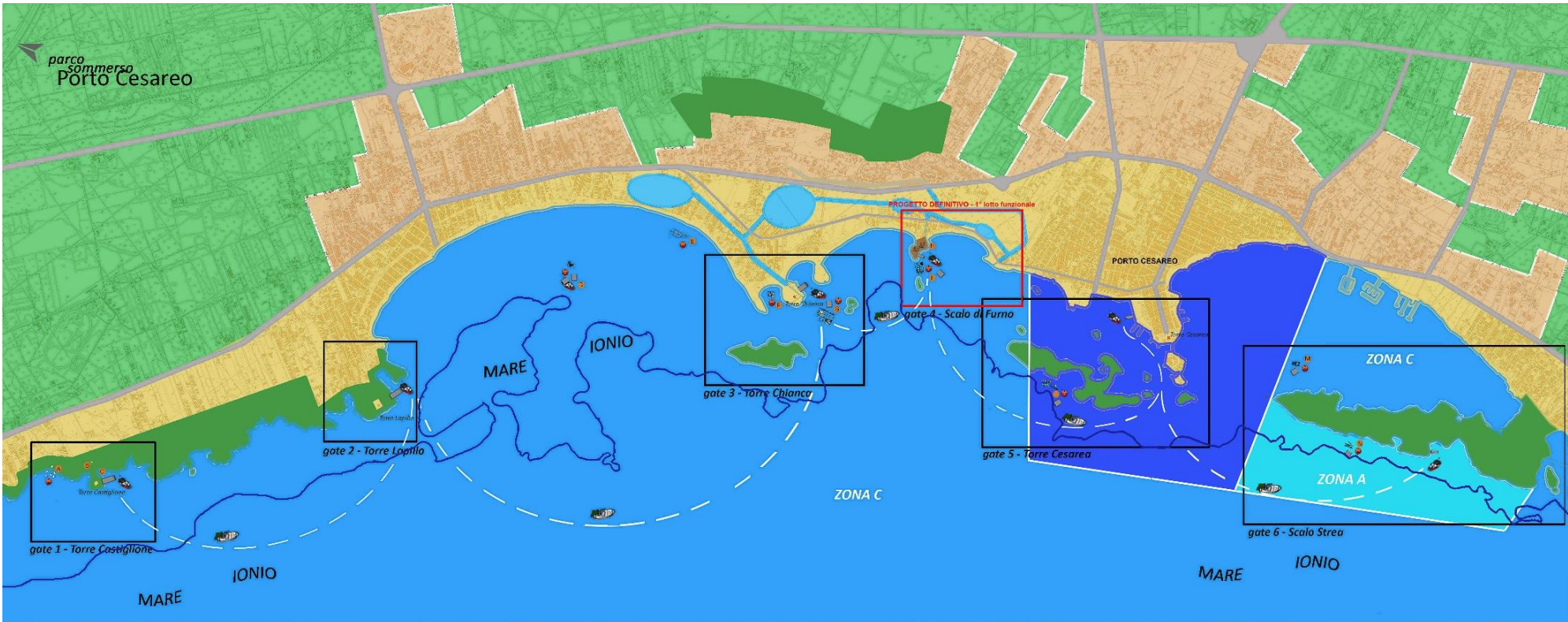


Dry-diving in Torre Chianca



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UNDERWATERMUSE developments: *regional action plans in Puglia*



PORTO CESAREO Coastal and Underwater Archaeological Park Project
Feasibility study and establishment of a technical table