

PORTUGAL'S DEEP WATER UNDERWATER CULTURAL HERITAGE MANAGEMENT

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Willing to Attend Workshop? Yes.

Target Name: Portuguese Coastline.

Geographic Areas of Interest within the North Atlantic Ocean: North Central and Northeast.

Relevant Subject Areas: Marine Archaeology, Biology, Geology, Physical Oceanography.

Brief Overview of Areas: Study areas are the *Esposende Area* (1), the *Sines Area* (2) and the *Lagos Area* (3), with depths ranging from 50 to 500 meters.

Brief Summary of Current State of Knowledge: Serving as an interface between the Mediterranean and the Northern Atlantic seas, Portugal's ocean facing position on the Iberian Peninsula has played a crucial role in Europe's maritime world over the last three millennia. Phoenicians, Romans, Goths, Arab Muslims, Crusaders, all have exploited its coastal resources, leaving behind a tangible (buildings, structures, landscapes, etc.) and an intangible (performing arts, social practises, etc.) heritage.



During the Age of Discoveries, as Atlantic trade winds forced ships coming from the New World, Africa or Asia to sail to the Azores and then straight ahead towards Lisbon, Sevilla or Cádiz, storms, pirate and corsair attacks and navigational errors have sent to the bottom of the Portuguese territorial waters more than 225 treasure carrying ships, a shining beacon still attracting modern day looters and treasure hunters that see those sites as auctionable goods instead of cultural heritage.

criminalizing treasure hunting, recognizing the value of cultural heritage of coastal and maritime regions and being aware of its vulnerability, Portugal ratified the UNESCO Convention for the Protection of Underwater Cultural Heritage. The economic benefits of Underwater Cultural Heritage (UCH) study and protection are now widely recognised not only in terms of tourism, but also as an innovative stimulant for growth and employment in a wide range of traditional and new industries - cultural heritage being one of the four pillars of Europe's sustainable development, with heritage being a strategic resource and a major contributor to social cohesion.

As UCH is a non-renewable resource that is forever lost if destroyed, it is therefore crucial to locate, preserve and record submerged sites before they are impacted - either by erosion or by looting, deep trawling or other human activities. For this to happen, shipwreck databases have to be built and UCH sites have to be pinpointed and identified.

For the past 20 years, Portuguese nautical archaeologists have been collecting information from the fish trawling activities regarding sites once impacted by fishing nets, where amphorae, cannons, olive jars, human bones and bullion have surfaced. Maps have been produced with this data, with depths and coordinates/transits recorded.

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The research process is now on the desk-based assessment (DBA) phase, with existing archaeological, geological and oceanographic databases being consulted in order to study the nature and potential of UCH sites. Sources used include historical archives, published literature, maps, charts, aerial and satellite photographs, sites and monuments data, wrecks data, geophysical and geotechnical data.

Rationale for Future Exploration: Texas A&M ShipLAB, the Oporto University Underwater Systems and Technology Laboratory (LSTS) and the Lisbon NOVA University are now applying for permits with the Portuguese Heritage Agency (DGPC) for the survey and mapping of selected areas of the Portuguese coastline up to 100 m deep, the maximum range of the sensing equipment embarked on board LSTS AUV's.

Data interpretation will be based on a combination of geophysical data (eg. magnetometer data with side scan sonar and multibeam imagery) coupled with geological, geomorphological and archaeological data compiled on the DBA phase.

If detected, UCH remains will be evaluated according to their intrinsic value and degree of significance. Criteria used to determine the intrinsic value of detected UCH sites will be: potential to yield important information; association with important events or people; distinctive characteristics of a period; representativeness; social or spiritual significance; and economic value in the present time and future/looting potential. Criteria used to evaluate the degree of significance will be: provenance; representativeness; rarity/uniqueness; condition/completeness; interpretive potential; and capacity to inform us about the past

As the most promising deep water UCH suspected sites –as recorded by trawling masters – are situated in between 200 and 500 m deep, a future collaboration with an ASPIRE campaign mission would be of paramount importance for strengthening research activities on the documentation, mapping, monitoring, preservation, protection and valorisation of Portugal's UCH in deep water.

Relevant Partnerships: We are a collaborative interdisciplinary scientific exploration group, that integrates Spanish and Portuguese nautical archaeologists, biologists, maritime historian and lawyers, social scientists and underwater robotics specialists that collect input from management agencies, fishing and diving communities in order to identify unexplored areas of the ocean where new UCH discoveries are likely to be made.

We have MoU's with the Portuguese Mission for the Extension of the Continental Shelf (EMEPC), the Cultural Heritage General Directory (DGPC), the Portuguese Navy Hydrographical Institute (IH) and with the coastal counties of Esposende, Lagos, Grandola, Sines and Alcaccer do Sal.

NOVA University of Lisbon's Instituto de Arqueologia e Paleociências has since 2011 positioned itself as a national and international leader on nautical archaeology studies, with increased participation in international European research programs. IAP-NOVA is also a leading institution in two sensitive topics concerning the safety of UCH: treasure hunting and trawler fishing activities, which are threatening the submerged heritage of Portugal, as well as that of many other countries such as Mozambique, Cape Verde and Uruguay.

The Underwater Systems and Technology Lab (LSTS) is an interdisciplinary research laboratory established in 1997. The LSTS specializes on the design, construction, and operation of unmanned underwater, surface and air vehicles and on the development of tools and technologies for the deployment of networked remotely operated vehicle systems. During the last 20 years, researchers from the LSTS have successfully fielded unmanned air, ground, surface and underwater vehicles in the Atlantic and Pacific oceans, and in the Mediterranean Sea.