Chapter 25
Education and Engagement: Developing Understanding and Appreciation of Submerged Prehistoric Landscapes

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Abstract The position of submerged prehistoric landscapes beneath the water and often beneath the seabed makes them difficult to access. Scientific investigation and research are providing data on prehistoric peoples and their associated drowned landscapes which is important for illuminating aspects of the past. Development of academic study and management approaches to the resource are vital for professional growth and appropriate protection. Alongside this is a large public fascination with past landscape change which provides an important route for engaging people with this otherwise hidden aspect of their past. Prior to the SPLASHCOS project the approach to education and outreach relating to submerged prehistoric landscapes across Europe had been patchy and inconsistent. This paper explores examples from the Maritime Archaeology Trust (MAT) of how education and outreach can promote this understudied area of the historic environment. It then details initiatives of the SPLASHCOS project that provided learning opportunities, field schools, engagement with industry and wider management aspects. Experience from this work is drawn upon to consider future challenges for expanding understanding and appreciation of submerged prehistoric landscapes.

25.1 Introduction

The understanding and appreciation of submerged prehistoric landscapes (SPLs) is currently at a very early stage, whether within the professional community of archaeologists and marine scientists, or more widely amongst marine managers, heritage professionals, policy makers, politicians and the general public. The fact that SPLs are not only underwater but also often further buried under seabed sediments presents a number of obstacles to ease of access and understanding. The 'remoteness' of SPLs, both in terms of the period of human history they refer to and their physically inaccessible location, provides particular challenges for engaging a wider audience.

With a limited number of preserved and stratified sites so far located and relatively few organisations undertaking any physically intrusive investigation of sites and landscape deposits, there are limited examples of well-studied and conserved material available for access, research and wider dissemination through archives, museums and other media. Moreover, the research itself requires specialist equipment for survey, archaeologists with professional diving qualifications, and complex logistics. The low number of experienced practitioners currently active in the field highlights the relative immaturity of the discipline.

However, the location and investigation of submerged archaeological sites and landscapes is ongoing and expanding, as is clear from other chapters in this volume, and these are revealing the huge

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potential of the underwater environment to add to the understanding of early human history in a number of key areas, including sites with unusual conditions of preservation and from very early periods. This as yet largely unexplored frontier of archaeological research will certainly provide significant discoveries in coming years and it is only through active efforts to promote increased education, engagement and incorporation within the wider public consciousness that this information will become available for all, and thus reinforce wider public and governmental support for ongoing research and conservation.

The aim of this chapter is to examine the key issues associated with communicating the significance of SPLs to a wider public and the different types of audience that need to be addressed, to describe the activities of the Maritime Archaeology Trust as an example of developing education and outreach programmes, and to summarise the activities developed as part of the SPLASHCOS Action, which included a Working Group specifically dedicated to communication, outreach, training and collaboration with industry.

25.1.1 Challenges and Benefits

The need to understand SPL deposits, and the need to communicate that understanding to a wider audience, is acute due to a range of humanly-induced threats through development and commercial use of seabed deposits and to natural threats from erosion, hydrodynamics and geomorphological processes. Without quality data on these deposits it is not possible to target investigations and manage the resource effectively.

In addition to the access issues of the underwater environment, there are other key obstacles to wider understanding. Concepts of large-scale landscape and environmental change can be difficult for the non-specialist to grasp, given the scale of the physical processes involved and the extent to which they have dramatically reshaped landscapes which now bear no resemblance to modern coastlines and international borders. An additional difficulty in conveying the nature and significance of the research to a wider audience is that the discipline is still developing and trying to understand where and how these deposits are preserved and how to locate them. Another barrier to engagement and understanding, although this applies equally on land and is not confined to underwater material, is that the most commonly available artefacts for study are stone tools. These artefacts often need additional interpretive materials demonstrating the specific application of different type of tools to allow their full significance to be appreciated.

On the positive side, underwater archaeological material and deposits are now becoming available for study in increasing numbers even if they are localised in nature and difficult to access. The preservation potential in the underwater environment can result in recovery of organic artefacts such as wooden structures, boats, fish traps, wooden implements, basketry, cordage and other organic materials, which would not normally survive on land-based archaeological sites, and which convey a more lively and detailed picture of past day-to-day life. Also, the rapidly changing evidence base does demonstrate ‘science in action’; as often with archaeological research, the actual detective work involved in the process of discovery and reconstruction is a source of perennial fascination to the non-specialist, and this is especially the case with underwater research, providing many opportunities for engaging the interest of non-specialist audiences.

25.1.2 Key Messages and Audiences

Inevitably there is a need to reach a range of different audiences when attempting to increase understanding. This task is especially important to pursue alongside the actual research itself, because increased understanding amongst a wider academic and scientific community as well as the wider public will help to ensure that the underwater cultural heritage will be valued, cared for and properly managed. For the SPLASHCOS project, it was important to identify the most important messages to convey to various audiences to maximise the international impact across Europe and beyond.

For the scientific academic audience there is a need to develop and promote this growing area of study, and especially the need for inter-disciplinary skills and approaches to solve research problems and develop future strategies. There is huge potential for the re-use of data and resources that are held in public and private archives to help develop research. This can help demonstrate the relevance of the study of SPLs to other areas of science, for example in contributing to an understanding of climate change or changes to the maritime environment.

Moreover, re-use of surveys and investigations undertaken by marine industries can help engage the commercial and industrial audience. Collaborations between companies and research organisations can help unlock the potential within marine datasets for understanding the extent and preservation of SPLs. This has been ably illustrated through examples such as the North Sea Palaeolandscape Project, which used 3D seismic industry data to map the early Mesolithic landscapes (Gaffney et al. 2009; Gaffney et al., Chap. 20), and the development of Rotterdam's Maasvlakte 2 port extension which included extensive assessment and mitigation work on Mesolithic archaeology and associated landscapes (Moree and Sier 2015; Momber and Peeters, Chap. 21). In the longer term, this can reduce risks related to unexpected discoveries or impacts on prehistoric archaeology resulting from industrial and commercial projects in the marine zone. While there is EU legislation and guidance documents that dictate minimum best practice in relation to consideration of prehistoric remains during the course of industrial work on the seabed, fulfilling and surpassing these minima can provide positive public relations opportunities for the companies involved.

Reaching government agencies and policy makers is also vital to help develop management, protection and funding. Some key elements for achieving this include highlighting how SPLs contain unparalleled information on early human populations and environmental change that is not preserved on land and is currently not well studied or integrated within research and management programs. Developing understanding of past climate change, particularly rising sea levels and their effects on prehistoric territories and human populations, has direct relevance for issues faced by modern coastlines and communities. From a management point of view, increased investment in research can develop understanding of SPLs—their location, extent and significance—and this in its turn will feed into marine spatial planning and associated licensing and protection. This can be particularly relevant for commitments under the UNESCO Convention on the Protection of the Underwater Cultural Heritage (2001), the Valletta Convention (1992) and the Council of Europe's European Landscape Convention (2007).

Messages to the wider public need to focus on a landscape that is now submerged and that can preserve fascinating evidence about daily life. A key aim is to provide a basic understanding that underwater investigations are providing a new dimension to knowledge of early human populations impossible to gain from studying only terrestrial sites and landscapes. SPLs can also be a valuable tool to engage children with a wide range of cross-curricular subjects, promoting engagement from an early age.

To deliver these messages effectively, I draw on experience from the UK, in particular the work of the Maritime Archaeology Trust, where education and outreach has been a major priority in actively raising the profile of submerged prehistoric landscapes, and then examine some of the initiatives developed within the SPLASHCOS Action.

25.2 MAT Experience in the UK

Within the UK, the Maritime Archaeology Trust, or MAT (formerly the Hampshire & Wight Trust for Maritime Archaeology) has extensive experience with research-led investigation of SPLs. This includes work on the nearby underwater site of Bouldnor Cliff (Momber et al. 2011; Momber and Peeters, Chap. 21) involving excavation, data gathering, analysis and interpretation, as well as dissemination and promotion of the significance of SPLs to audiences ranging from school children to marine managers and planners. The work of the Trust extends to all aspects of the maritime heritage including shipwrecks and coastal and underwater installations from more recent periods, but has a particularly strong focus on prehistoric underwater material.

As an independent charitable Trust, the MAT operates to deliver its broad aim of 'promoting interest, research and knowledge of maritime archaeology'. Specific objectives related to education and outreach include:

- Promoting public awareness, enjoyment, education and participation in maritime archaeological heritage
- Ensuring that maritime archaeology plays an important role in coastal planning, management and policies.

These objectives are achieved through formal and informal initiatives for different sectors and audiences. The lessons learnt from these education and dissemination activities provide examples at a regional scale that could be expanded nationally and internationally to promote this understudied area of the historic environment.

25.2.1 Direct Hands-on 'Training in the Field': Professionals and Volunteers

One of the most important ways of gaining an understanding of SPLs is to directly experience them. The MAT provides opportunities to participate in research projects for professional colleagues and volunteers from the scientific and research community as well as the general public. In addition to being open to those qualified to dive, the Trust offers a range of related tasks for non-divers. This inclusive approach aims to develop public archaeology in its broadest sense through creating access to materials and experience of methodologies and techniques.

The Solent has been recognised as being of particularly high potential for submerged prehistoric landscapes (Fulford et al. 1997; Momber 2000; Momber et al. 2011). One of the most significant areas is off the north-west coast of the Isle of Wight at Bouldnor Cliff, where stratified Mesolithic occupation remains have been located in 12 m depth of water (Fig. 25.1). The site provides a significant opportunity to study well preserved prehistoric material including a range of organic artefacts and palaeoenvironmental evidence. Not only is the site contributing unusual knowledge of the Mesolithic within the UK (Smith et al. 2015), it also provides a range of opportunities for training.

This expanding area of archaeological research and investigation is demanding the development of innovative approaches to underwater recording, sampling and recovery (Fig. 25.2). The project has also demonstrated the need for training of archaeologists, either those used to terrestrial prehistoric sites, or those more familiar with shipwreck remains. The Bouldnor Cliff project hosted two Short Term Scientific Mission (STSM) placements as part of the SPLASHCOS project, providing the opportunity for early stage researchers to experience all aspects of underwater investigation of SPLs (http://splashcos.org/training/2010_Southampton).

There is also an ongoing requirement for the processing of a large number of samples of seabed deposits from the Bouldnor Cliff site. Due to the difficulties of conducting underwater excavation in

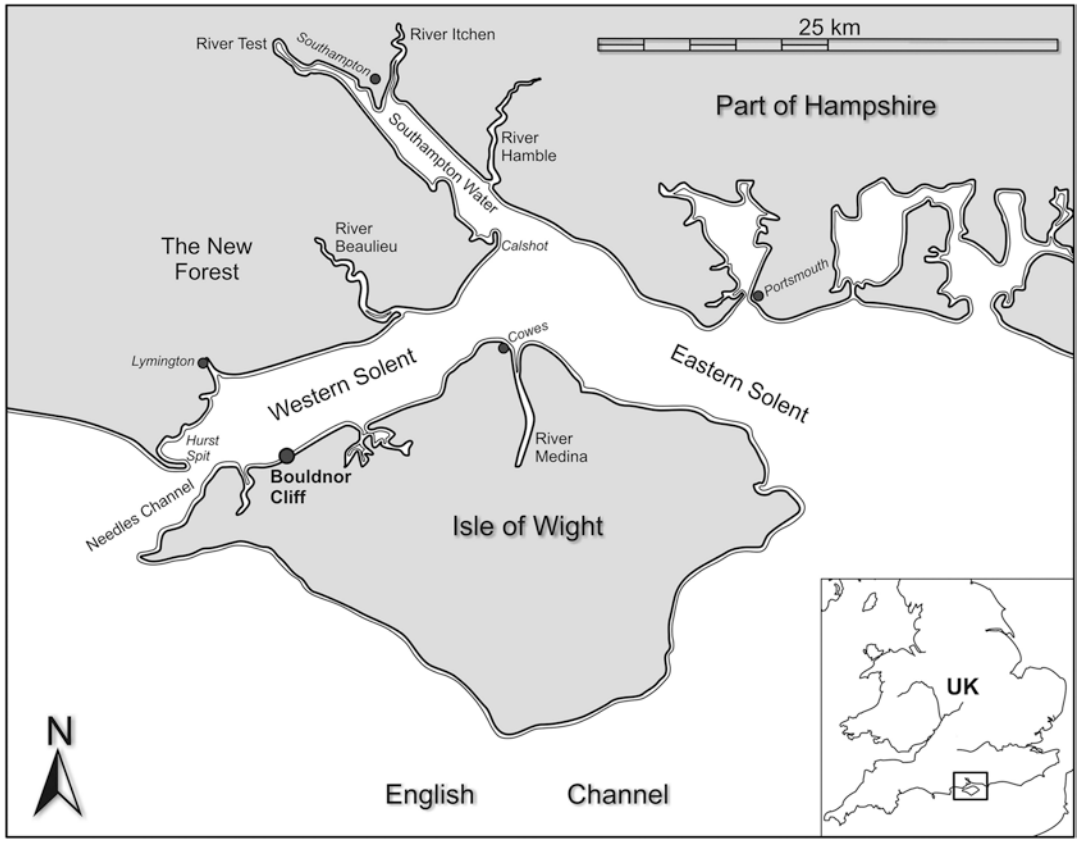

Fig. 25.1 The location of the Bouldnor Cliff submerged Mesolithic site and landscape, off the North West coast of the Isle of Wight, UK (Maritime Archaeology Trust)

Fig. 25.2 Diver records evidence of Mesolithic occupation at Bouldnor Cliff (Photo: Maritime Archaeology Trust)

situ because of the harsh tidal environment, the excavation strategy required the removal of blocks of sediment and their transportation back to dry land for detailed processing and the development of a sieving programme to maximise the recovery of data (Momber et al. 2011, pp. 24–33). Much of the data is in the form of palaeoenvironmental samples (e.g., bulk samples, cores, monoliths and timber

Fig. 25.3 Volunteers of all ages have been involved with the recording and processing of material recovered from the submerged prehistoric landscape deposits from Bouldnor Cliff (Photos: Maritime Archaeology Trust)

samples), often with unusual conditions of preservation. Processing of such samples may be familiar to those used to working and volunteering on terrestrial sites, but they provide an excellent learning opportunity for non-specialists as well as for those more familiar with other types of maritime work, such as photography, survey or diving.

The examination, recording and recovery of material from these samples involved the training of non-diving volunteers and students who were keen to gain experience (Fig. 25.3). Although recognising the need for supervision and guidance while carrying out processing of samples, those involved have relished 'hands-on' work with prehistoric material.

The educational potential of this project was recognised from the outset, and has achieved positive results simply through the significant numbers who have participated. Those involved have gained practical experience in a range of activities:

- Underwater recognition of prehistoric landscape deposits, their stratigraphy and the potential of their associated palaeoenvironmental evidence
- Use of recording techniques such as photography on submerged prehistoric remains
- Adapting and developing survey and sampling approaches to a new environment
- Recognition of archaeological material including worked and burnt flints, worked wood, and food remains such as hazelnuts

The development of interest in SPLs is not confined to the archaeological field. There is huge public interest in this subject, which combines the study of early human populations with 'drowned' landscapes. This is further fuelled by challenges posed by modern climate change and sea level rise. It has been possible to link evidence from Bouldnor Cliff with these themes in interpretations and exhibitions and through this to attract wide interest in this area of marine archaeology.

25.2.2 Formal and Informal Education and Learning: Children and the General Public

Embracing the potential to inspire children and young adults with SPLs through formal and informal learning opportunities has resulted in the development of a range of education products. As archaeology is seldom taught in UK schools as a separate discipline, we have found it necessary to raise the profile of the subject through a number of innovative schemes in order to enhance its accessibility and appeal. We have introduced maritime archaeology and SPLs to junior-age children in order to encourage them to explore the subject further both outside a formal teaching environment and into higher education. At a basic level, simply providing children with an appreciation of this under-studied aspect of their cultural heritage imparts knowledge that is likely to stay with them throughout life.

Archaeology and the study of SPLs is a highly cross-curricular subject and is relevant to history, geography and sciences in addition to contributing to literacy and enjoyment of language. Teaching resources that we have provided for schools have included education packs made available on loan. The packs contain folders and notes for teachers that provide background information in addition to a range of activities linked to learning objectives, and a range of artefacts, core samples showing stratigraphy, and CDs containing interactive components for teaching. One example of an activity focusing on SPLs is 'Reconstruction of ancient landscapes and people' that encourages pupils to study artefact and environmental evidence through which they learn about prehistoric lifestyle, technology and culture.

Learning is not confined to the formal setting of schools, and there are a wide range of ways that information can be provided to children and adults. The writing and production of well-illustrated children's story books has been a route for reaching both children and parents. 'Derek the Dredger and the Underwater Archaeologists' (HWTMA 2008) explore aspects of archaeology and the marine aggregates industry including how traces from prehistoric landscapes such as remains of bones and flints can be discovered in sorting through dredged-up material.

Based on the experience of attending a range of events, shows and conferences to engage different audiences, the MAT developed the 'Maritime Discovery Bus', a travelling resource which show-cases maritime archaeology including SPLs (Fig. 25.4). The bus has undertaken tours within the UK and across Europe, most recently within the EU Funded 'Common Cultural Connections' project with partners in France and Spain (www.commonculturalconnections.org). Using onboard artefacts, information boards, videos and a screen-linked microscope, visitors learn about the process of archaeological investigation in addition to the types of evidence recovered.

The approaches taken by the MAT have demonstrated the advantages of taking a holistic approach to the investigation and dissemination of SPLs. In addition to practical activities for outreach, the MAT also works through representation on coastal and marine management groups and forums to help ensure that the wider appreciation of the resource is translated into effective management approaches and policies for protection. This experience was drawn on when working within the SPLASHCOS project to promote communication and wider engagement with marine industry.

Fig. 25.4 The Maritime Archaeology Trust's Discovery Bus presenting information on submerged prehistory at a public event located at a coastal park, Plymouth, UK

25.3 SPLASHCOS: Training, Outreach and Collaboration

The aim of the SPLASHCOS project in pushing forward the development of the study, appreciation and management of SPLs included a number of objectives for delivering training opportunities, increasing collaboration with marine industries and broader outreach to stakeholders and the wider European public.

25.3.1 Training

Targeted training and direct field experience was provided for early stage researchers. There were two key mechanisms for this – Short Term Scientific Missions (STSMs) for individuals or small groups, and Training Schools for larger groups of individuals (see Uldum et al., Chap. 5; Galili et al., Chap. 6). Eleven STSMs were delivered during the project. These allowed individual researchers to gain valuable experience at a host organisation within another EU state. The missions differed in duration from 5 days up to 1 month, the key aim of which was to foster collaboration and to learn new techniques (Fig. 25.5).

The training schools provided intensive specialist training on particular subjects for groups of researchers. SPLASHCOS delivered six training schools, which focused on a range of areas related to SPLs: palaeo sea-level modelling (Estonia), underwater excavation (Israel, Galili et al., Chap. 6), underwater geoacoustic modelling (Spain), underwater recording and conservation (Malta) and remote sensing of submerged landscapes (Rhodes).

During the project, 65 early stage researchers were able to benefit from these training opportunities.

Fig. 25.5 An Early Stage Researcher from Portugal (Leandro Infantini) working in the laboratory on prehistoric sediment samples during a SPLASHCOS Short Term Scientific Mission (Photo: Maritime Archaeology Trust)

25.3.2 Engagement with Industry

There is an urgent need for greater collaboration between SPL research and marine industry. For industries impacting the seabed there are requirements to ensure heritage is investigated prior to development, and this is embedded within European Directives. However, direct contact between companies and archaeologists is not always required as part of the regulatory process. The framework through which heritage legislation and management are delivered differs between countries with regulation and relations with industry being more developed in some states than others. The need for promotion of collaboration with industry was highlighted by Flemming's (2004) volume 'Submerged Prehistoric Archaeology of the North Sea: Research Priorities and Collaboration with Industry'. Over the following decade, growing awareness of SPLs, an increasing volume of research and new evidence from the seabed has focused attention on the need for appropriate evaluation and monitoring through development work. This situation has been examined by Salter et al. (2014), who summarise approaches to research and management of SPLs, emphasising the importance of industry collaboration and the need for greater international cooperation and coordination.

The existing survey data that is held by companies, developers and governmental organisations is of great value when developing understanding of SPLs. Making such data available can bring benefits to scientific and wider public understanding of past human occupation and environments. Facilitating this access requires increased cooperation and communication between industry and the heritage sector, which will be of mutual benefit. During the SPLASHCOS project a number of internationally significant projects were initiated or came to fruition which demonstrate the potential of such collaborations and are building a body of knowledge about best practice (see also Homlund et al., Chap. 4; Glorstad et al., Chap. 19; Gaffney et al., Chap. 20; Sturt et al., Chap. 28).

The largescale project to develop Maasvlakte 2, an expansion of the Port of Rotterdam, embedded archaeological assessment and mitigation throughout the project involving close cooperation from the beginning of the planning process through to completion between the Port authority, the government heritage agency, archaeologists and geoscientists. Evidence from SPLs within the development area included underwater Mesolithic sites, coring and excavation techniques adapted to the working conditions, and recovery of flint tools and palaeoenvironmental indicators (Moree and Sier 2015; Momber

and Peeters, Chap. 21). The work included initiatives to communicate the results to the public, generating wide interest (https://www.maasvlakte2.com/en/index/show/id/665/archaeology-palaeontology).

In the UK, the Aggregate Levy Sustainability Fund enabled research and consultancy organisations to undertake projects to better understand the impacts of the aggregate extraction industry on the marine historic environment (Sturt et al., Chap. 28, http://archaeologydataservice.ac.uk/archives/view/alsf/). Notable SPL examples include the University of Birmingham's West Coast Palaeolandscapes Project, which used industry seismic data to explore Late Palaeolithic and Mesolithic deposits (Fitch and Gaffney 2009) applying approaches originally developed as part of the North Sea Palaeolandscape Project (Gaffney et al. 2007, 2009, see also Gaffney et al., Chap. 20). Further work by Wessex Archaeology in their Seabed Prehistory project developed methodologies for assessing the presence or absence of prehistoric archaeology within marine aggregate deposits (Russell and Tizzard 2011). The British Marine Aggregate Producers Association Protocol for Reporting Finds of Archaeological Interest has established a framework for direct contact between industries working in the marine environment and heritage specialists (BMAPA 2005), which has resulted in reports of flint tools, bones and submerged landscape evidence. This approach is also being applied to the fishing industry through a pilot project (https://fipad.org/) and has been very recently adapted into the Marine Antiquities Scheme through which divers, fishermen, boat operators and coastal visitors can report marine discoveries (https://marinefinds.org.uk/).

SPLASHCOS initiatives targeting relations with industry include a publication 'Marine Industry and Submerged Prehistoric Archaeology: Sharing Data, Developing Understanding and Delivering Best Practice', which was distributed through network members in all project countries and is publically available on the SPLASHCOS website (http://splashcos.org/sites/splashcos.org/files/SPLASHCOS_Marine_Industry_Guide_FINAL.pdf), and a conference with Industry entitled 'Offshore Industry and Archaeology: a Creative Relationship' held in Denmark in March 2013 and organised by Thijs Maarleveld (http://splashcos.org/events/splashcos-esbjerg-meeting). The 2-day event addressed key themes of existing data, the need for standardisation in fulfilling environmental regulations, and the involvement of small and medium sized enterprises (SMEs). Speakers included representatives from major industries in addition to those responsible for gathering and interpreting data from the heritage sector. The event provided opportunities for SMEs which specialise in survey, offshore archaeology services, data evaluation and consultancy to present their experience to representatives of offshore industries and the heritage management sector.

25.3.3 Wider Promotion

The need to enhance understanding and appreciation of SPLs by scientists working in related disciplines and the public was achieved through a range of routes. For events and conferences, we created posters for display. For wider promotional opportunities, we designed and produced a leaflet (Fig. 25.6), and distributed 10,000 of these during the project. As with any current project, internet presence was important, and the project website at www.splashcos.org attracts several hundred visitors per month. A Facebook page was also established with posts regularly reaching over 500 people. Statistics available for the Facebook page indicate that the largest audience reached was the 25–34 age group, providing an important route to reach younger researchers.

Fig. 25.6 The SPLASHCOS publicity leaflet. Over 10,000 were distributed during the project (Photo: Maritime Archaeology Trust)

25.4 Looking to the Future

As understanding of SPLs is a developing area of research, it is important to capitalise on any opportunities for raising awareness within the scientific community as well as more broadly with the general public. It is important for those involved in data gathering and analysis to think about how new results can be disseminated as widely as possible, making sure this goes beyond the research community. Examples from a number of European countries are showing how information can be used for maximum impact and to reach the widest possible audience.

As the SPL resource is physically difficult to access, this makes archaeologists' responsibilities towards promoting public archaeology even more pressing. While definitions of public archaeology, or community archaeology, are difficult to pin down to specifics, there is broad acceptance of the need to make results available for all to examine, interpret and reinterpret (Merriman 2004; Holtorf 2007).

The results of enhanced wider public understanding of the SPL resource and its importance in the story of human history can have wider effects. Increased public awareness helps raise the profile of the marine cultural heritage and this in turn influences the development of management plans focussed more generally on the coastal and marine environment at local and regional level. When local and regional approaches are translated into national and international frameworks, then more robust protection is possible.

While raising the baseline profile of SPLs within the population has been an important goal, it has also been vital to increase communication with marine industry, in order to increase understanding of the submerged heritage, the need for protection, and a positive dialogue that ensures appropriate treatment of the resource and collaborative partnership without compromising the commercial demands of underwater work.

Within the SPLASHCOS framework it has also been possible to take forward specialist training of early stage researchers and help to increase the numbers involved. Building a body of professionals who will be able to expand current levels of research, and some of whom will find employment in government agencies and archaeological companies responsible for implementation of environmental impact assessments and legislation, is an important legacy for the future.

Enjoyment and understanding of SPLs should be fostered at every opportunity, and all those involved in heritage need to promote this on a national and international scale. Developments over the past decade have meant a growth in understanding and awareness. It is now essential to ensure there are available opportunities to facilitate the future aspirations of those wishing to be directly involved in their heritage and to continue to build on this work.

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