

Broad Character: Cultural Topography

Character Type: Palaeolandscape Component

Regional Perspective: Southern England

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INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

The potential for survival of palaeolandscape components in marine topography and deposits in England is immense. Processes such as climate change and the fluctuation of sea levels over the last two million years have contributed to the deposition of sand and gravels in river systems that are now submerged (BMAPA 2000, ODPM 2005). Through these processes, large areas of the present sea floor were periodically exposed as dry land. As such, they formed part of the human habitat, leaving potential for associated impacts and archaeological evidence. It is with that regard that we consider the historic character of palaeolandscape surviving within the present seascape.

In the Southern England region, the Solent and West Sussex rivers contain some of the world's most important early Palaeolithic cultural contexts. Sediments of the Solent and its tributaries indicate that south coast river systems were corridors for human migration and favoured habitats for early human populations (Momber 2004, Wenban-Smith 2002, Wessex Archaeology 2007a), with the earliest hominid fossils from the British Isles being recovered from a Pleistocene raised beach at Boxgrove, West Sussex (www.ucl.ac.uk/boxgrove). The platform on which these deposits rest extends into the English Channel and would have been exposed during phases of low sea-level connecting England with the European mainland (Dix et al 2004).

According to Fulford et al (1997) 'interest in the potential of underwater landscapes around England was stimulated in part by an audit of the English coastline in 1997 which recorded coastal prehistoric peat deposits that were seen to follow ancient river systems extending offshore'. These include the rich source of Mesolithic material from the Solent area such as Bouldnor Cliff (Momber et al, in progress) and the confirmed examples of prehistoric sites in the South Coast intertidal zones from the Neolithic and Bronze Age which include Wootton Quarr on the Isle of Wight and Langstone Harbour in Hampshire.



**Neolithic trackways recorded at Wootton Quarr, Isle of Wight
(© Hampshire & Wight Trust for Maritime Archaeology)**

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

Features and variability of this Character Type are difficult to assess since investigations are only in their infancy. However, research undertaken in the Southern England region

indicates a concentration of peat deposits along the coast and offshore areas of the Western Solent and palaeochannels in the English Channel.

The pattern of rivers, tributary junctions, deltas, braids, and over-deepened channels which is seen now on the English Channel floor has been influenced by successive retreats and re-advances of the sea level over the fluvial and deltaic features (Maritime Archaeology Ltd, 2007). During the early prehistoric period, between approx. 700,000 and 8,000 years ago, sea level varied greatly. As a result of climatic change and a cycle of cold and warm periods, sea level rose and fell as large amounts of water were alternatively locked away in and released from ice sheets. Consequently, during various times in the Late Quaternary sea level was much lower than today and during these periods the North Sea and the English Channel became land surfaces. At times, Britain was no longer an island but became a northern peninsula of continental Europe. During these periods this landscape became habitable to human populations (Wessex Archaeology, 2007a).

Identified remains in the Southern England region include Middle Palaeolithic inter-glacial deposits which have been recorded at Stone, Hampshire (Brown et al 1975) and Selsey, West Sussex (West and Sparks 1960), and intertidal peat and tree remains at Russell's Lake and Baker's Rithe (Langstone Harbour, Hampshire) (Allen and Gardiner (2000)). The significant loss of mudflats from the coast in the western Solent (between Hurst Castle and Pitts Deep) over the past 200 years has been exposing a buried prehistoric land surface and peat deposits which can be compared to the upper peats off the north coast of the Isle of Wight.



Langstone Harbour intertidal zone (© Hampshire & Wight Trust for Maritime Archaeology)

Palaeochannels provide an important archaeological resource for understanding prehistory. Through the study of submerged landscapes and palaeochannels it is possible to obtain archaeological material which has remained largely in situ and so improve our understanding of how the landscape was utilised (James et al, 2010). The Palaeosolent is of particular interest in the study of Palaeolithic Britain with many handaxes being recovered from its gravel terraces (James et al, 2010). The origins of the Solent can be traced back into the Pleistocene where river systems abraded a path from Dorset, running east to pass north of the Isle of Wight. Numerous academics have discussed the evolution of the 'Solent' river, interpreting the distribution of fluvial gravels recorded across the Hampshire Basin. The Solent waterway was formed sometime after 3500 BC, shifting from estuarine to fully marine conditions (Scaife 2000; Tomalin 2000). The Palaeoarun is another example of an

ancient river of archaeological interest. Study of these data and similar riverine systems has helped inform understanding of the landscape, and the processes which led to the formation of the English Channel (Gupta et al, 2007).

In a recent English Heritage study aimed at assessing the size and spread of significant palaeoenvironmental and archaeological potential existing in intertidal and offshore organic deposits (Hazell, 2008), an even spread of sites containing such deposits was identified along the Southern England coast. The majority of sites included in Hazell's study are intertidal peat and forest exposures, and are typically formed through the creation of waterlogged conditions associated with changes in relative sea level (as discussed by Heyworth (1986) and Bell (1997). These include exposed Holocene intertidal deposits along the north-east coast of the Isle of Wight such as at Wootton Quarr (Hillam 1994, Loader et al, 1997) where modern erosion has revealed a plethora of archaeological material dating back to the Mesolithic (Allen et al., 2000), and the fully-submerged Mesolithic peat platform and cliff face off Bouldnor Cliff, on the north-west coast of the Isle of Wight (Momber 2004).



Diving fieldwork at Bouldnor Cliff (© Hampshire & Wight Trust for Maritime Archaeology)

To date, the Mesolithic site at Bouldnor Cliff is the only stratified prehistoric occupation site identified in UK waters. Investigations of Bouldnor Cliff have been ongoing intermittently since the 1980s, with the results being presented in a number of interim publications as new information has come to light (Tomalin 2000, Momber 2000, Momber 2004, Momber 2006, Momber *et al.* 2009). Among the varied occupation debris, timber believed to be the remains of a log boat has provided a secure radiocarbon date of 6370-6060 cal BC. Despite only a small fraction of the site having been explored, the remains point to a site of industrial activity (Momber, in progress (b)).



**Worked and channelled timber from Bouldnor Cliff
(© Hampshire & Wight Trust for Maritime Archaeology)**

Peat deposits dating between 12,650 to 7000 BP exist in the sheltered waters of the Solent. Here, material spanning the lower Palaeolithic to Neolithic has been recovered from the sea floor by oyster fishermen. These finds emanated from fluvial deposits associated with Pleistocene periglacial river systems and from below peat laid down during the Flandrian Transgression (MA Ltd, 2007). On the River Test in Southampton, a series of seven trackways have become exposed in the lower reaches of an inter-tidal peat deposit as the silts have eroded from above them. Typologically, they compare to the Neolithic trackways from the Somerset Levels (Coles *et al.* 1973). These sites are known because they have become uncovered and visible. Many similar prehistoric landscape features remain preserved within the foreshores of the drowned ria systems within the Wight area. Wherever such sites exist, the possibility of finding further contexts containing in-situ Neolithic archaeological material is high (MA Ltd, 2007). Additionally, there are submerged prehistoric landscapes and associated palaeoenvironmental material dating to the Neolithic and Bronze Age both off the Isle of Wight coast and off the New Forest, running for kilometres along the coast (HWTMA 2006, 2008). Today, these provide baseline information about the time-depth of those now submerged landscapes.



Trackways in the River Test (© Hampshire & Wight Trust for Maritime Archaeology)

VALUES AND PERCEPTIONS

The archaeological community has started to recognise that maritime archaeology is not only concerned with shipwrecks but also prehistoric submerged landscapes. The archaeological potential that exists on the continental shelves has been recognised in the UK, especially through the Aggregates Levy Sustainability Fund (ALSF) (see <http://ads.ahds.ac.uk/project/alsf/>), due to the recent expansion of industrial concerns onto the shelf. It is therefore important, from both academic and cultural resource management perspectives, to locate and investigate this archaeological resource which otherwise will be irretrievably lost.

There are also increasing efforts to disseminate understanding of submerged landscapes and raise awareness among the wider public. An example is the successful Education and Outreach programme run by the Hampshire and Wight Trust for Maritime Archaeology (www.hwtma.org.uk) which raises public awareness about prehistoric deposits in the Solent by involving volunteers in the processing of remains from Bouldnor Cliff and putting on public exhibitions.

A further opportunity to stimulate public understanding and perceptions of our coastal and marine palaeolandscapes comes from information provision along the coastal access route to be established under the Marine and Coastal Access Act 2009.

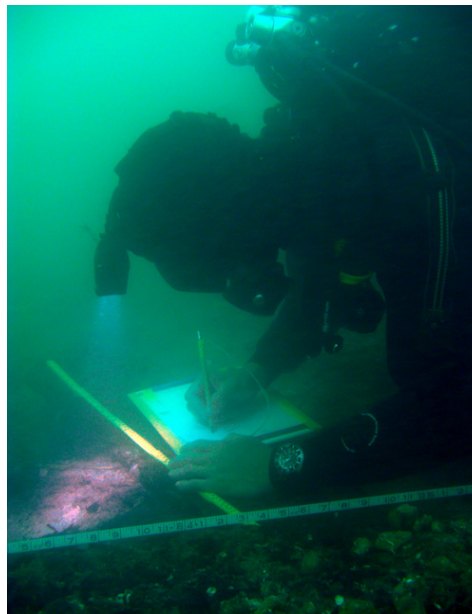
RESEARCH, AMENITY AND EDUCATION

Research methods used to identify and analyse prehistoric deposits include a combination of geophysical and geotechnical survey methods. The Arun Valley project used high-resolution marine geophysical technologies, sedimentology and seismic sequence stratigraphy to evaluate the landscape context and archaeological potential of submerged and buried fluvial systems in the English Channel. (Gupta et al, 2004) The reconstruction of the submerged and buried landscapes of the Arun will aid the management of submerged archaeological resources in both these and similar river systems e.g., Outer Thames estuary. Furthermore, this research project offers the following opportunities:

- Provide a landscape context for Palaeolithic submerged landsurfaces which has potential application to understanding the pattern of human colonisation of Britain.
- Improve predictive capability of archaeological resources within offshore sediments.
- Develop strategies for archaeological resource management.
- Extend professional archaeological capacity in the archaeological analysis of marine geophysics.

The Palaeosolent is thought to be of particular interest when studying encroaching sea levels and changes in coastal morphology (James et al, 2010). Fluctuations in sea level would have forced early humans to relocate and adapt to a changing climate. With modern society facing similar changes to our environment it is worth trying to understand how our ancestors may have coped as the world changed around them (James et al, 2010).

The potential for sites such as Bouldnor Cliff and their associated deposits to add to archaeological and palaeo-environmental knowledge represent a major contribution to the archaeological discipline as a whole. They also present a range of opportunities to develop understanding of marine preservation potential, the effect of natural and human threats to submerged prehistoric material and the development of investigative techniques and approaches (Momber et al, in progress).



Diving fieldwork at Bouldnor Cliff (© Hampshire & Wight Trust for Maritime Archaeology)

Other research is being carried out by a team at the marine research consultancy ABPmer, who are currently working on a project to deliver GIS datalayers of UK submerged palaeoenvironments to aid the development of a management indicator framework. The overall aim of the project is to support marine spatial planning in UK offshore environments with regard to historic environments, and is funded by the MALSF.

This Character Type is physically inaccessible to the wider public and remains the sphere of academics and diving specialists. However, dissemination programmes and initiatives are currently being developed which aim to raise public awareness on the existence and uniqueness of these submerged landscapes. These include the Hampshire & Wight Trust for Maritime Archaeology (HWTMA) which is raising public awareness about prehistoric deposits in the Solent by involving volunteers in the processing of samples and material from Bouldnor Cliff, using hands-on educational techniques in the Maritime Bus, and by putting on public exhibitions, for example 'Surviving the Stone Age' exhibition held in 2009 (www.hwtma.org.uk/exhibitions). Outreach work is also carried out by the Dorset Coast Forum (www.dorsetforyou.com).

In terms of formal education, palaeolandscapes provide excellent case studies for cross-curricular work looking at environmental change and how it affects populations over time.

CONDITION AND FORCES FOR CHANGE

The potential survival of palaeolandscape components is very much dependent on processes accompanying burial, erosion and ongoing coastal/marine geomorphological processes.

The components are under intensive developmental pressure from a range of threats including mineral extraction and the direct impact of construction. Specific threats range from the laying of pipelines to, more recently, the development of wind farms, the wider issues of mineral extraction and the extensive, generalised, impact of fishing and commercial trawling (Dix et al 2004).

The sands and gravels targeted by marine aggregate dredging have the potential to contain evidence of palaeolandscapes. The dredging scars seen in the sub-bottom profiler data next to the Palaeoarun, as identified in the South Coast REC, highlight the fact that as the aggregate areas are exploited they pose a threat to deposits of archaeological interest, as well as providing an opportunity for archaeologists to access these submerged sites and acquire archaeological data that would not otherwise be recorded (James et al, 2010).

As new areas are targeted for marine aggregate extraction in the area, archaeologists will be able to assess the threats to deeper parts of palaeochannels which would have been inundated at earlier stages. This will further enhance our knowledge of how the now submerged landscape and character of the study area has changed over time (James et al, 2010).

The cumulative knowledge that such activities are producing through research to inform Environmental Impact Assessments (EIAs) will enable a deeper understanding of this Character Type before it is lost forever, not only due to human action but also natural erosion processes.

RARITY AND VULNERABILITY

Submerged Palaeolithic and Mesolithic landscape components such as Bouldnor Cliff (see Momber 2004) and the Arun Palaeochannel in the Southern England region are rare discoveries. As such, these deposits are regarded as of national, and even international, importance. Wherever possible, these deposits should be left undisturbed due to the fragility of peat deposits and associated faunal remains (and potential human occupation evidence such as structures).

Neolithic and Bronze Age submerged landscape tracts are also relatively uncommon although examples have been found in areas such as the Solent as well as in tidal rivers and estuaries such as Wootton Quarr on the Isle of Wight. Prehistoric landscape components in the intertidal zone are generally exposed to eroding processes. Therefore, it is important to emphasise the high priority need to monitoring eroding tracts of prehistoric landscape such as those at Wootton Quarr and Langstone Harbour.

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