

ARFORDIR COASTAL HERITAGE 2012 - 2013



Prepared by
Dyfed Archaeological Trust
For Cadw



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Mawrth 2013
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**ARFORDIR
COASTAL HERITAGE
2012-2013**

Gan / By

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With contributions from
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Paratowyd yr adroddiad yma at ddefnydd y cwsmer yn unig. Ni dderbynnir cyfrifoldeb gan Archaeoleg Cambria am ei ddefnyddio gan unrhyw berson na phersonau eraill a fydd yn ei ddarllen neu ddibynnu ar y gwybodaeth y mae'n ei gynnwys

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ARFORDIR, COASTAL HERITAGE, 2012 - 2013

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ARFORDIR, COASTAL HERITAGE, 2012 - 2013

SUMMARY

Arfordir is a Cadw grant-aided and Pembrokeshire Coast National Park Authority (PCNPA) funded project designed to identify, monitor and record archaeological and historical sites within the coastal zone that are under threat of erosion from tidal action, and other forms of damage resulting from the effects of visitors and livestock erosion or changes in use. The project aims to enable interested community groups and individuals to take an active role monitoring and recording threatened sites and identifying new sites with minimal input from the professional sector.

2012-2013 was the fourth year for the Arfordir Project, run by the Dyfed, Gwynedd and Glamorgan-Gwent Archaeological Trusts. The Dyfed region project has been undertaken by staff from DAT, PCNPA and numerous volunteers.

The 2012-2013 year of Arfordir has been mostly taken forward this year by DAT's Community Archaeologist, Menna Bell, which has enabled more emphasis to be put to recruiting and training volunteers. Through her work the Abermawr Rapid Response Recording Group has established themselves to undertake monitoring and surveying of the Abermawr beach. Training days have also been given to the Llanelli Community Heritage Group and in Cardigan to the Dros Y Tonnau group and other interested parties. A second talk was then undertaken in Cardigan due to popular demand from members of the group who could not attend the first session.

Information from members of the public has again proved very useful in identifying new sites and monitoring threats to known archaeological and historic sites. This is evidenced by the information regarding peat exposures at Llanrhystud, a wreck site at Goodwick and the re-exposure of three mines at Caerfai Bay. Further information on new episodes of erosion at St Ishmael, Carmarthenshire has also been made known to the project.

This year has also seen the development of the intertidal peat recording form. This has taken some time to develop using practical information from site visits undertaken as part of Arfordir, and assessing methodologies used to record peats by DAT, RCAHMW, GAT and GGAT. The eventual form is designed to be user friendly so that useful information can be easily recorded by volunteers and additional detail can be added by those with the correct equipment or training. The form allows the extent of peat exposure to be assessed and provides information on what is visible. This will be useful both for monitoring changes in intertidal peats (exposure and erosion) and determine the palaeo-environmental potential of the deposits. The form can be used by professionals where long term monitoring of peat beds may be needed, perhaps as part of archaeological assessments for intertidal projects such as coastal defences, marinas or for renewable energy projects.

ACKNOWLEDGEMENTS

Thanks to the numerous volunteers who have taken an interest in and supported the work of the Arfordir – Coastal Heritage project.

Thanks also to Menna Bell, Ed Davies, Ken Murphy, Marion Page and Hubert Wilson of Dyfed Archaeological Trust, Andy Williams of Orchardweb Design, Pete Crane of Pembrokeshire Coastal National Park Authority/DAT, GAT, GGAT and Deanna Groom of RCAHMW.

INTRODUCTION

Project outline

Arfordir is a Cadw grant aided partnership project with the Pembrokeshire Coast National Park Authority (PCNPA) and the Royal Commission on the Archaeological and Historical Monuments of Wales (RCAHMW). The project was designed with the intention of providing support and training to volunteers from the community and other groups to give them the skills and information needed to enable them to monitor the impact of tidal action and other sources of erosion on archaeological sites along the coast of Carmarthenshire, Ceredigion and Pembrokeshire, with minimal input from the professional sector.

This report provides a summary of the work undertaken during the April 2012 – April 2013 period. The project has continued to successfully collect new archaeological information and provide community engagement while also contributing to the achievement of the Welsh Government's objectives regarding Climate Change.

Project background

The project background is the same as previous years, namely: awareness of the impacts of coastal erosion on Welsh coastal archaeology has been recognised for many years, and has been the subject of previous Cadw and PCNP funded fieldwork and survey projects (Cole 1995; Sambrook & Williams 1996; Murphy & Allen 1997, 1998; Page & Scott 1998, Page 1998). In the context of increasing global awareness and concern about the effects of climate change, the issue has recently become more pertinent, and the need to establish a means by which the predicted effects can be monitored and mitigated has become more evident.

In addition, as the popularity of archaeology among the public increases, and public engagement increasingly features as a condition for accessing sources of funding, the need to establish a framework, and means of sustaining future projects has been recognised.

The aspirations of the project were based on the award winning SCAPE (SHOREWATCH) project in Scotland, which has been a constant source of inspiration and ideas throughout the pilot year. Further work in Scotland has led to the establishment of the ShoreUpdate project, which takes the established programme to a further more volunteer friendly level. The new project has put in place a smart phone app which enables volunteers to input data, geo-referenced photographs and notes directly onto their mobile device. This information is then sent to the project coordinators to verify the data and update or add to the archaeological record. The app allows data from HER to be accessed and downloaded, which is also then available on the volunteers phone. In November 2012 a talk on the project was presented by Ellie Graham (formerly the GGAT Arfordir coordinator) to the Wales IfA coastal archaeology day school. The talk was particularly useful in providing a comparison between the Arfordir project/recording forms/methodologies and that being undertaken in Scotland (pros and cons for both). What was of greatest interest was the user friendliness of the forms for ShoreUpdate and that using a series of tick boxes or multiple choice answers led to more volunteers being prepared to submit record forms.

Project objectives

The aims of this project are to develop new and sustainable (ie. with minimal input from the professional sector) links with community groups and working partnerships with other professional bodies and educational establishments to

provide local communities with the skills and information that will be useful in monitoring and mitigating the predicted effects of climate change on the region's coastal archaeology.

To identify known and new coastal sites under threat. To implement appropriate recording prior to their destruction. The project will also build upon and add value to previous projects relating to coastal archaeology.

Specific Objectives for 2011 - 2012

The fourth year of the Arfordir project had a number of specific aims:

1 Submerged forests and peat beds, 'The Lost Landscapes of Our Ancestors': Preparation of a methodology and recording form for use by both professionals and volunteers to undertake *ad hoc* recording of exposures of submerged forests/peat beds and other archaeological remains, revealed on the foreshore during low tides.

2 Continued monitoring of coastal sites with provision of walks and training to interested groups and volunteers.

3 Arfordir introduction days and training sessions in archaeological recording.

4 Designing specific projects to engage volunteers for the year and into the future.

METHODOLOGY

The project has continued to use the methodologies utilised during the previous years. For the project the coastal zone is defined as a band c.500m from the water's edge.

Volunteer Recruitment and Training

The Arfordir project has continued to try and engage members of the public in the identification and monitoring of coastal sites under threat of erosion.

As stated in the project objectives, the intention is to provide community and other groups with the skills and information to enable them to monitor the archaeology of the coastal zone in the future, with minimal input from the professional sector. Regular users of the coast for leisure and work purposes are an ideal source of volunteers, who will be able to undertake more regular site monitoring.

This year we have again delivered a number of talks or meetings to local groups in an attempt to raise interest in the project. These have been supplemented with training sessions on-site in different aspects of archaeological recording.

The Arfordir project has provided further opportunities for highlighting the work undertaken on the recent West Coast Submerged Landscape Project (supported by the Aggregate's Levy Sustainability Fund and Cadw). The 'Lost Lands of Our Ancestors' booklets have been provided to a number of Arfordir volunteers both during talks and lectures.

Identification of Coastal Sites (both those under threat and new sites)

The methodology developed in the pilot year for identifying new and threatened coastal sites is still being used, although as the majority of the coastline has now been assessed, fewer site visits have been undertaken.

SUMMARY OF THE MAIN ACTIVITIES COMPLETED 2012-2013

1 Website Updates

Previous years reports have been added to the website. Downloadable versions of the updated on-site recording forms, intertidal peat recording forms, manuals and introductory leaflets have been (or will very shortly be) made available. Little work has been done on the Flickr website as this does not seem to have worked as we had hoped it would. With the increase in the social media presence of DAT (Facebook/twitter) the Flickr website seems somewhat redundant.

2 Arfordir Recording Forms and Manuals

Arfordir recording forms and manual have been updated by DAT through discussions with volunteers and collaboration with GGAT and GAT. Work has been carried out on producing an intertidal peat recording form (see section 6 below).

3 Presentations and Events

A number of talks and presentations have been provided on the project during the year, some specifically about Arfordir, and others using the opportunity of other presentations to highlight the project to a wider audience. Talks introducing Arfordir and providing examples of the work undertaken to date have been provided by DAT staff (and one of our volunteers) to Llanelli Community Heritage Group (Photo 1), the Dros Y Tonnau Group, Hanes Llandudoc members, Coastlands Local History Group, the newly formed Abermawr Rapid Response Recording Group, and the fledgling Laugharne and District Local History Society, to the Welsh IfA Day School and the Carmarthenshire Archaeology Day School.

4 Guided Walks, Training Sessions and Meetings



Photo 1: Plane Table training with the Llanelli Community Heritage Group at Machynys Mound

A number of meetings regarding the project have been undertaken during the year, both with professionals and with volunteers and members of the public. Guided walks to look at archaeological remains were undertaken at Abermawr, Machynys, Cardigan, Gwbert and Laugharne.

5 Archaeological Investigations

The 2012-2013 year of Arfordir has targeted a number of sites identified in the previous year that require further archaeological recording. These include Laugharne, Carmarthenshire; Abermawr, Pembrokeshire; and Llansantffraid, Ceredigion.

Additional projects were identified during the year, including sites identified by members of the public/Arfordir volunteers. These have included a fieldwalking project at Watery Bay Rath, Pembrokeshire; recording of a wreck site at Goodwick, Pembrokeshire; survey of peat exposures at Llanrhystud, Ceredigion; and recording of the World War II mines at Caerfai Bay, Pembrokeshire.

Watery Bay Rath (5th and 13th April 2012) – Following identification of a flint scatter in a field near to Watery Bay Rath during filming of the Gateholm Time Team episode in 2011, the PCNPA archaeologist, working in partnership with the National Trust undertook a structured fieldwalking exercise (Photo 2). A number of Arfordir volunteers were recruited (including members of the Coastlands Local History Group) to assist with the survey. On collection the density of flintwork was even greater than expected and a very interesting assemblage of apparently Mesolithic material was collected. Further collection is still required to cover the whole of the scatter area which is scheduled for next year.



Photo 2: Fieldwalking at Watery Bay Rath

Goodwick Wreck (14th May 2012) – Mr W C Philips contacted DAT during the May spring tides to inform us of a small ship wreck that had been exposed in Goodwick harbour (Photo 3). Mr Philips had lived and worked in the harbour all of his life and had no recollection of seeing this before.



Photo 3: The Goodwick Wreck site



Photo 4: Exposed ribs and planking of the vessel

A site visit was undertaken with Mr Philips to record the wreck at the following low tide. The remains were of a vessel which measured 12m in length and 5m in width (Figure 1). Following consultation with Deanna Groom of

RCAHMW the remains appear to be carvel built (where the outer planks edge-abut to one another), although it may have been clinker built (where they overlap), but the visible remains were only slight and this could not be confirmed (Photo 4).

The 12m or 40ft length of the vessel is a relatively standard size for a smack or sloop. Numerous wreck sites are known in the harbour (over 40 recorded by the RCAHMW). Following information from Deanna Groom the following wrecks could relate to that recorded:

NPRN 240266 JOHN AND GRACE and NPRN 273143 MARY: The smacks JOHN AND GRACE of Milford and MARY of Cardigan went ashore in a north-east gale at Goodwick Sands in November 1872.

NPRN 272747 QUEEN OF TRUMPS: The QUEEN OF TRUMPS was a 33ft wooden smack belonging to the port of Aberystwyth. At time of loss 18 October 1854, the vessel was carrying a cargo of ironstone from Penrynder. It was caught by a north-northeasterly force 10 gale and was driven ashore on Goodwick Sands to become a total wreck. The crew were saved.

NPRN 273071 JOHN AND ANN: The JOHN AND ANN was a 51ft wooden ketch built at Aberystwyth in 1821. At time of loss 24 March 1898, the vessel was owned by R Evans of Caernarfon and was carrying a cargo of coal from Newport (Gwent) to Goodwick under the command of R Jones. The ketch was caught by a northeasterly force 10 gale and driven ashore on Goodwick Sands.

NPRN 273344 CONSTITUTION: The CONSTITUTION was a wooden sailing vessel on passage from Galway to Bristol under the command of master MacNiggen. The report printed in Lloyds List on 15 November 1825 noted that the vessel had been driven ashore at Goodwick 'outside the quay' on 12 November 1825.

Further to the above records there is an image of 5 vessels ashore on Goodwick Sands in Ted Goddard's Book, 'Pembrokeshire Shipwrecks', pg42. The caption reads 'Sailing vessels beached on Goodwick and after a storm in the early 1900s'. In the foreground, there is small single-masted vessel which could potentially be that discovered by Mr Philips.

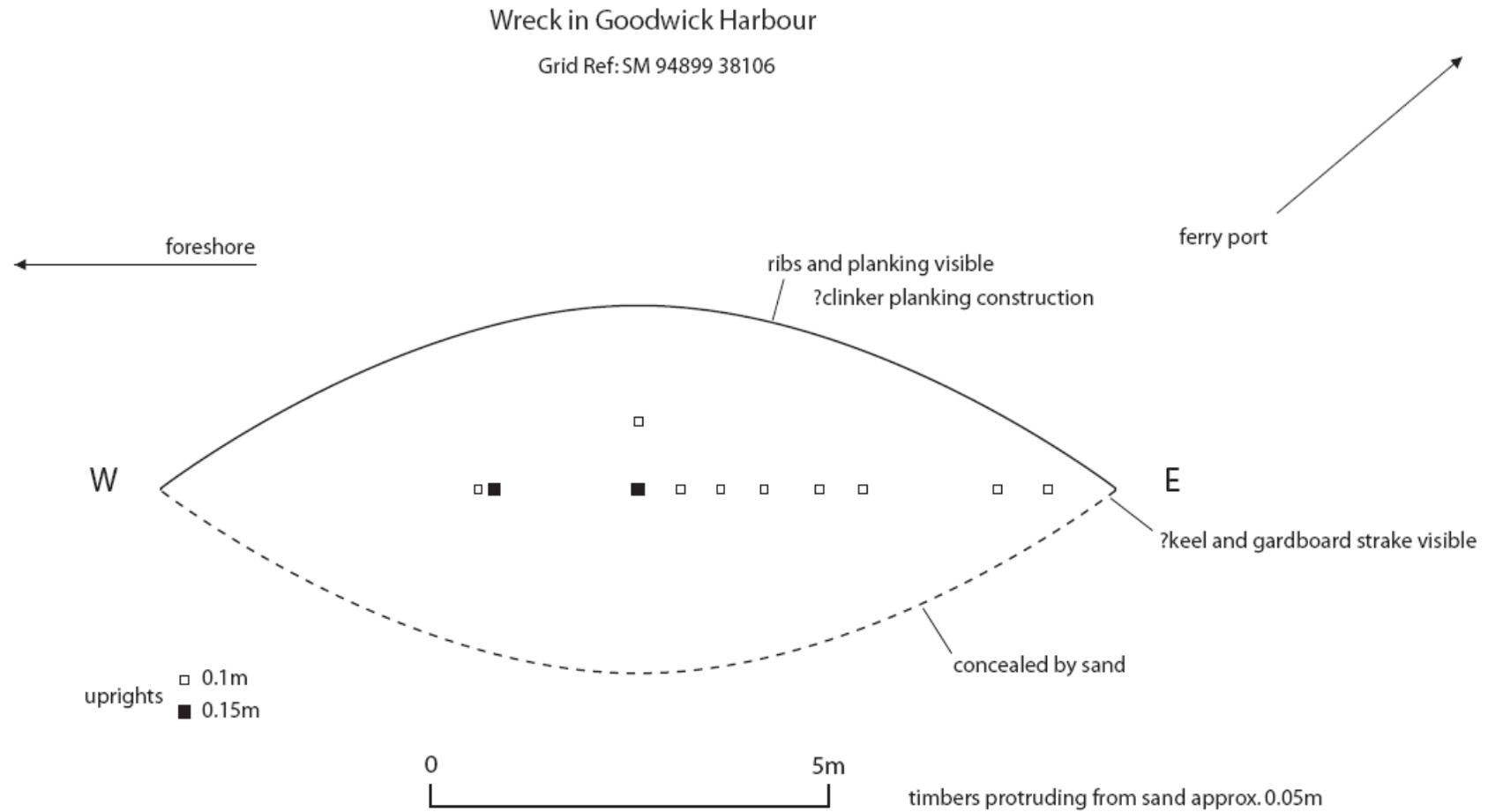


Figure 1: Plan of the Goodwick Wreck

Peat Exposures at Llanrhystud (5th September 2012) – Information was received by Stephen Briggs regarding a new exposure of peat and tree stumps at Llanrhystud beach. A survey of the exposed remains (Photo 5) was undertaken a few days later, when unfortunately the majority of the exposure had been recovered by shingle. The peats run from NGR SN 52336 68875 to SN 52380 68958.

The extents of the exposure were surveyed in accurately using a Trimble TST, tying the survey in to national grid coordinates. What was evident when overlaying the survey results on the ordnance survey map (Figure 2) was that the coastline has eroded quite considerably. The base of the peats, lies some 8m east of the base of the shingle recorded on the OS map. Although a few tree stumps were recorded, these has been partially re-covered by shingle since the observations by Stephen Briggs (Photo 6).



Photo 5: Eroding land surface below shingle at Llanrhystud



Photo 6: Partially exposed peat horizon and two embedded tree stumps showing through shingle at Llanrhystud



Figure 2: Location of peat exposures recorded at Llanrhystud
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Llansantffraid Building (5th September 2012) – A detailed survey of the exposed structure in the cliff face at Llansantffraid was also undertaken using a Trimble TST. The exposed remains lie within a vertical cliff face adjacent to a small stream which runs down onto the beach (NGR SN 50987 67544 – eastern wall; Photos 7 and 8). The ground has been eroded both by the action of the stream and tidal action. The geology is relatively soft, containing sands and pebbles which easily erodes and collapses. The structure has further eroded since it was recorded in 2011.



Photo 7: The cliff face and stream with the building at Llansantffraid on the right hand side of the photograph



Photo 8: Detail of building remains and cobbled surface

Caerfai Bay, World War II Mines (2nd February 2013) – Following information given to the Trust regarding three mines exposed on Caerfai Bay, the finder was contacted to learn more about the discovery. Mrs Julia Horton-Powdrill provided a series of photographs of the objects and their location (Photo 9). A visit was made to get further photographs of the objects, record their dimensions and ascertain whether they were safe or had been recently washed up.

It was evident that the mines had been located on the beach for many years and subsequently it was found out that they have been known about locally for years, having been dragged on to the beach and made safe in the 1950s or 60s. The mines were usually covered in sand, but occasionally when the tides were right, sand would be washed off the beach and the mines made visible again. The PCNPA archaeologist had visited the site a few years ago also. The mines were empty of any workings or ordnance, but were filled with sand.

The three mines were all apparently of the same type, one upright (Photo 10), one upside down (Photo 11) and the third on its side (Photo 12). They are likely to be of mine Type 17, as defined in the Mine Identification Manual, Description and Illustrations of Mines produced by the Navy Department, Bureau of Ordnance, Washington, D. C. in October 1943 (Figure 3). They date from World War II and would have been moored, deep water mines for defence against German U-Boats. They had obviously come adrift following the war and were found, collected and made safe, with the shells of the mines being emptied and left on the beach.



Photo 9: The three mines viewing north at Caerfai Bay, with the one on its side in the foreground, upright one to the upper left and upside down mine in the upper central part of the photograph (Photo courtesy of Julia Horton-Powdrill)



Photo 10: Top of mine (central)
NGR SM 76118 24314 (GPS data from camera phone)



Photo 11: Bottom of mine (northern)
NGR SM 76116 224312 (GPS data from camera phone)



Photo 12: Side of mine (southern), with top in foreground
NGR SM 76121 24305 (GPS data from camera phone)

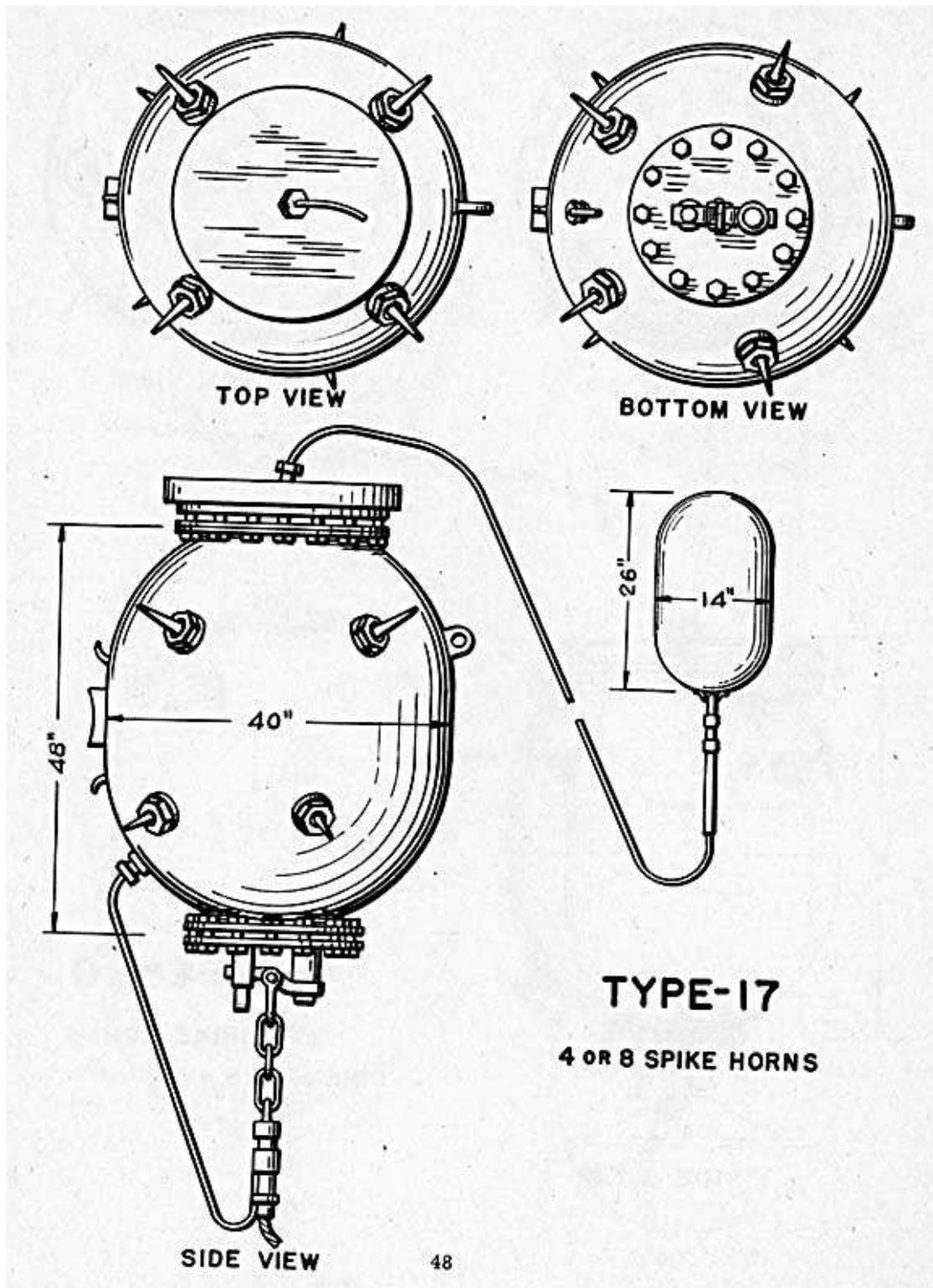


Figure 3: Extract from Mine Identification Manual, Description and Illustrations of Mines produced by the Navy Department, Bureau of Ordnance, Washington, D. C. in October 1943

<http://www.hnsa.org/doc/mineid/index.htm#toc>

Abermawr, Pembrokeshire – The Abermawr site had been highlighted as one in need of recording due to the rate of erosion of this bay. The hard geological clays were being rapidly exposed by tidal action and visitor erosion of the soft sandy soils above them. At the base of the sandy soils and on top of the clay levels flint artefacts have been recovered for many years.

The peat deposits and exposures of the submerged forest at Abermawr have been previously recorded (Crane 2003, 2004 and 2006; and work by Lampeter University) and were recommended for on-going monitoring and survey. In the past, assemblages of worked flint have been recorded to have been found on the headland of the beach (Dunn 1968; Lewis 1992). The dateable material suggests this flintwork is of Mesolithic date.

This year has seen a priority in developing a strategy for recording this eroding material. The data recorded will be very useful in not only recovering and accurately locating artefactual evidence, but also to establish the rate of erosion of the coastal edge.

In October 2012 an initial survey of the bay was undertaken using a Trimble TST to provide an accurate survey of the coastline and exposures of clay. During the survey two Mesolithic flint blades were recovered from the surface of the clay. A series of survey stations were established on the fence line close to the beach, for which accurate NGRs and heights above Ordnance datum were established. Three fence posts at the head of the beach were established as survey points and labelled as such in order that they could be used for offset surveys and plane table surveys of the archaeological deposits on the beach.

During this survey a number of other archaeological features of later post-medieval date were identified associated with the former coach house of Tregwynt House, located on the higher ground above the bay. Leading from the coach house is a road, defined to the north by a terrace in the hillside with a slight bank on top and by a large hedgebank to the south. This roadline previously led down to the former coast road that crossed the eastern side of the bay, but has since been completely eroded away. The road from the coach house now meets the vertical cliff edge and a perfect section through it is visible from the seaward side, including the terrace, hedgebank, road surfaces and drainage channel. The road line and coach house are both features that would be worthy of further survey.

The formation of ARRRG and monitoring surveys at Abermawr.

Within the last year an Arfordir volunteer who regularly fishes in the area, had been collecting a large amount of allegedly worked flint, eroding from the upper clay deposits on the beach. The volunteer also reported on the rapid erosion of the coastal deposits as a whole. This was further supported by a local resident who had lived in the area since childhood and had been documenting the erosion via photographs since 1992. A third Arfordir volunteer with an interest in the beach and who had also found worked flint up on the headland was also keen to share their concerns. It was clear that this rapid erosion needed to be recorded and the location of the eroding flints and peat exposures to also be recorded. These three volunteers had all previously attended an Arfordir Training Day in Cardigan and had been introduced to the methodology of plane table survey.

It was suggested that it might be possible to regularly survey the site using a plane table to record the locations of the eroding flint, the peat and timber exposures and also the eroding coastline. And so the ARRRG (Abermawr Rapid Response Recording Group) was founded, trailing this methodology as a sustainable means to survey the site using a volunteer workforce! It was agreed that the three Arfordir volunteers would undertake regular surveys using the

plane table survey equipment made available at the Trust for exclusive use of volunteers. The plane table surveys that have been carried out by ARRRG have utilised the three existing fence posts running parallel to the beach which have been established as survey points.

CCW, The National Trust and PCNPA were supportive of this proposed methodology.

The first survey was undertaken on the 14th – 15th of November 2012 (Photo 13). The results of this survey was digitised (Figure 4) and copies were dispersed between the group. Initially, it was intended that in between surveys members of ARRRG could plot the locations of eroding flint onto their plans. These plans could be collated by DAT, and this information could be overlaid onto the “Master” copy of the plan.



Photo 13: Plane Table training and recording with the Abermawr Rapid Response Recording Group at Abermawr

Whilst the issues of the survey were addressed, the remaining issue was the cataloguing and curation of the flint finds. Menna Bell contacted Elizabeth Walker at the National Museum who agreed to provide a workshop for the ARRRG on flint identification and cataloguing. Elizabeth’s visit to Pembrokeshire was co-ordinated with a site visit to Abermawr, led by Sid Howells from CCW. The group, members of DAT, the PCNPA archaeologist and members of the National Trust were given a whistle-stop tour of the geology of Abermawr by Sid Howells, providing very useful information on the formation of bay as it looks today and how it would have looked in the Mesolithic period. This took place on the morning of the 12th of December. In the afternoon, members of ARRRG, DAT and the PCNPA Archaeologist moved on to the “Discovery Room” at Oriel Y Parc in St Davids, for the flint workshop run by Elizabeth Walker.

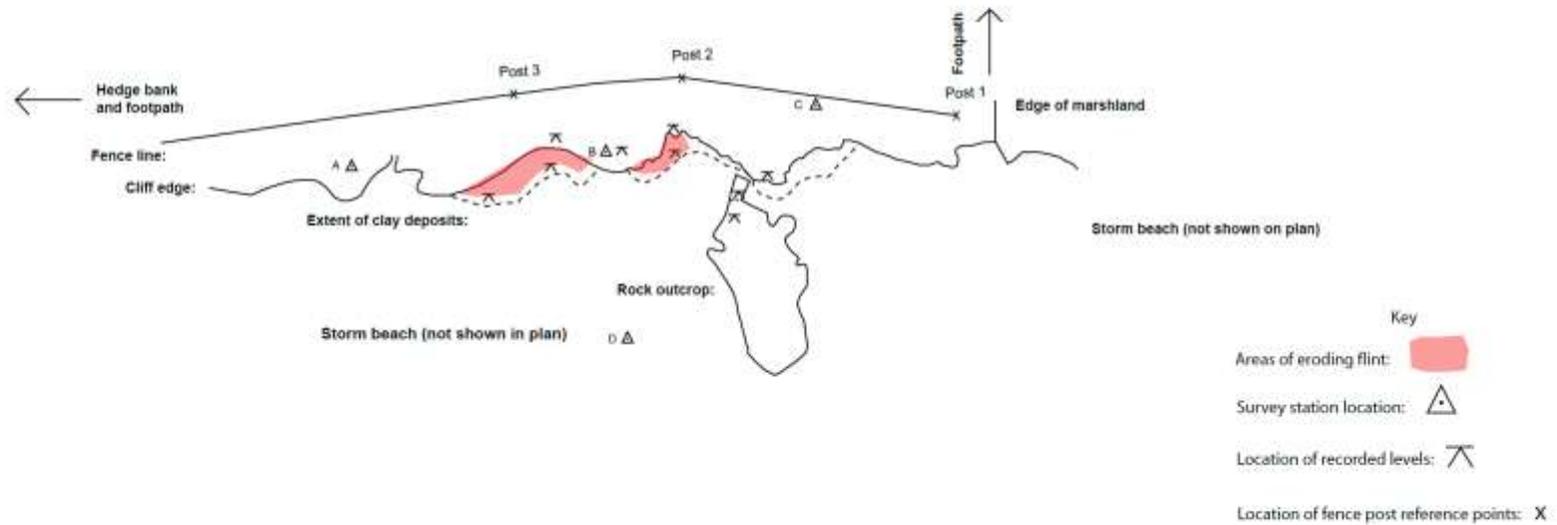
Plane table survey plan November 2012:
Abermawr Beach, Mathry, Pembrokeshire
Scale: 1:500



Post 1: SM 8826534560

Post 2: SM 8828634585

Post 3: SM 8829634602



Low tide: 0.60m at 13.14

High tide: 7.47m at 19.15

Survey recorded by Rhodri Kemp, David Kerrison and Jill Morgan

Date: 14th - 15th November 2012

Figure 4: The results of the first plane table survey carried out by ARRRG

A second flint workshop was then undertaken with the members of ARRRG on 9th January 2013, given by Menna Bell of DAT and the PCNPA Archaeologist. During this session, Menna set up a catalogue for the group, created as a simple worksheet in Microsoft Excel and copies were sent to each ARRRG member. Each member was allocated with a bulk batch of identification numbers so that their assemblages would not be confused. The flint collection information would then be sent to Menna for verification and addition to the "Master" copy of the flint catalogue.

ARRRG undertook the second plane table survey of Abermawr on the 19th of February 2013. This record has yet to be digitised and overlaid with the original plan.

Excavation and detailed flint collection

It had been hoped that a small programme of test pit excavation and flint collection would be undertaken at Abermawr this year with members of ARRRG. The site is a SSSI and an application for SSSI consent was sent to CCW and approved. Unfortunately it was not possible to organise the excavation licence from the National Trust in time to undertake the test pitting in this financial year, but it will be undertaken in the next.

The aims of the work will be:

- to try and establish at what level the Mesolithic flint, which has been found on the coastal edge, is actually present in these presently un-eroded areas of the site;
- to determine if the flint work is present at different levels, indicating a prolonged usage of the site area or is localised to one level suggesting a single flint knapping event;
- to establish the presence of any possible occupation layers, which for the Mesolithic may only be thin layers of flint working debitage and possible flecks of charcoal, although potentially stake holes from temporary structures could be found;
- If charcoal is present then it is hoped that a radiocarbon date may be obtained;
- The archaeological recording of any other remains of later periods that may be present.

A project design for the works was prepared for two test pits 2m x 1m in size, to be hand excavated away from the coastal edge and on the eastern side of the coastal path, fairly close to the existing fence line. One of the pits would be located close to the shingle bank at the edge of the non-eroded land slope in the bay (c.SM 8826 3456), and the second located directly behind the area where the majority of flint work has been recovered from the coastal edge (c.SM 88287 34591). The test pits would be initially de-turfed and the immediate top and subsoils removed and stockpiled adjacent to the trench area.

Below the subsoil, the trench would be excavated in very thin spits (around 1cm depth) in the hope of revealing further flint work. Any flint found would be accurately 3D located using either an electronic distance measurer or by using tapes and a dumpy level. Soil descriptions will be made of all material removed and a photographic record of the works maintained. The work would be undertaken by volunteers involved in the Arfordir project supervised by members of the Dyfed Archaeological Trust and possibly the PCNPA archaeologist.

As there will potentially be more time to work at Abermawr next financial year, and the number of willing volunteers seems to be increasing, a revised application

will be made for SSSI consent to open up slightly larger test pits (possibly to 2m x 2m). This should enable a better understanding of flint distribution both in horizontal and vertical distribution and provide better answers to establish the nature of the flint working site.

6 Intertidal Peats and the Intertidal Peat-Recording Form

6.1 Intertidal Peat Recording Methodologies

Throughout the year a number of visits have been made to beaches where intertidal peats have been exposed. Many of these visits have been undertaken ad-hoc whilst visiting other sites or as part of other activities. This has enabled a number of different recording methodologies to be carried out and tested. The methods have informed the development of the peat recording strategy and intertidal peat recording form. The archaeological watching brief undertaken at Borth in 2011 and 2012, where substantial areas of peats and submerged forest were exposed, and the subsequent completion of the report on this work has also fed into the preparation of the peat recording strategy.

The use of smart phone technology is very useful in being able to take photos during ad hoc visits to beaches where exposures may be present. Ensuring that landmarks are within the photos means that it is possible to determine the directions in which the photograph was taken and allow approximate location on the ground. Where the geo-referencing capabilities of the phone are used, information on date, time and GPS location are recorded (Photos 14, 15 and 16). It is known that the GPS accuracy of the phone could be slightly inaccurate, but testing these using a Sony Ericsson Xperia Ray for example and mapping the location onto GIS, the results are probably within only a few metres of the actual location (it should be noted that the altitude that seems to commonly be achieved with the phone GPS is completely inaccurate). Such information would be perfectly acceptable for recording exposures. The GPS data recorded from the phone is likely to be in Latitude and Longitude, but this can easily be converted to OS grid references using the Ordnance Survey website conversion page:

http://gps.ordnancesurvey.co.uk/etrs89geo_natgrid.asp.



Photo 14: Example of peat exposures at Morfa Bychan, Carmarthenshire
PRN 33469 viewing southwest with Gilman Point beyond
Date: 7th July 2012, 14.34pm; NGR SN 22503 07450 (from camera phone GPS)



Photo 15: Example of peat exposures at Amroth, Pembrokeshire PRN 7999 viewing west-southwest with Telpyn Point headland and Ragwen point in distance
Date: 16th April 2012, 11.56am; NGR SN 16124 06815 (camera phone GPS)

The above intertidal peat area is regularly exposed at Amroth (Photo 15) in the right conditions, although the exposure was exceptionally large on the day of recording. A further area of submerged forest is recorded at the eastern end of the beach, though in the HER record for PRN 8000, it states that 'no sign of the submerged forest was seen at this location'. On the day the peats were observed (Photo 16), considerable quantities of sand had been stripped off the beach by tidal action, but also through the flood water discharging from the stream leading onto the beach. The location is slightly to the west of that recorded on the HER.



Photo 16: Example of peat exposures at Amroth, Pembrokeshire PRN 8000 viewing northwest, east end of Amroth with breakwaters and shingle bank visible;
Date: 15th December 2012, 14.47am NGR SN 17502 07079 (camera phone GPS)

At Borth, areas of peats and the submerged forest were accurately recorded by the site contractors using a differential GPS. The perimeter of the exposures was mapped and then individual points placed on tree stumps. With photographic record undertaken as part of the watching brief, a good record of the peat exposures was enabled along with locations of tree stumps and the larger fallen branches and tree trunks. The peat deposits were then mapped onto GIS and overlaid with the coastal defence structures being constructed on the beach (Figure 5). Although this was a commercial project the information gathered and the methodologies used have informed the development of the peat recording strategy.

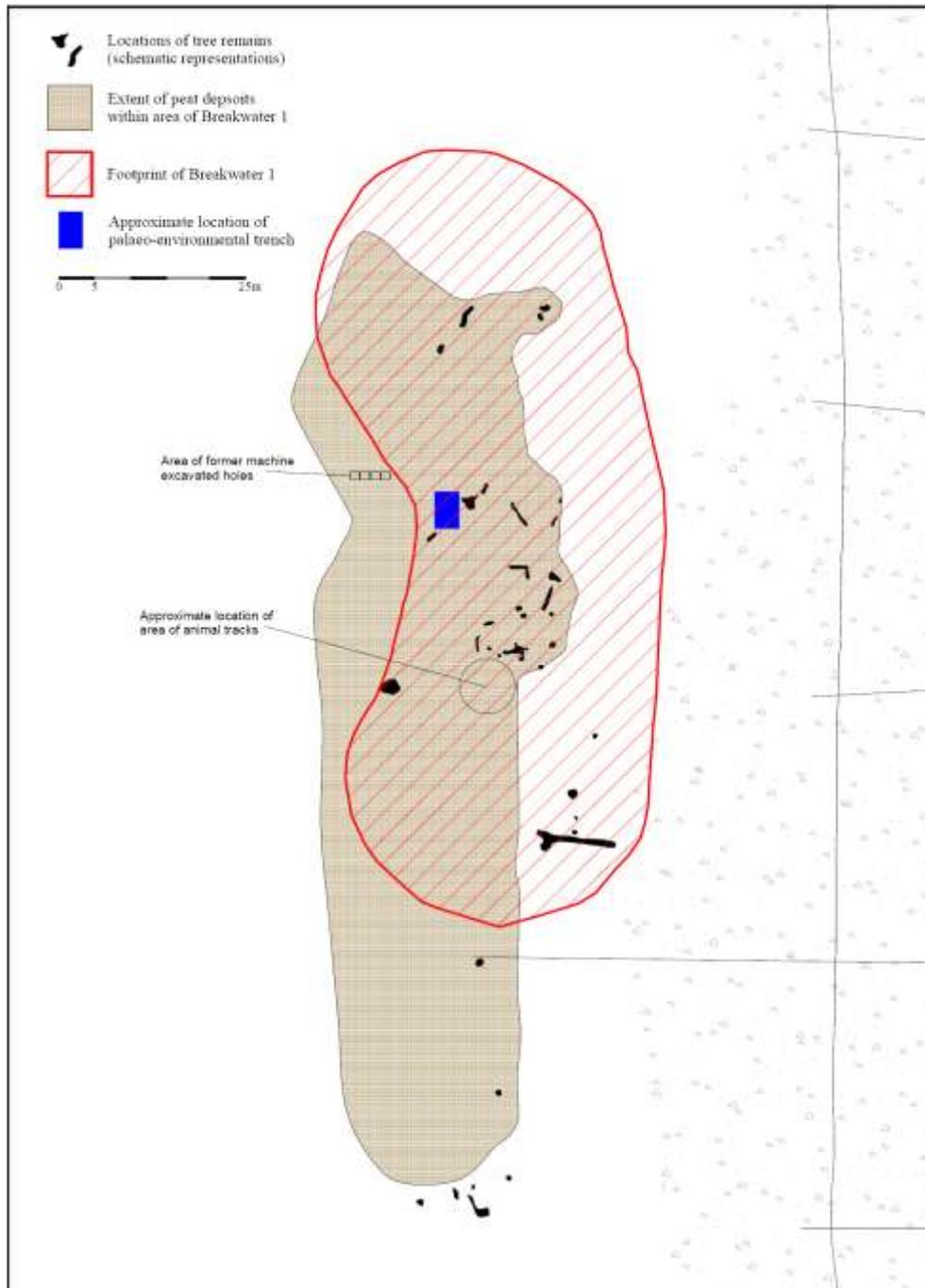


Figure 5: Detail of Breakwater 1 of Borth coastal defences and locations of peat beds and tree stumps/tree trunks (from Meek 2012)

At Borth the commercial nature of the project also enabled environmental sampling of the peats to be carried out, as well as a dendrochronology sampling. The results of these are included in the watching brief report for Borth (Meek 2012) and are not included here. From discussions with the palaeo-environmental specialists from University of Wales Trinity St David, it is evident that what is needed to obtain detailed environmental evidence from peat deposits is a good depth of peat overlying the clays below. The deeper the peat, the better the stratigraphic sequence of environmental evidence there is. Where preservation of organic deposits can be seen to be good, in the case where leaves and root material survives in the anaerobic conditions of the peat formation, then the better the palaeo-environmental evidence there is. Such information needed to be included on the intertidal peat recording form in the event that palaeo-environmental sampling could be considered.

With the tree stumps and potential for Dendrochronological dating, large tree stumps were needed to provide a clear sequence of tree rings. As the majority of tree stumps survive at the very base of the trunk and at the start of the tree roots, clear tree ring sequences may not be possible. Where the tree stumps survive to a greater height, better sequences may be present. In some cases fallen trees and tree trunks may be present where there is again potential for obtaining Dendrochronological samples with good sequences which can be used for dating. This information was also needed to be included on the recording form. Tree species are also important for this form of dating, with some species, such as oak, being far better than pine trees for example. Although such information could be included on the recording form, it has been left off at this stage as identification can be quite specialised in these water logged deposits, though photographs may enable identification by specialists where necessary without a site visit.

As noted above, peat exposures and tree stumps have been recorded using electronic distance measurers and tying the surveys in to the national grid, such as at Llanrhystud and also during survey work at Borth. This is obviously an accurate way of recording the deposits, but would need the equipment to be available at the time of survey, which may not be possible. Where significant remains have been identified, then EDM survey could be organised to provide accurately located results. Where a differential GPS is available, this could also be used to gain the same results. Plane table surveying could be used to gain similar, if less accurate, results.

Substantial exposures of the submerged forest that occurred at Borth in 2010 were recorded by Deanna Groom of RCAHMW using a hand held GPS. It was possible to map the extents of the exposure using way points around the perimeter. Points were also recorded on a number of the visible tree stumps. Photographs of the remains were also taken and notes made. This provided detailed and fairly accurate evidence of the exposure at that time. The methodology is relatively simple, requires limited resources, can be completed by a single person, but is effective and provides perfectly adequate detail.

As with all of the above recording methodologies photographic records are essential. Basic information such as the location and direction the photograph was taken in is needed (but approximate locations would be acceptable). Written notes or sketches would also be useful.

6.2 The Recording Form

The preparation of the intertidal peat recording form has involved consultation with other Trusts, assessing the recording methodologies used at Borth and practical experience associated with recording exposures within the Dyfed region.

The recording form that GGAT have prepared is based on a series of questions devised earlier in the year that was felt necessary to provide the details required, and so both forms have very similar requirements for details.

The aim of the recording form was to provide a methodology for recording such remains by both professional archaeologists and volunteers. The form is separated into two halves, one for casual recording and the second for more detailed information. The form could also be used in situations where long-term monitoring of coastal areas and intertidal peats is needed, for example in areas where coastal defence works or other large scale projects were proposed which could impact upon the deposits.

The sheet is A4 sized (see next below) and has the first side for General Information on the presence and appearance of the peat exposure. The second is for more specific details, sketch plans and measurements.

This general information side of the form has been kept deliberately simple, using a series of tick boxes and simple answers. This is far simpler for anyone recording an exposure to fill in on-site, but the information is also essential in determining extents/changes/erosion in those deposits. The tick box nature of this side of the form is also designed to so that the majority of the information would be easily filled in from memory (with the aid of photographs) where peat has been seen, but no recording forms are to hand. It is to be stressed to volunteers that if they can only fill in this side of the form, that is perfectly acceptable and still of great importance.

Using tick boxes for recording has proved to be more successful in getting volunteer responses, as had been evidenced by the present ShoreUPDATE project in Scotland. The Tick boxes are more user friendly and enable volunteers to record essential information through a series of prompts, removing some of the worry that comes from filling in written details.

The second side of the recording form attempts to gain more detail on the remains, including grid references/GPS coordinates for the extent of the exposure. This side of the form would assume that a planned visit is being made to record peats. The form would need to be taken to be filled in (or at least prompts for the required information taken). Either a hand held GPS or smart phone with GPS capabilities would be needed, as well as a camera / camera phone. From previous recording of peat deposits, it seems that the best way to record extents is to circumnavigate the exposure, where it is safe to do so, and record way points around the perimeter (either to the device or written down). Where tree stumps survive, these can also be recorded using GPS points. The centre of the tree stump could be recorded and a brief written note on its diameter made. Photographs of the recorded tree stumps should also be made with an indication of direction facing. This information can then be used to demonstrate changes in exposure over time or changes through erosion / disturbance. Even with the slight inaccuracies of hand held GPS, by having reference points of individual tree stumps and accompanying photographs, a good indication of changes over time will still be possible.

As with any recording form, volunteers or professionals are encouraged to add more information where ever possible either on the forms or on separate sheets of paper.

Accessibility of the peats is also important information and the safety of the recorder is also stressed.

From discussions with colleagues it is intended that two 'intertidal recording' packages are to be created for use by volunteers in the recording of both peat exposures, but also other intertidal features such as ship wrecks or fish traps. The kit will include a hand held GPS, a digital camera, tapes, scales, waterproof

notebooks, pens etc to enable individuals or groups to undertake organised recording expeditions. Training in the use of the equipment will be made available to any volunteers wanting to use the kit (this opportunity has been made available by the current CBA Outreach trainee placements).

6.3 The Recording Form Instruction Sheet

Through discussions with volunteers and colleagues it has been noted that the recording instructions for the original Arfordir recording form were too long. Although they were written to instil confidence in users, their length was off putting. The instructions for the intertidal peat recording form have been deliberately kept to a minimum length – a single side of A4. It is hoped that the form is self explanatory – but this will aid volunteers where there might be queries. A copy of the recording instructions is included below.

The A4 size of the instructions also makes it easier for us to provide laminated copies for use in the field.

ARFORDIR - COASTAL HERITAGE

INTERTIDAL PEAT RECORDING FORM General Information

SITE LOCATION/BEACH NAME	DATE AND TIME OF VISIT
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INFORMATION ABOUT THE PEAT EXPOSURE

Has the peat been visible before?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't Know <input type="checkbox"/>
If Yes, how does the extent compare?	Larger <input type="checkbox"/>	Smaller <input type="checkbox"/>	The same <input type="checkbox"/>
Have you recorded the peat before?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Is the peat recorded on the HER?	Yes <input type="checkbox"/> PRN:.....	No <input type="checkbox"/>	Don't Know <input type="checkbox"/>

WHAT IS VISIBLE?

Notes (any relevant information?)

Is peat visible? <i>Dark brown waterlogged soils, can be compressed, but surface will spring back to original shape</i>	<input type="checkbox"/>	
Is clay visible? <i>Usually grey / blue clays are present directly beneath the peat - or are present in the absence of peat. Very firm to the touch.</i>	<input type="checkbox"/>	
Are any tree stumps visible? <i>Upright timbers with root bowl beneath, spongy and water logged wood.</i>	<input type="checkbox"/>	
Can smaller twigs and branches be seen? <i>Horizontal branches or twigs, sometimes tree trunks of fallen trees are visible</i>	<input type="checkbox"/>	
Can any matted leaves be seen? <i>Sometimes material can survive where individual leaves and roots are visible</i>	<input type="checkbox"/>	
Can the full depth of peat be seen? <i>How deep is the peat material above the underlying clays?</i>	<input type="checkbox"/>	Depths:
Is the surface of the peat well preserved? <i>Are there large flat areas visible, or is it covered in stone holes or water channels?</i>	<input type="checkbox"/>	

TIDAL CONDITIONS DURING VISIT

Low Tide <input type="checkbox"/>	Mid Tide <input type="checkbox"/>	High Tide <input type="checkbox"/>	Uncertain <input type="checkbox"/>
Spring Tide <input type="checkbox"/>	Neap Tide <input type="checkbox"/>	Mid-Cycle <input type="checkbox"/>	Uncertain <input type="checkbox"/>

HOW ACCESSIBLE IS THE PEAT? - Never risk your own safety!

Easily on foot <input type="checkbox"/>	Easily with boots <input type="checkbox"/>	Difficult to access <input type="checkbox"/>
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Approximate distance to the coastal edge (land):

PHOTOGRAPHS: Have you taken any photographs of the peat exposure? <i>If you have geo-referencing capabilities on your camera/camera phone, please use this if you can</i>	<input type="checkbox"/> <input type="checkbox"/>	Take photos of overall extents, views across the peats to land, tree stump or timbers. If you visit on a number of occasions taking photos from similar spots in the same direction is most useful.
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ARFORDIR - COASTAL HERITAGE

THE ARFORDIR – INTERTIDAL PEAT RECORDING FORM

What is Intertidal Peat and why is it archaeologically important?

The warming climate at the end of the last Ice Age c.2,000 years ago caused the steady melting of the ice sheets, the raising of sea levels and the subsequent gradual inundation of vast areas of low lying land causing the isolation of Britain from the rest of Europe. The peat levels which are present around much of the Welsh coastline are the remnants of this former land surface which were submerged by the rising sea levels. AS they became submerged peat formed, which along with tree stumps and other plant matter can still remain preserved in the waterlogged conditions. The peat we see in the intertidal zones generally dates from between c.5500 and 3500 years ago. The peats can also contain evidence for past environments, flora and fauna and even human activity. This material is constantly being eroded by a number of factors and the evidence is gradually being lost.

GENERAL INFORMATION

Site Location or Beach Name – this basic amount of information will allow us to easily recognise where the exposures of peat lie. The date and time of visit allows us to record changes in tides, sand coverage and monitor erosion. It is important for us to know if the peat has been visible before, as quite often areas of peat can be exposed which we have no previous record of, although may be well known locally. Knowing the size of the peat exposure in comparison to previous exposures allows us to determine sand coverage or extents of erosion.

What is visible? Sometimes only clays underlying the peat are visible, demonstrating erosion. Not all peat exposures have tree stumps visible. In some cases the waterlogged conditions also preserve smaller branches, twigs and sometimes leaves and roots, looking similar to that which would be seen on the floor of a woodland. The depth of peat is important for telling us about erosion and the potential for archaeological material. The surface of the peat may survive as quite flat surfaces, or severed by water channels or pockmarked with stone holes. Evidence for modern human disturbance may be present.

Tidal Conditions: The position of the tide is useful for us to determine extents of preservation, similarly whether the visit was taken during a Spring or Neap tide tells us when the peats may be visible again. If you are not sure, don't worry we can work it out from the time and date of the visit. The accessibility of the site is also very important for organising future visits where needed **and never risk your safety when recording.**

Photographs: If you have a digital camera, please take some pictures of the peat. Some cameras, and many mobile phones, have the facility for geo-referencing the photographs (giving an approximate location of where you were standing when the photo was taken). If you have and are able to use this facility, please do, as the information is included within the digital image. If you are able, take photographs of the general extents of the peat, views across the peats to land or landmarks, of individual/groups of tree stump or timbers. If you visit on a number of occasions taking photos from similar spots in the same direction is most useful.

DETAILED INFORMATION – This side of the form is for more specific details - if you do not feel confident in filling it in, please do not feel that you have to.

Grid reference or GPS coordinates of peat, can be obtained either via a hand held GPS or using a map. A mid-point (if possible) allows a location to be placed on our records. For those with a hand held GPS and know how to, way points around the perimeter of the peat exposure can be logged. It is also possible to log points on tree stumps where present. This information can then be downloaded to a computer and passed on to us.

A simple sketch plan with a few coordinates placed upon it is very useful, though a simple sketch by itself is also informative. If tree stumps or timbers are present, sketches with approximate measurements are most useful, as are photos. They can be used as reference points for future visits.

Information on the state of preservation of the peat provides an indication of its archaeological potential, both in terms of environmental remains and human activity. This information is important in assessing whether further visits are essential or otherwise.

Finally the information contained on the forms (in however much detail) will be used to add information to the Regional Historic Environment Record (HER). Dyfed Archaeological Trust maintain the HER for Carmarthenshire, Ceredigion and Pembrokeshire. This information is available at www.archwilio.org.uk. Return forms and digital photographs via e-mail to j.meek@dyfedarchaeology.org.uk or by post to: **Arfordir, Dyfed Archaeological Trust, The Shire Hall, Llandeilo, SA19 6AF**



7 Identification of Coastal Sites (both those under threat and new sites)

The majority of site visits undertaken this year have been to monitor known sites that are suffering or have suffered from erosion. Other visits have been specifically focussed on peat deposits and changes in sand covering. Further updates can be made to existing HER records on the state of preservation of these remains where changes have been noted.

Of specific note are the remains at St Ishmael which suffered considerable erosion during October and November 2013. The majority of the western (outer) wall of Building 2 has now been lost, including all but the two uprights of the doorway. Some distance to the south, beyond the originally perceived extents of the settlement, a further substantial wall has started to become exposed in the sand dunes along with a wall line on the landward edge of the foreshore.

Tidal movement of sands in January and early February 2013 removed large amounts of sand from the beaches around the region. As a result of this, the three sea mines were exposed on Caerfai Beach. Large peat exposures were also noted in other areas around this time, including at Amroth, Morfa Bychan, Borth and Abermawr.

A further series of visits have been undertaken to Laugharne to note the state of the post-medieval structures on the cliffs overlooking the River Taf, both to the north and south of the centre of the township. Further structures along the foreshore have been noted, including a rock cut bench (Photo 17) and presumed walls for former landing stages. It was not possible to programme in any fieldwork during this year, but initial steps have been started to coordinate volunteers and groups to assist in the recording during next year. The author has been involved in the initial steering group meeting to set up the Laugharne and District Local History Group, where this specific Arfordir project was introduced. A detailed talk to the group on Arfordir and recruitment drive is scheduled for June 2013. Interest in assisting has already started.

Further work and liaison has been carried out by the PCNPA Archaeologist with landowners and the National Trust to hopefully enable the Y Gribin, Solva proposed survey work to be undertaken in the next financial year.



Photo 17: Bench seat cut into the cliffs at Laugharne close to Faulkner's Boat House

8 Links with Nautical Archaeological Society (NAS)

The 2012-2013 year has provided new opportunities to work with the Nautical Archaeological Society (NAS) and specifically Bill Turner and Ian Cundy of the Malvern Archaeological Diving Unit (MADU). In January 2013 they gave a presentation on a triple wreck site at Ynys Las to the Coastal Archaeology Forum in Aberystwyth. The site is located at the mouth of the Afon Leri where it enters the Afon Dovey. The NAS/MADU has been undertaking intermittent recording of the site recently due to significant erosion that is occurring. A visit was undertaken by Menna Bell with MADU in February 2013 to assess the wreck site and determine its suitability as a potential future project for Arfordir volunteers.

Following on from the meeting an NAS training day in intertidal wreck recording was organised by Ed Davies (CBA trainee) and made possible through funding from the CBA and Cadw. The training event was run on the weekend of the 9th and 10th March 2013 and included classroom and practical sessions. The training was undertaken on the intertidal wreck site in the Cresswell River at Lawrenny, Milford Haven, known as the "Black Mixen Pool Wreck" (PRN 37278; SN 10731 06313). The event was advertised amongst to DAT volunteers, including those who have worked with Arfordir as well as to a wider audience. A total of 15 volunteers undertook the training and braved the inclement and cold weather (cover photo and Photos 18 – 21).



Photos 18 – 21: Volunteers and members of MADU and DAT at the intertidal wreck recording training day at the Black Mixen Pool wreck, Lawrenny

DIARY OF EVENTS, TALKS, WALKS, MEETINGS ETC 2011 - 2012:

- 3rd April 2012 – Meeting with Ann Stokoe of the Dros Y Tonnau/Over The Waves project in Cardigan to discuss possible links with Arfordir
- 5th and 13th April 2012 – Watery Bay Rath fieldwalking project, with PCNPA Archaeologist and National Trust (14 volunteers on each day)
- 8th August 2012 – Manorbier Range Tour with PCNPA Archaeologist (20 attendees)
- 9th and 10th August 2012 – Flint Knapping demonstration by Karl Lee at Oriel Y Parc organised by PCNPA Archaeologist, with Liz Walker of (flint specialist) and Martin Lodwick (Portable Antiquities Scheme) both from the National Museum Wales and Marion Page with information regarding the HER and Archwilio from DAT (30 attendees)
- 19th August 2012 – Castlemartin Range Tour with PCNPA archaeologist and PCNP Ranger (20 attendees)
- 8th September 2012 – "A Walk in the Past" Solva, with PCNPA Archaeologist (10 attendees)
- 15th September 2012 – Arfordir Training Day to Llanelli Community Heritage Group, with morning lecture and afternoon session using plane table at Mahcynys (10 attendees).
- 18th October 2012 – Arfordir Day School, lecture and training session at Cardigan, including graveyard survey and plane tabling, plus guided walk to lime kilns (20 attendees to the lecture and 13 attendees to the practical session)
- 18th October 2012 – Monitoring visit to St Ishmael during high tide with south-westerly wind, observing significant erosion of the site in action
- 19th October 2012 – Abermawr surveying and establishing survey points
- 1st November 2012 – Vegetation clearance at Tower Point Rath with PCNPA archaeologist (8 volunteers)
- 14th – 15th November 2012 – First Abermawr plane table survey with ARRRG, plus Cloe Gerrad, Nikki Hamilton Jones and PCNPA Archaeologist
- 30th November 2012 – Wales / Cymru Ifa Day-school 'Archaeology on Beach, Cliff and Beyond: Policy, Recent Work & Community Involvement.' Including talk by Owain Harris, volunteer, on the deserted medieval village of St Ishmael and Arfordir (32 attendees)
- 12th December 2012 (am) – Abermawr Guided walk with Sid Howells of CCW on the geology of Abermawr and how the site would have looked in the Mesolithic period (with National Trust, PCNPA archaeologist and the Abermawr Recording Group)
- 12th December 2013 (pm) – Flint workshop at Oriel Y Parc with Liz Walker of National Museum of Wales and assessment of volunteer found flint from Abermawr (Abermawr Recording Group)
- 9th January 2013 – Flint cataloguing workshop with ARRRG at Oriel Y Parc with Menna Bell, Ed Davies and PCNPA Archaeologist (6 attendees)
- 16th January 2013 – Coastal Forum Meeting and Cadw Monitoring of Arfordir, RCAHMS offices, Aberystwyth
- 10th February 2013 – Visit to Ynyslas wreck site with NAS/MADU
- 19th February 2013 – Second Abermawr plane table survey with ARRRG (3 attendees)
- 20th February 2013 – Monitoring visit to St Ishmael following information that significant dune collapse had occurred
- 2nd March 2013 – Carmarthenshire Day School, with talks including volunteering with the Trust, including the Arfordir project and a brief summary of Arfordir work in Carmarthenshire (80 attendees)
- 9th - 10th March 2013 – Intertidal Archaeology training day, organised by CBA Outreach Placement with NAS/MADU at The Black Mixen Pool at Lawrenny, Pembrokeshire (15 attendees)
- 13th March 2013 – Coastlands Local History Group Talk on Arfordir (25 attendees)

14th March 2013 – Steering Group Meeting for Laugharne and District Local History Society, introducing the Arfordir project and starting interest in the proposed research and recording work for 2013-2014 (10 attendees)

28th March 2013 – Arfordir Day School, talks and practical recording in Cardigan to Dros Y Tonnau/Over the Waves group and other volunteers at Gwbert (a second session was organised following requests from the group)

CONCLUSIONS

The 2012-2013 year of Arfordir has been undertaken in a slightly different way again to the last three. The project has been taken forward this year by the Community Archaeologist, Menna Bell, which has enabled more emphasis to be put to recruiting and training volunteers. The success of this is demonstrated by the establishment of the Abermawr Rapid Response Recording Group and the fact that they now undertake monitoring and surveying of the Abermawr unaided. The Arfordir training days given to the Llanelli Community Heritage Group and in Cardigan to the Dros Y Tonnau group and other interested parties were both very well received. A second talk was requested in Cardigan due to popular demand from members of the group who could not attend the first session.

The use of the Plane Table by volunteers has proved to be very effective. It has been used on peat exposures, standing structures, for monitoring beach erosion and recording wreck sites. Plane table kits for volunteers were put together through the opportunities from the CBA Community Archaeology training placements. In 2013-14 two intertidal recording kits for volunteers will be put together through the same funding source. These will include a digital camera, a hand held GPS and other recording equipment. Such kits will hopefully be well used and provide interesting archaeological information next year and beyond.

The work scheduled to be undertaken in Laugharne has also sparked local interest and as such the author was invited to attend the steering group meeting for the formation of the Laugharne and District Local History Society. The coordinator of the meeting is very interested in the project and other attendees also showed interest and provided some useful information. A talk is scheduled for the group in June 2013 and it is hoped that work can start on recording and research in Laugharne shortly afterwards.

A number of other sites have been recorded during the year that have arisen through information from members of the public or other archaeologists. This has led to interesting recording work of very different archaeological sites from prehistoric peats at Llanrhystud, a probable medieval building at Llansantffraid, a 19th century shipwreck at Goodwick and World War II mines at Caerfai Bay. Further work is scheduled for the next year at Llanrhystud where Stephen Briggs has also brought to our attention a number of wooden jetty and quayside structures associated with the lime kilns in the vicinity.

As noted last year volunteer involvement has been greatest during organised site visits and fieldwork and independent working is hard to maintain. Through the work of Menna Bell, we now seem to be developing a change where she has enabled a number of local groups and volunteers to begin to work more independently. It is hoped that we can continue to build on this next year, especially if the funding for the project may cease.

This year has also seen the development of the intertidal peat recording form. This has taken some time to develop to achieve a form which at this stage seems to provide the information needed to monitor changes and identify archaeological potential of these deposits. The form will also hopefully be used as part of commercial archaeological projects associated with intertidal development (such as coastal defence sites, marina developments or renewable energy projects). The form could be used for a period of observation and monitoring of such sites (ideally over periods of more than 6 months) to observe changes in sand covering of intertidal peats and identify the probable extents of the submerged forest areas. Changes in sand covering can alter rapidly with significant changes in depths occurring. This information can then be used to inform the design of such projects or at least identify where further archaeological works, such as evaluation, palaeo-environmental or Dendrochronological sampling should take place.

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ARFORDIR COASTAL HERITAGE 2012 – 2013

**CADW PROJECT REF: DAT-96
RHIF YR ADRODDIAD / REPORT NO. 2013/23
RHIF Y DIGWYDDIAD/ PROJECT RECORD NO. 102763**

**ABERMAWR EXCAVATIONS
RHIF Y DIGWYDDIAD/ EVENT RECORD NO. 105522**

Mawrth 2013
March 2013



INVESTOR IN PEOPLE
BUDDSODDWR MEWN POBL

Paratowyd yr adroddiad hwn gan / This report has been prepared by

James Meek

Swydd / Position: Head of Field Services

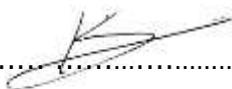
Llofnod / Signature  Date 28/03/2013

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by

Ken Murphy

ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf.
on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: Trust Director

Llofnod / Signature  Date 28/03/2013

*Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau
sydd gennych ar gynnwys neu strwythur yr adroddiad hwn
As part of our desire to provide a quality service we would welcome any
comments you may have on the content or presentation of this report*

