
DATA PAPER

Archaeological Survey and Monitoring Data from the *Flower of Ugie*, Wrecked 1852 in the Eastern Solent, England

Julian Whitewright¹

¹ Project Officer, Hampshire and Wight Trust for Maritime Archaeology

This paper discusses the potential future reuse of the archived dataset resulting from the archaeological survey of the shipwreck remains of the *Flower of Ugie*, a wooden sailing barque wrecked in the Eastern Solent in 1852. Seven years of archaeological survey are represented in the site plans which record the structural details of the vessel along with many of its material characteristics. This record serves to establish the baseline condition of the site, against which future monitoring of the site will be conducted allowing informed management decisions to be made.

Keywords: aggregate, archaeology, Flower of Ugie, maritime, shipwreck

Funding statement

Work on the *Flower of Ugie* was made possible due to the generous support of sponsors and volunteers. Assessment, analysis and publication was funded through DEFRA's Aggregate Levy Sustainability Fund (ALSF) administered through English Heritage. Prior to the ALSF funding, work on the site (2004-2008) had been undertaken as part of the HWTMA's Eastern Solent Marine Archaeological Project (SolMAP). Funding specifically for SolMAP had been provided in some seasons by the BSAC Jubilee Trust and PADI Project AWARE International. Research and monitoring work on the site in 2010 and 2011 has been supported through the HWTMA's Interreg IVA fund 'Archaeological Atlas of the 2 Seas' project. Additional support was provided by HWTMA funders Hampshire County Council, the Heritage Lottery Fund, the Gosling Foundation, Aiken Foundation, D'Oyley Carte Trust, Roger Brookes Charitable Trust, John Coates Charitable Trust and the Charlotte-Bonham Carter Charitable Trust. Further invaluable support has been provided by volunteers and organisations who have provided their time and assistance in kind, without this help the work on the site would not have been possible.

Context

The Mystery Wreck Project (for a full account see Whitewright and Satchell 2011¹) comprised the archaeological and historical investigation of the seabed remains of the *Flower of Ugie*, a wooden sailing vessel built in Sunderland in 1838 and wrecked in the Eastern Solent, England in 1852. The vessel was discovered in 2003 when a fisherman snagged his nets on the wreck, following initial investigation by the Hampshire and Wight Trust for Maritime Archaeology (HWTMA), on-going survey was conducted on the site between 2004 and 2008. The shipwreck lies within an area that is licensed for aggregate extraction, placing the remains under potential threat from such activity. Liaison with the dredging company (Tarmac Marine Dredging Limited) led to the establishment of a voluntary dredging exclusion zone around the site. At that time the identification of the wreck was unknown and the vessel was referred to as the 'Mystery Wreck'.

The location of the site within an aggregate extraction area also facilitated opportunities for further, detailed study of the site. In 2008, funding was received through

the Aggregate Levy Sustainability Fund (ALSF), distributed through English Heritage (EH), to conduct additional archaeological work on the site. The aim of this work was to complete the archaeological survey of the site and to establish the identification of the vessel through detailed research into its material characteristics. Survey work was completed between 2009 and 2010 and samples of the wooden structure and metal fastenings were recovered to enable material/compositional analysis. Further monitoring survey in 2011 was made possible through the Interreg IVA funded Archaeological Atlas of the 2 Seas Project.

The shipwreck lies in three main parts comprising two large sections of hull remains, with a dispersed area of broken, mainly concreted iron elements in between. The vessel is primarily constructed from oak, ebony and elm. It is carvel built, with iron reinforcement in many areas of the hull being used instead of wooden knees. The ship was fastened with a mixture of wooden treenails, copper bolts and yellow-metal (brass) bolts. At the time of sinking, the exterior of the hull was sheathed in yellow-metal. It was not possible to date the vessel through dendrochronology, but comparative analysis

of the metal fastenings allowed a provisional date of c. 1820-1850 to be assigned. A provisional tonnage of 350 old tons was suggested. There are few artefacts from either the vessel's cargo or on-board items surviving.

Comparison with the historical record of shipwreck remains in a 10km radius area around the site identified five vessels (out of 303 potential wrecking incidents) as possible candidates. Historical records for one of these closely matched the characteristics of the seabed remains in terms of materials, date of construction and sinking, vessel size and general location. That vessel was the Flower of Ugie, a 350 ton sailing barque built in Sunderland in 1838. The identification of the shipwreck allowed further historical investigation to be undertaken to establish the career of the vessel and to provide a broader context for the archaeological remains.

The Flower of Ugie spent the period between 1838 and 1846 engaged in trade with the Indian Ocean. This included a voyage to China at the time (1842) of the First Opium War between Britain and China. A period of return voyages between Madras and Mauritius coincides with a sustained period of transport of indentured labour from India to Mauritius in 1843/4. The vessel was sold to new owners in 1846 and was then used on a variety of northern hemisphere routes including the Mediterranean, Baltic and North Atlantic. The final voyage of the Flower of Ugie ended on 27th December 1852 while carrying a cargo of coal to Cartagena in Spain. The history of the vessel provides a relatively unique insight into the part played by such vessels in the expansion of British colonial activity in the 19th century. Additionally the vessel also allows detailed analysis of the shipbuilding technology utilised in Britain at this time. Both of these themes are given further strength through comparison with contemporary documented archaeological remains of other surviving wooden sailing vessels from the same period.

Since the completion of the survey and analysis of the vessel, HWTMA has continued to monitor the site. This has been done through repeat diver observation in conjunction with the installation of monitoring points to provide an indication of alterations to the seabed sediment across the site. Reduction in sediment levels leads to the exposure of more timbers, these are subsequently degraded by the combined effects of physical erosion and attack by marine organisms, most notably Shipworm (*Teredo navalis*) and Gribble (*Limnoria*).

The archaeological survey of the shipwreck has provided the primary dataset under discussion here; namely the site plans produced over seven years of archaeological survey. These serve to establish the baseline condition of the site and are central to the future monitoring and management of this significant piece of England's underwater cultural heritage. Elements relating to the historical investigation, such as NMR records and historical documents do not form part of the data archive because they are already in the public domain. A management report, commissioned by English Heritage also forms part of the dataset. Like the survey data, this serves to establish the baseline threats to the future integrity of the site and to

provide a formal site risk assessment in accordance with English Heritage guidance on sites of this nature².

Spatial Coverage

Extant, identified seabed remains of the Flower of Ugie, are located in 12m of water in the Eastern Solent, England. General centre point of site located at 50° 43' N, 1°1' W. Due to on-going management concerns the exact coordinates have been withheld.

Temporal Coverage

Archaeological material: AD 1838-1852

Methods

Steps

Survey of the site can be seen to have been undertaken in three main phases:

1. Identification of the extent and general nature of the seabed remains including the establishment of a number of datum points across the site.
2. Detailed structural survey of the vessel remains by divers, using the established datum points for orientation.
3. On-going monitoring of the site to establish changes in sediment levels across the site and the extent of any corresponding exposure/burial of structural remains.

Sampling Strategy

Once the extent of the site had been established as comprising a western section of hull remains, a second (eastern) section and a central area of scattered remains of concreted iron elements and some wooden remains, a recording strategy was formulated to most effectively survey these substantial areas. Both the western and eastern sections represented coherent parts of the ship's hull, this meant that the most effective recording was through establishing longitudinal base lines in addition to a range of datum points. The baselines were then used for both offset measurements and planning frame survey of the remains at a scale of 1:20. On the western section the linear nature of the remains, with a maximum width of only 5 m meant that a single baseline was established down the centre of the wreckage. Datum points were established every 5 m along this line which allowed sections of baseline to be re-established by diver pairs who often worked either side of the line recording the remains. The eastern section was slightly wider than the western section which meant installing additional datum points, again based on a longitudinal lay out.

The central area required a different survey approach due to the scattered nature of the material and the relatively large area over which it stretched; approximately 30 x 30m. Diver searches established datum tags on structure, fixtures and fittings, these were then measured in to established datum points on both the eastern and western sections of structure. Trilateration was used both between the individual features and the wreckage to enable the individual pieces to be fixed within the plan. Further recording of the structure was undertaken each season using both photography and video. The level of detail recorded of each timber element was influenced by the conditions on site with some years experiencing large

amounts of weed, others low visibility. With the outline of timbers recorded in the early seasons, later seasons concentrated on gathering detail of the position and type of fastenings on each section and recording the positions of samples taken for dendro-chronological analysis.

Finally, in 2009 a series of monitoring points were installed at sixteen locations across the eastern and western wooden sections. These allow measurements to be taken from the monitoring point to the seafloor, in order to assess changes in sediment levels at relatively localised spots across the wreck. Thus far, measurements have been taken in 2009, 2010 and 2011. It should be noted that the 2011 measurements were taken after the project had been archived with the ADS. The results of that year's survey were included in the final project monograph¹ and illustrate immediate re-use of the archived baseline dataset.

Quality Control

The primary output of the archaeological survey was hard records of perma-trace sheets on which the survey measurements were recorded and drawn. These scale drawings were scanned and imported into a vector-based package to be drawn up and combined. At this stage, inconsistencies in measurements were noted and rectified following additional seabed recording at a later stage in the survey season, or in the following season. Additionally, triangulation measurements taken between datum points and for recording elements in the central area of the site were also processed. This created a multi-layered, scaled survey record of the dimensions and relative locations of seabed material that could be easily manipulated, replicated and altered to reflect the nature of the seabed remains as recorded over the various seasons of fieldwork. It was also simple to incorporate the results of dendrochronological analysis into this plan through the appropriate shading of structural elements. During the archiving process, the decision was taken, in conjunction with the Archaeological Data Service, to archive this survey record as a series of .pdf files, rather than as the original .dwg file. The primary reason for this was to make the material more immediately accessible over the long-term.

Constraints

All diving was undertaken using Self Contained Underwater Breathing Apparatus (SCUBA). As the site is subject to tidal influence diving took place during slack water, which provided a working window of around three hours depending on the proximity to neap tides. The maximum depth of the site is 12 metres at high tide. Visibility encountered on the site varied between 0.5m and 3m. Between 2004 and 2011, 233 hours of dive time were spent on site. Each of the diving seasons were based around a five day planned project.

Dataset Description

Unlike other datasets discussed in this journal (e.g. Bevan and Connolly 2012³) the Mystery Wreck project did not create large quantities of GIS based material, such as .shp files. Although a large quantity of GIS work was done, particularly in the processing of Historic Environment Record

(HER) data which lead to the identification of the wreck, this data is all held in the public domain, either by the National Record of the Historic Environment (NRHE) or by the local HERs of Hampshire and the Isle of Wight. Similarly, bathymetric survey data was granted to the project by the aggregate company concerned and was invaluable in assessing the wider context of the site. However, this material remained in the ownership of the aggregate company and so could not be archived as part of the project. The project archive is therefore relatively 'old-fashioned' in nature, comprising a simple range of material.

Object Name

Mystery Wreck Project (Flower of Ugie)

Data Type

Primary data

Format Names and Versions

- Record photographs and archaeological drawings of the limited number of seabed artefacts that were found on the site (JPEG)
- Spreadsheet detailing the artefacts (CSV)
- Spreadsheet detailing the samples taken for dendro-chronological analysis (CSV).
- Site plans detailing the extant and spatial arrangement of structural seabed remains (PDF version 1.4/Acrobat 5.x).
- Site plans detailing the results of dendrochronological analysis (PDF version 1.4/Acrobat 5.x).
- A Management Report commissioned by English Heritage to reflect the monitoring of the site up to the end of 2010 (PDF version 1.4/Acrobat 5.x).

Creation Dates

Modern observations of structural remains and sediment levels: AD 2004-2011

Dataset Creators, Roles and Affiliations

- Site Management Report: Julian Whitewright, Julie Satchell, Vir Dellino-Musgrave.
- Archive Summary Report: Julian Whitewright
- Photographs: Julian Whitewright and Gareth Jones
- Drawings: Julian Whitewright
- Site Plan: Rebecca Causer, Vir Dellino-Musgrave, Paul Donahue, Christin Heamagi, Brandon Mason, Doug McElvogue, Victoria Millership, Nigel Nayling, Dan Pascoe, Julie Satchell, Lauren Tidbury, Julian Whitewright
- Finds and Samples Data: Julian Whitewright

Repository Location

Archaeological Data Service:

DOI: <http://dx.doi.org/10.5284/1011899>

Publication Date

19th April 2012

Language

English.

License

CC-BY

Reuse Potential

The archived dataset has already demonstrated its re-use potential since its deposition with the ADS in April 2011. In the summer of 2011, a single day of diving took place on the site in order to record the sediment levels at the monitoring points installed in 2009. This allowed further measurements to be added to those measurements taken in 2009 and 2010 and which are contained in the Management Report. In addition, this work also undertook a general survey of the structural remains, in comparison to the surveys included in the dataset and discussed in the Management Report. It is envisaged that the HWTMA will continue to monitor the site of the Flower of Ugie for the foreseeable future. This work will continue to be founded upon the baseline condition and information that is contained within the Mystery Wreck Project Archive.

It may be possible, in the future, to supplement this archive with further data that will update the baseline information. Such a scenario would be desirable if a point is reached when the HWTMA no longer considers the site to be worthy of monitoring, or if the site is taken over by a different organisation under a different management regime, for example an EH Heritage Partnership Agreement. At this stage, the baseline information, including any updated information would continue to be important and valuable.

One clear limitation in the dataset is its relative lack of compatibility with GIS based software and analysis on a site-wide scale. At the time of the project, there was no requirement, or indeed need, to be able to view the seabed structure within a GIS package. The resolution of bathymetric survey data used by the project was such that a dot-on-the-map was sufficient to identify the location of the site within such surveys. In the future, the increasing availability of high resolution swath-bathymetry surveys may result in such a survey being conducted across the site. At this point, it would be a requirement for the original .cdr files to be transformed to georeferenced .shp files that could be situated within any such surveys. As a counterpoint to this future limitation of the existing dataset, it should be noted that the use of a vector graphics package was extremely user-friendly for processing, rectifying, analysing and publishing the underwater survey records. Likewise, the archived .pdf files are highly user-friendly for instant display and long-term access.

On a wider scale, the Flower of Ugie is the only example of wooden shipwreck remains that are located in an active aggregate extraction area. The exclusion zone that has been established around the site has been effective in

protecting the site from direct physical damage through aggregate extraction. However, the longer-term effects of nearby extraction are still largely unknown, on a site of this type. The archived baseline dataset may therefore have potential for further reuse as a part of any future projects that seeks to enhance our understanding of the on-going exposure/burial of shipwreck material located adjacent to aggregate extraction activity.

Acknowledgements

On behalf of the HWTMA, I would like to thank Arthur Mack who initially informed the HWTMA of the discovery of the site, aided its location through coming out on the boat during fieldwork and has continued to support the investigations with his enthusiasm. Work on the Flower of Ugie has been directed by Julie Satchell who also undertook research and planning prior to the ALSF funding in 2004 and has since acted as a project specialist. Virginia Dellino-Musgrave has provided project management during the ALSF funded work, with Julian Whitewright being the Project Officer who has carried out extensive research and analysis leading to the delivery of project monograph. Project specialists have included Nigel Nayling (University of Lampeter), Peter Northover (Department of Materials Science, Oxford University), Justin Dix (University of Southampton), Angela Karsten, David Dungworth and Duncan Brown (English Heritage). During the ALSF funded assessment, analysis and research the HWTMA received the help and support of a number of individuals and organisations. Particular thanks go to Dr Andrew Bellamy and Nicolas Corne (United Marine Dredging), Ian Whitehead (Keeper of Maritime History, Tyne and Wear Archives and Museums) and Graham Thompson (Caird Library, National Maritime Museum). Finally and most importantly, the HWTMA would also like to thank the numerous staff and volunteers who have worked on the site and given up their time over the course of the project.

References

1. **Whitewright, J and Satchell, J** 2011 *The Archaeology and History of the Flower of Ugie, Wrecked 1852 in the Eastern Solent*. Hampshire and Wight Trust for Maritime Archaeology Monograph Series No. 1. Oxford: British Archaeological Reports.
2. **Dunkley, M** 2008 *Protected Wreck Sites at Risk. A Risk Management Handbook*. English Heritage.
3. **Bevan, A and Conolly, J** 2012 Intensive Survey Data from Antikythera, Greece. *Journal of Open Archaeology Data* 1(1), DOI: <http://dx.doi.org/10.5334/4f3bcb3f7f21d>

How to cite this article: Whitewright, J 2012 Archaeological Survey and Monitoring Data from the Flower of Ugie, Wrecked 1852 in the Eastern Solent, England. *Journal of Open Archaeology Data* 1:e6, DOI: <http://dx.doi.org/10.5334/4f7db511ae16c>

Published: 5 April 2012

Copyright: © 2012 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution 3.0 Unported License (CC-BY 3.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited. See <http://creativecommons.org/licenses/by/3.0/>.



The *Journal of Open Archaeology Data* is a peer-reviewed open access journal published by Ubiquity Press

OPEN ACCESS