

Underwater Cultural Heritage and Fishing Communities: safeguarding heritage and safeguarding fishermen

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ABSTRACT

This paper proposes that development of a fit-for purpose management to protect underwater cultural heritage from negative impacts caused by fishing gear requires three elements; evidence-based characterisation of impacts; understanding of the pressures and constraints acting upon fishing communities; commitment to engagement with fishermen and industry associations. A new study is introduced, ENDURE, that will help to characterise and quantify damage caused by fishing gear to archaeological material as part of a broader study of site formation and preservation *in situ*. The work of Lloyd's Registry Foundation on fishing safety is presented as a contribution to the design of appropriate management regimes – it is emphasised that fishing is already inherently dangerous and that dislocation from traditional fishing grounds caused by exclusion or limitation of fishing in certain areas can exacerbate occupation safety challenges; the work of Historic England in is described as a case study of liaison with fishermen to safeguard heritage and the need for broad. The need for commitment to a broad programme of engagement with fishermen, industry associations and responsible agencies is illustrated. The paper concludes that the vital role of fishing in maintaining the stability of coastal communities must be recognised while seeking arrangements that minimise risk to heritage on the seabed.

Key Words: Impact , Preservation *in situ*, Safety, Engagement

Abbreviations

ALDFG - Abandoned, Lost and Discarded Fishing Gear
CFP - Common Fisheries Policy
DEFRA - the Department for Environment, Food and Rural Affairs
FIPAD - Fishing Industry Protocol for Archaeological Discoveries
FMP – Fisheries Management Plans
HAZ - Heritage Action Zone / High Street Action Zone
HE - Historic England
HPMA – Highly Protected Marine Area
IFCA - Inshore Fisheries and Conservation Authority
LRF Lloyd's Register Foundation
MPA – Marine Protected Area
MMO - Marine Management Organisation (MMO)
UCH – Underwater cultural heritage
UKMA – UK Marine Area

INTRODUCTION

This paper addresses three areas of endeavour central to managing the impact of fishing activity on Underwater Cultural Heritage (UCH). There are more than three million shipwrecks estimated worldwide according to UNESCO (Croome 1999, 49-52). The *UNESCO 2001 Convention on the Protection of Underwater Cultural Heritage* encourages *in-situ* preservation and states that wrecks older than 100 years count as a cultural heritage site. This encompasses many metal shipwrecks, including World War 1 casualties and gives rise to significant conflicts of interest (Firth 2018, 8-9). They are habitats for marine life, enhancing biodiversity and biomass (Bałazy et al. 2019, 1-2). They can also pose environmental pollution threats, especially if they contain hazardous substances such as oil, chemicals, or munitions (Ndungu et al. 2017; Szafrńska et al. 2021). Marine spatial planning issues often arise as wrecks interfere with the ever-increasing offshore sub-sea engineering efforts, such as the installation of cables, pipelines, or wind farms (Papageorgiou 2018, 195-196). Shipwrecks are also treated as geohazards and obstacles to marine engineering, posing risks to navigation or safety through unexploded ordnance. The impact of fishing activity must therefore be considered in the context of a complex marine management and stewardship environment.

The first section deals with the need for evidence-based characterisation of the impact of fishing that is integrated into wider consideration of site formation dynamics. A major European Research Council research programme, ENDURE, is introduced. Based at the National Museum of Denmark, ENDURE aims to disentangle natural and anthropogenic decay processes and determine their cumulative effects on UCH. The aim is to validate the efficacy of *in situ* preservation.¹ The following sections develop the proposition that the application of such foundational work on new management regimes will be compromised in the absence of full appreciation of the pressures operating on the fishing industry and without concerted effort committed to close engagement with fishermen. Not all fishing activity poses an equal threat to UCH, and it is critical that an understanding of material differences in impact shapes management solutions. The second section introduces the work of Lloyd's Register Foundation (LRF) - shaping a future for the fishing industry that is safe for all fishers working in a sustainable ocean economy. Today's fisheries are part of a highly stressed marine system, and the human cost of fishing is appallingly high. LRF's work will help inform proposals for protection of UCH that avoid exacerbating occupational safety challenges. The third section presents work undertaken by Historic England (HE) to engage with fishermen to mitigate damage to UCH and develop fit-for-purpose management regimes. It emphasises the need for broad engagement with agencies as well as industry bodies and communities.

CASE STUDIES

Out of sight but not out of mind - Sustainable preservation of underwater archaeological sites

Given the scale of the heritage management challenge – a wide range of site types in complex, dynamic environments - a desk-based approach for assessment of the most significant site formation processes is urgently needed. Rapidly progressing marine remote sensing techniques allow effective non-intrusive detection, characterisation, and monitoring of underwater sites (Plets et al. 2011, 87-88; Westley et al. 2019, 3629-3632). The remote characterisation and monitoring of change at individual sites (Quinn & Boland 2010, 2938-2940; Brennan et al. 2016, 82-84) includes environmental factors to understand physical formation processes in control of site preservation (Smyth & Quinn 2014, 221-223; Fernández-Montblanc et al. 2016, 240-242; Quinn & Smyth 2018, 1429-1432; Geraga et al. 2020, 1210-1215; Majcher et al. 2021, 1-4).

Gregory and Manders (2015, 7-10) formed a baseline process-based approach to control, assess and achieve *in-situ* preservation, and one of its central points is the assessment of the most significant chemical, biological and physical threats to the site. Understanding the formation of underwater sites also enables more accurate archaeological interpretation. Assessing environmental factors can not only

¹ Project ENDURE <https://www.endureerc.com>.

lead to better understanding of events that caused the sinking of the vessel but it also helps to predict pathways of future deterioration. This enhances understanding of potential pollution and fishing hazards and address UCH management needs.

In ongoing work (Gregory *et al*, forthcoming) baseline post-depositional site formation processes for more than 500 shipwreck sites located in the North and Baltic Seas are being examined. Multi-beam bathymetry data supplied by the marine survey company (JD-Contractor A/S) are integrated with multiple environmental and anthropogenic influenced data layers sourced from open-data portals. The sites were manually classified using a revised form of Muckelroy's (1977) approach and subsequently, statistical correlation analysis was used to determine the most significant variables. Fishing activity was assessed through inclusion of variables representing fishing efforts. EMODnet (2023)² provides a variety of quantified fishing activities in the Baltic and North Seas. Only the fishing methods entailing direct contact of the fishing gear with the seabed were relevant. Bottom seiner, beam and otter trawler fishing data were downloaded from the EMODnet portal, representing fishing intensities averaged across three years. However, caution is required as there is on-going research into the footprint and actual impact of fishing on seabed habitats (McConnaughey *et al.* 2020, 325-30). Although the study presents a simplified, preliminary approach it serves as a big-data-driven attempt to assess the predominant basin-scale post-depositional site formation factors acting at UCH sites. Water depth, bottom fishing intensity and oceanographic variables like salinity have significant influence as well as the expected correlation between the age of a wreck site (sinking date) and its current preservation state. These aspects are being further developed in the ENDURE project addressing the following key knowledge gaps: 1) the efficacy and long term sustainability of 'in-situ preservation'; 2) what to preserve and why; 3) a comprehensive understanding of decay processes (including their rates) and how and in what circumstances these can be mitigated for; 4) the invisible and inaccessible nature of these sites and how such a large resource can be effectively monitored; 5) the increasingly dynamic and changing nature of the marine environment due to both natural and anthropogenic drivers; and 6) the lack of integration of UCH management with other disciplines and end users of the marine environment.

RESOURCES

The world's most dangerous industry

The damage caused to UCH by trawling activity cannot be ignored by responsible Government agencies and Lloyd's Register Foundation³ (LRF) is committed to supporting the safe and effective management of UCH. However, attempts to develop better management regimes for UCH located on or near fishing grounds will be compromised without a high-level of awareness of challenges faced by the fishing community. Accordingly, LRF Heritage Education Centre has launched the *Learning from the Past*⁴ programme to help generate insights that contribute to fisher safety. It will also help archaeologists and historians to communicate with fishermen and policy makers to limit harm to both the natural and historic marine environments.

Illegal fishing, climate change, weak governance, poverty, and reduced fish stocks all contribute to make fishing one of the world's most dangerous professions. Recent work by the FISH Safety Foundation indicates that over 100,000 fishing-related fatalities occur annually with the majority in the developing world.⁵ Negative health effects on industry participants in general and fatalities greatly

² <https://emodnet.ec.europa.eu/en/fishing-intensity-data-set-extended-additional-sea-regions>

³ <https://www.lrfoundation.org.uk/en/>

⁴ <https://hec.lrfoundation.org.uk/get-involved/introducing-learning-from-the-past-236>

⁵ <https://www.the-human-cost-of-fishing.org/>

exceed those in the wider shipping sector.⁶ In Bangladesh, over 1,350 fishermen die at sea every year, often in boats without the most basic safety equipment.⁷

LRF has launched several initiatives, such as FishSafe2025, to help assure fisher safety through training and awareness.⁸ The highly influential Insight Report on Safety in the Fishing Industry (Attwood 2018) stressed the need to improve safety in ways that are appropriate for local communities. The Foundation has also supported development of new safety technology—for example SeaWise®, a tablet-sized device that monitors the stability of smaller fishing vessels.⁹ These outputs contain many insights that may be valuable in designing new UCH management regimes—especially in inshore waters.

Marine Protected Areas (MPAs) and latterly, Highly Protected Marine Areas (HPMAs), will be a key tool in both marine nature and heritage conservation but displacement of fishers from familiar grounds, whether through creation of MPAs or other processes, can carry a cost that must be recognised and addressed in planning stages. The LRF funded film *Two Kinds of Water*¹⁰ tells the story of fishers in Africa’s most vulnerable fishing communities. Displaced from their traditional fishing grounds into stormier waters, fishers are forced to venture further and stay at sea longer in poorly adapted vessels. Larger, mechanised fishing vessels now compete with artisanal fishers for fish and pose a safety threat to their more fragile, smaller craft. Fishing communities also face disruption around the UK. Fishers have been moved from traditional shore facilities due to redevelopment. The UK Government plans for new, HPMAs,¹¹ may also deny fishers access to traditional inshore grounds. UK sea fisheries associations have warned of a looming displacement crisis with lasting harm to coastal communities.¹²

The UK Government has consulted extensively on proposed HPMAs and eventually refused two of the proposed designations. The needs of fishing communities were prominent in the published rationale for rejection.¹³ For Lindisfarne, reasons included residents’ concerns about losing their heritage, community, and cultural identity through losing fishing and their health and safety concerns, including mental health. The Inner Silver Pit South designation was refused on the basis that the relatively high costs to fishermen would not be offset by the potential benefits from its designation as a HPMa.

FRAMEWORK

Protecting England’s Maritime Heritage and fishing community engagement

Fishing in English waters, using both mobile and static gear, involves a variety of complex interactions with UCH. Fishing has given rise to important heritage both underwater and along our coastlines, but fishing can also cause damage to UCH. Fishing is often a source of information about UCH – in the form of new discoveries – even where those discoveries are a consequence of fishing impacts.

⁶ <https://www.spglobal.com/marketintelligence/en/mi/research-analysis/seafarer-fatalities-shows-shipping-must-do-more.html>

⁷ <https://www.fishsafety.org>

⁸ <https://www.lrfoundation.org.uk/en/impact-stories/saving-lives-of-the-worlds-poorest-fishermen/>

⁹ <https://www.lrfoundation.org.uk/en/impact-stories/hook-marine>

¹⁰ <https://www.lrfoundation.org.uk/en/news/keeping-fishers-safe-at-sea/>

¹¹ <https://www.gov.uk/government/publications/highly-protected-marine-areas-hpmas-review-2019>

¹² <https://www.nffo.org.uk/spatial-squeeze-report-parliamentary-launch/>

¹³ <https://www.gov.uk/government/publications/highly-protected-marine-areas/highly-protected-marine-areas-hpmas#an-overview-of-the-pilot-hpma-selection-process>

Historic England (HE) is the government's advisor on the historic environment in England, including in the UK Marine Area (UKMA) off England¹⁴, encompassing the territorial sea to 12 nautical miles (nm), and the UK Continental Shelf and Exclusive Economic Zone to median lines with neighbouring countries or to the boundary of national jurisdiction (200 nm) in the southwest. HE's capacity to designate sites under heritage legislation is limited to the territorial sea but HE advises government on a range of other powers relating to resource use, the environment and fishing that apply to the full extent of national jurisdiction. For fisheries management, another key boundary lies at six nm, which is the outer limit of areas administered by Inshore Fisheries and Conservation Authorities (IFCAs). Beyond six nm, fisheries management is subject to the Common Fisheries Policy (CFP) of the European Union (EU). Since the UK left the EU, fisheries off England beyond six nm are now administered by the Marine Management Organisation (MMO), one of the family of public bodies sponsored by the Department for Environment, Food and Rural Affairs (Defra).

HE, including through its precursor English Heritage, has been engaging with fisheries for many years. It commissioned a wide-ranging examination of fishing and the historic environment that encompassed the contribution of fishing to the historic environment as well as direct and indirect interactions, both positive and negative (Firth et al. 2013). The report spurred further investigations and continues to provide evidence to support advice to government.

In the 1990s, 'fishermen's fasteners' were included among the core data recorded in the national inventory, now known as the National Marine Heritage Record. Fasteners are places where fishermen have noted snags to their gear which, in several cases, proved to be historic wrecks. Whilst fasteners indicate potential UCH, their actual character is unknown. This and several other ambiguities prompted a project led by Sussex IFCA to better understand fasteners and their heritage implications, including testing whether the survey methods used by IFCAs for fisheries and habitat mapping could also be used to examine fasteners. The project, which included dialogue and joint fieldwork with fishermen, confirmed the continued importance of fishermen's fasteners as a source of information (Firth & Dapling 2020). The project also flagged the safety issues presented by cultural heritage to fishing insofar as some fishing vessels, and fishermen's lives,¹⁵ have been lost from snagging obstructions and other historic material such as ordnance.¹⁶

The potential for IFCAs to use habitat survey methods to examine UCH was further explored in a project led by Isles of Scilly IFCA with the University of Plymouth (Firth et al. 2020). In 2012-13, HE funded a pilot project to encourage fishermen to report their discoveries of UCH through a Fishing Industry Protocol for Archaeological Discoveries (FIPAD) (Davidson 2013). FIPAD was further developed with the support of the National Lottery Heritage Fund and Sussex IFCA in 2016-18.¹⁷

Notwithstanding these positive instances of collaboration, fishing is still a cause of impacts to UCH, including to highly significant historic wrecks designated under heritage legislation. Several instances of documented damage are currently being investigated as heritage crimes and in other instances, fieldwork has been commissioned to remove Abandoned, Lost and Discarded Fishing Gear (ALDFG) that is obscuring designated sites and presenting a hazard to licensed divers. Whilst damage is a criminal offence, fishing as an activity is not restricted on these sites. Consequently, and in addition to pursuing criminal damage, HE efforts are twofold: working with the fishing sector to discourage the use of potentially damaging methods in the vicinity of important sites; whilst also exploring the use of fisheries management measures to formally restrict fishing. New fisheries legislation, the Fisheries Act 2020, was introduced to accompany the UK leaving the EU and encompasses 'features of archaeological or historic interest' within the scope of the marine and aquatic environment that can be conserved, enhanced, and restored through financial assistance, regulations, or conditions on sea fishing licences. It was confirmed by the Minister in Parliament that regulations for conservation

¹⁴ Cultural heritage and fisheries in the UK are both devolved matters: distinct arrangements apply in England, Scotland, Wales, and Northern Ireland.

¹⁵ <https://www.gov.uk/maib-reports/capsize-and-sinking-of-beam-trawler-noordster-off-beachy-head-england-with-loss-of-3-lives>.

¹⁶ <https://www.gov.uk/government/news/galwad-y-mor-report-published>.

¹⁷ <https://fipad.org/>

purposes may be used to amend or introduce legislation to protect features of archaeological or historic interest individually or collectively.¹⁸

Exclusion of fishing activity from limited areas around specific heritage sites is a residual option if the risk of impact cannot be reduced through other means, but it is not the starting point. As noted earlier, fishing is a valued part of our heritage, contributing to the character and sense of place of coastal communities, including people who work in them or visit. Often, UCH is itself the heritage of fishing generally but also of the fishermen themselves: numerous fishing vessels lie wrecked in English waters, not least from the First and Second World Wars when fishing vessels and fishing crews served in the hazardous role of minesweeping. HE has supported the contribution of fishing heritage to regeneration of coastal communities through Heritage Action Zones (HAZs) and High Street Action Zones (HAZs). Examples of this include the ‘Kasbah’ at the heart of Grimsby’s historic fishing industry,¹⁹ and the Whapload Road area of North Lowestoft (Bristow 2019). HE is carrying out a thematic assessment of heritage relating to steam fishing, encompassing heritage assets on land and at sea.

HE continues to explore how heritage contributes to the sustainability of fishing, reducing impacts to UCH but potentially contributing to the wider sustainability of our continued use and enjoyment of our seas. HE is supporting and co-supervising a new PhD starting in October 2023 on using cultural heritage proactively to help manage UK marine fisheries in conjunction with Heriot Watt University and the University of Exeter as part of the Centre for Doctoral Training in Sustainable Management of UK Marine Resources (CDT SuMMeR). The research will examine how the legacy of cultural heritage embedded in the practice of small-scale fishing – traditional ecological knowledge, maritime landscapes, historic landing places, traditional vessels, and all their associated skills and material culture – can be used to drive greater sustainability within fisheries management.

Historic England continues to engage with Defra and the MMO on major changes to fisheries management introduced by the Fisheries Act 2020. The new Joint Fisheries Statement (JFS)²⁰ – which sets out the overall direction of fisheries management across the UK – acknowledges that the seafood sector is an important part of the economy of coastal communities and has a rich cultural heritage from which many of those communities draw a sense of place and identity. There is work to do, however, on detailing how this rich cultural heritage is to be conserved and enhanced through the JFS. Historic England is engaged on the practical implications of the Fisheries Management Plans (FMPs) that support the JFS through binding obligations and identified measures for dealing with individual fish stocks, types of fishing and geographic areas. The introduction and implementation of FMPs provides a key opportunity to flag the impacts of specific fisheries and how they can be reduced, but also the positive contribution that heritage can make to the long-term sustainability of fishing and coastal communities.

CONCLUSION

Unhelpfully, some commercial salvage companies have used the threat of trawl damage to justify the commercial salvage and sale of valuable materials from historic wreck sites—a line of argument that must be refuted through evidence led approach to the actual nature and scale of impacts created by different types of fishing gear in different locations. Fishing is also an inherently hazardous occupation and the fact fishing communities represent intangible cultural heritage values is increasingly recognised in consultations²¹ and programmes supporting the regional socio-economic

¹⁸ [https://hansard.parliament.uk/Commons/2020-09-15/debates/a7b42ae4-819e-45c7-a0d6-fc32b494aacf/FisheriesBill\(Lords\)\(FifthSitting\)#contribution-FCA4B1FA-E107-4602-B34C-E9AF6F80A30F](https://hansard.parliament.uk/Commons/2020-09-15/debates/a7b42ae4-819e-45c7-a0d6-fc32b494aacf/FisheriesBill(Lords)(FifthSitting)#contribution-FCA4B1FA-E107-4602-B34C-E9AF6F80A30F)

¹⁹ <https://historicengland.org.uk/services-skills/heritage-action-zones/greater-grimsby/>

²⁰ <https://www.gov.uk/government/publications/joint-fisheries-statement-jfs>

²¹ <https://www.theheritagealliance.org.uk/wp-content/uploads/2020/10/Heritage-in-the-Marine-Environment-paper.pdf>

role of fisheries.²² Heritage agencies have worked successfully with fishing communities to explore collaborative management approaches. Indeed, examples exist of fishing communities recruited and trained specifically to assist with monitoring and conservation of UCH.²³ However, much more effort is needed to develop ways to balance the needs of fishers with preservation of nature and heritage. Lloyd's Register Foundation will continue to support such efforts.

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²² <https://www.cabfishman.net>

²³ <https://risingfromthedepts.com/blog/marovany-4/>

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