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UNDERWATER CULTURAL HERITAGE FROM WORLD WAR I



PROCEEDINGS OF THE SCIENTIFIC CONFERENCE ON THE OCCASION OF THE CENTENARY OF
WORLD WAR I
BRUGES, BELGIUM, 26 & 27 JUNE 2014

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The Protection of the
Underwater Cultural Heritage

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Foreword

The international community will commemorate the the centenary of the First World War from 2014 to 2018. These four long years of war and hardship left an indelible mark on many societies and peoples around the world. They also left a significant underwater heritage that can today serve as a tool for dialogue between the nations concerned in the conflict. Until recent years, the potential of this shared heritage for achieving reconciliation, mutual understanding and friendship was not sufficiently acknowledged and understood. The remembrance of the past through



Alfredo Pérez de Armiñán,
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historic sites and artefacts can significantly contribute to peace and reconciliation in the twenty-first century. The present publication highlights a special legacy of World War I: the many warships, submarines and merchant vessels that sank during that conflict and that constitute the last remaining original traces of war. Each sunken ship has a story to tell. This invaluable underwater cultural heritage stands as a moving memorial of the painful events of the conflict, as well as the lives lost. As such, they deserve our respect and protection.

Unfortunately, the underwater cultural heritage of WWI has been extensively damaged through salvage, looting and industrial activity over the past hundred years, and legal protection has been insufficient. Beginning in 2014 the underwater heritage of WWI will begin to be covered under the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage for those UNESCO Member States that have ratified this international instrument. The Convention protects all shipwrecks lying more than 100 years under the oceans, and will prove very useful in the fight to preserve them.

The papers featured in this publication are the results of the UNESCO Scientific Conference held in Bruges on 26 and 27 June 2014. They highlight the extent and importance of WWI underwater cultural heritage, new information resulting from recent research and ongoing projects aimed at protecting, preserving and researching it. The years 2014 – 2018 will provide an excellent opportunity to emphasize the significance of WWI underwater cultural heritage. The papers published herein, reflecting the opinions of numerous experts in the fields of underwater archaeology and cultural heritage management, represent a good starting point in this campaign.

UNESCO wishes to thank the Government of Flanders, the city of Bruges, and the Government of West Flanders for their kind assistance and generous support in organizing the conference and its related events. Our sincere gratitude also goes to the many archaeologists, conservation specialists, cultural heritage experts and editorial staff who have contributed to the preparation of this publication.

Alfredo Pérez de Armiñán

UNESCO Assistant Director-General for Culture



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Section I.

The Underwater Cultural Heritage of World War I

The naval battles of the First World War took place over a very wide area. They gave rise to large, uninterrupted battles, such as Jutland, which pitted the British Navy against its German rival on 31 May and 1 June 1916 in the North Sea near the Danish peninsula of Jutland. Another clash of similar scale occurred at the battle of Gallipoli (from 25 April 1915 to 9 January 1916).

The conflict was characterized primarily, however, by small-scale battles, submarine attacks and naval blockades. Thus, the naval blockade of Germany, led by the British Royal Navy from 1914 onwards to halt attempts to supply Germany and its allies by sea, is considered a key element in the ultimate victory of the Allies. Germany, which in fact largely depended on imports to feed its population and fuel its industry, was hit hard by this embargo.



Figure 1. The War Balloon, a steamer sunk during WWI. © Nicolas Job

During the conflict, British naval forces mobilized some 11,000 war vessels. In total, approximately 250 of those vessels and some 850 auxiliary vessels sunk. More than 74,000 sailors and 15,300 men of the Merchant Navy lost their lives. On the German side, almost 200 submarines and hundreds of warships were lost. The total casualties amounted to 34,836 men.

Such battles were not limited to the North Sea, and many lives were also lost in the Mediterranean, the Indian Ocean, and in the waters off China, Japan and Australia

These vessels that sank with their crews a century ago remain at the bottom of the ocean. This underwater cultural heritage is a major witness to history. It is, however, little protected, scarcely researched, and insufficiently known.

This section presents a number of papers discussing specific examples of WWI underwater cultural heritage that have been researched recently. These papers demonstrate the great variety of this heritage and the important lessons that can be learned, as well as the connections that can be made between the past and the present.

The Historical Archaeology of World War I U-boats and the Compilation of Admiralty History:

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Over the course of the last 17 years the author has researched, dived, surveyed and identified some 100 submarine wrecks around the UK. His 2014 book examines the 63 known U-boat wrecks in the English Channel, of which 32 were sunk during World War I. Detailed analysis of each case revealed that the list of U-boat losses published by the Antisubmarine Division (ASD) of the Admiralty in 1919 (the 1919 List) was only 48 per cent accurate. Of the wrecks not mentioned in the 1919 List, (*UC-79*) is the most startling case, primarily because ASD knew where it was during wartime but hid its true fate when it compiled the 1919 List in order to preserve its own reputation. This

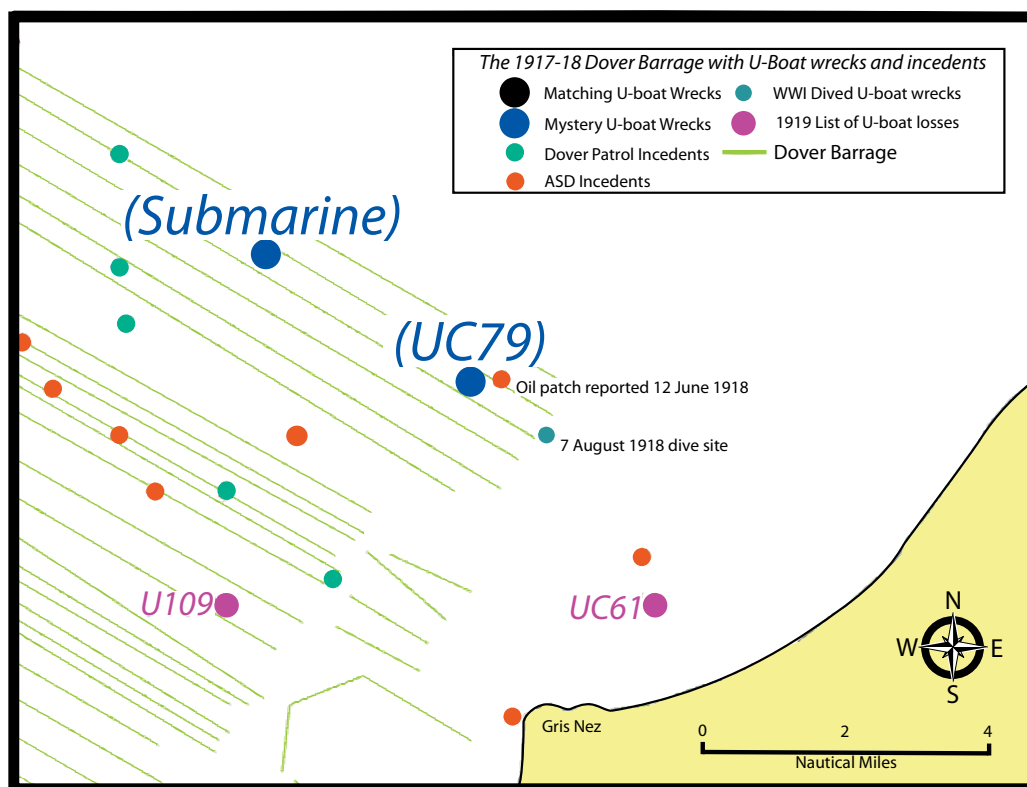


Figure 1. Map showing the location of the wreck of (*UC79*) in the Dover Barrage and the related oil patch and 1918 diving site. Nearby wrecks and incidents are also shown © Innes McCartney.

paper examines why this happened and what its broader implications are for archaeologists, historians and heritage managers.

In 2000, on a tip-off from a local fisherman, French divers found the wreck of a U-boat off Gris-Nez in the Dover Straits (Figure 1). During subsequent dives it was found to be of the UCII-Class of minelaying U-boat, mined in the Dover Barrage (a large minefield laid in 1917-18 to close the Dover Straits to U-boats). Both of its propellers were scraped in an attempt to reveal the identity of the wreck. This methodology can be 100 per cent successful, leading to an unassailable identification of a U-boat wreck, if both propellers match and the result coalesces with supportive historical evidence. Not unusually, in this case the propellers did not match, leading to an inconclusive result. The port side propeller was stamped 'UC79' and starboard side 'UC77', raising the possibility that one, or even both propellers had been substituted during the U-boat's operational life.

In consultation with the divers, the historian Michael Lowrey deduced that wreck must be (*UC-79*), which left for its last patrol on 20 March 1918. Figure 1 shows that the location of the wreck is very close to where a patch of oil was first spotted by airship on 12 June 1918. Since *UC-77* was operational until July 1918 it seems that it can be discounted as a candidate for this wreck site. This means that *UC-79* remains by far the best probable identity for the wreck. But it is yet to be fully confirmed, with *UC-78* also being a potential candidate, unaccounted for as a wreck elsewhere. For this reason the wreck's identity is cited in parentheses, a probable but unconfirmed identification.

According to ASD's 1919 List, *UC-79* was confidently attributed with being destroyed by the British submarine HMS *E-45* on 19 October 1917 in the southern North Sea. However, an examination of the details of the attack reveals that all that was witnessed was in fact a 'great disturbance of water', with no supportive physical evidence seen. This would appear then, to be a somewhat dubious attribution, if it was not for the fact that ASD thought it knew from radio intelligence that *UC-79* was in the same area as HMS *E-45* at the time of its attack. So seemingly confident was ASD about the success of this attack that *UC-79* was removed from its daily plot and listed as sunk, never to be reinstated. We now know that in fact it was *U-53* that was attacked (ASD had most probably confused its callsign with that of *UC-79*) and it survived to report the incident in its war diary.

Of course ASD could not have known this, but it was not too long before the inconvenient truth that *UC-79* was still operational began to emerge. The first signs must have come from the Admiralty's cryptographic branch, Room 40, whose own history sheet for *UC-79* shows that by February 1918 it knew that

the U-boat was still operational. Although it may have been easy for ASD to ignore the views of a few intelligence officers, more bothersome was the discovery of the wreck of (UC-79) by Admiralty divers on 7 August 1918.

Figure 2 shows the telegram sent by Commander Damant of the Admiralty Salvage Section, who was detailed to work for the Naval Intelligence Division during the summer of 1918, to find U-boat wrecks from which to gather intelligence. It describes the condition and state of the wreck and this matches well with the position of the wreck found in 2000 (Figure 1). The author surveyed the wreck site in the summer of 2014; the results are shown in Figure 3, the wreck is broken in half as Damant described. The forward section is blown off and lies on its port side, the stern section is upright. The two halves are almost touching on the starboard side. The key features on site are labelled as follows. Image A shows that the forward section is blown off at the point where it bisects mine chute six. All the mine chutes are in fact empty. The U-boat's stern portion points north, suggesting the U-boat was destroyed in the Dover minefield while heading back to Flanders at the end of its patrol. Image B shows one of the two external forward torpedo tubes. Both are present on the wreck site, with doors sealed shut. Image C shows the view into the stern section which would have confronted Damant's divers in 1918. It shows the underneath of the pressure hull folded upwards by the mine blast, creating only a tiny aperture through which no diver in 1918 could have safely entered the wreck. It clearly shows the wreck struck a mine underneath chute six. Image D shows the extreme bow of the wreck showing the angle of lean of the forward section. Image E shows the forward portion of the conning tower revealing the steering pillar for the bridge helm to still be in place. Image F shows a view of the conning tower seen from above. The hatch is opened, as described in Damant's telegram. Image G shows the shut engine hatch. All are shut except the conning tower hatch seen in Image F. Image H shows the

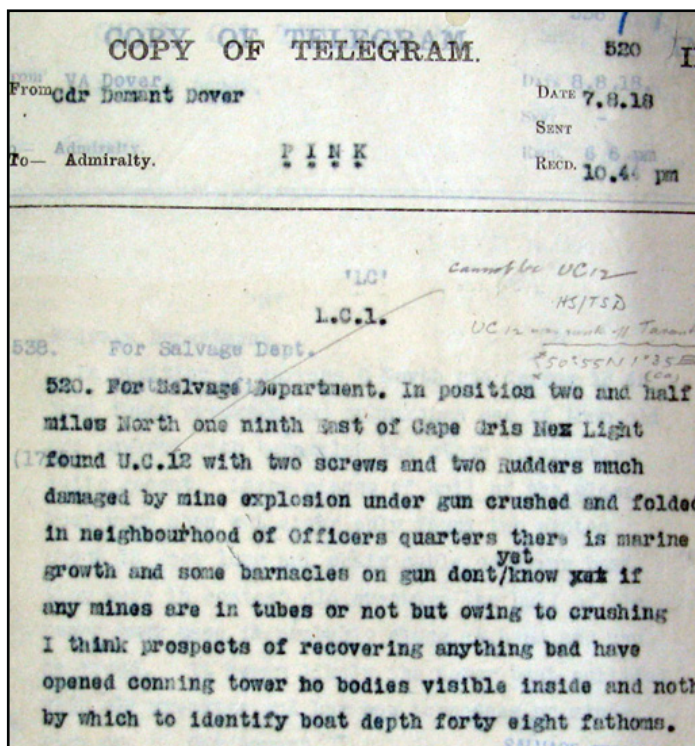


Figure 2. Commander Damant's telegram describing the discovery of (UC79) in August 1918. The attribution to "UC12" is most probably a typographic error, with Damant meaning that a UCII type had been found. © Crown Copyright

Name: (UC79) **Posn:** 50 54.983; 01 34.419E **Depth:** 35m
Date of Loss: Mar-May 1918 **How Sunk:** Mine
Date of Survey: 20 July 2014

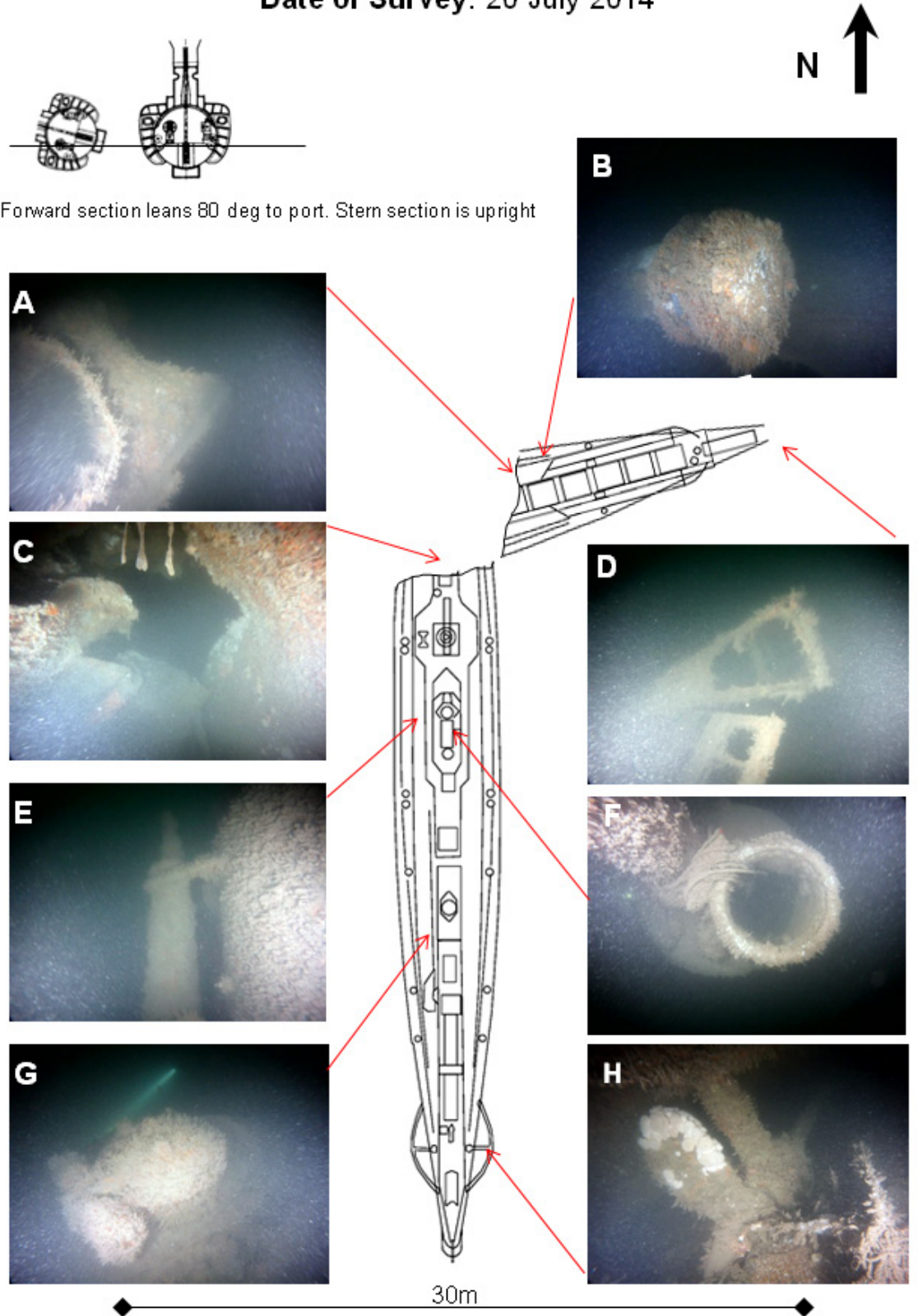


Figure 3. Site map of the wreck of (UC79) as surveyed by the author on 20 July 2014 © Innes McCartney

starboard side propellor. Both are still present and still clear of the seabed.

The presence of this wreck caused a problem for ASD in the fact that no witnessed incident could be found to plausibly explain its presence in the minefield before the 12 June sighting of oil. In an attempt to date when the U-boat was sunk, Damant's divers recovered a piece of "tin" sheet from the wreck and it was sent to the British Museum so that the barnacle growth could be dated (Figure 4). This is certainly an early case of such a forensic approach being used in wartime. The results of the museum's analysis led to the conclusion that the U-boat was sunk in March to May 1918. The problem was that this conflicted with ASD's view that it had already successfully accounted for all of the UCII minelayers which had been lost during this period and awkwardly, none fitted this scenario.

ASD's weakest assertion was seemingly that of *UC-78*, considered mined in the Dover Barrage. In this instance its supposed destruction had not yielded survivors or other identifying material, but the witnessed mine explosion made for a very good case. Parenthetically, in 1982 a wreck was found by divers at the position given in 1918 for the loss of *UC-78* and it ironically turned out to be *UB-78*, leaving *UC-78* without a verified recorded fate to this day, making it a theoretical albeit unlikely candidate for this wreck. Of course ASD knew that Room 40 had shown that *UC-79* had survived its encounter with HMS *E-45* the previous October and was still operational.

Ultimately then, ASD must have concluded that in all likelihood the wreck found on 7 August 1918 had to be *UC-79*, confirming Room 40's suspicions



Figure 4. How ASD's attribution for the loss of UC79 unravelled (left to right): Commander Damant, whose divers located the wreck of (UC79) off Gris Nez in August 1918 (R. H. Davis), the barnacled tin sheet which dated the time of loss of UC79 (National Archives) and Paymaster Lieutenant-Commander William F. Clarke RNVR, the Room 40 intelligence officer who revealed how ASD manipulated the historic record to its advantage © Crown Copyright

that the U-boat was still operational. Since February 1918 the intelligence appreciation as to *UC-79*'s operational status had been strengthened by U-boat survivor interrogations which showed that *UC-79* was last seen around April 1918. Unbeknownst to ASD *UC-79* had actually departed on its final patrol on 20 March. It seems therefore that ASD could only realistically have concluded that the wreck was *UC-79*.

The problem was that it had already listed it as destroyed. So how could it now be resurrected?

The answer is that it simply was not. Of all of the U-boat wrecks known to have been surveyed by Salvage Section divers, this case is the only one in which the actual physical presence of a destroyed U-boat was simply (and conveniently) ignored when ASD compiled the 1919 List. Therein the fate of *UC-79* is described as being sunk by HMS E45 in October 1917, even though ASD clearly knew that this was not true.

Such a bold assertion about how official Admiralty texts were compiled, made by an archaeologist, would seem to require some alternative form of substantiation, ideally from within the Admiralty. It was found in the unpublished papers of W. F. Clarke, Room 40 Intelligence Officer and latterly Deputy Head of the Naval Section at Bletchley Park in WW2 (Figure 4) who wrote in his unpublished memoirs that:

The Anti Submarine Division ... had frequently to boost their own efforts, insisted on the success of many attacks that we in Room 40 knew to have been abortive and many officers had received decorations in consequence; when these very gallant men put in their claims for prize bounty, it was my none too pleasant task to turn down their claims.

ASD, constituted in December 1916 to combat the growing U-boat menace, seems to have been as interested in maintaining its reputation as in compiling an accurate and impartial record of U-boat losses. This is most probably the explanation for how such an obviously inaccurate attribution of a U-boat loss passed into the 1919 List and thence into published history. The obvious confusion with U53's callsign was uncovered by the historian Arno Spindler in the 1930's, and left *UC-79* without a recorded fate until the wreck was located in 2000. The question remains though, how many other cases, similar to this still lie in the historical lists of U-boat losses in WW1 waiting to be uncovered as more U-boat wrecks are identified in the future? And moreover how does this affect the lists of the thousands of ships sunk by U-boats in WW1?

The author's latest research published this year has uncovered other cases which can also quite clearly be interpreted in a similar manner. Alongside them are

an innumerable accompaniment of obvious mistakes and oversights which do much to support the historian Arthur Marder's assertion that the lack of a Naval Staff College at this time in Britain's history produced 'merely a nondescript collection of officers ... as ignorant of the principles of staff work as they were of strategy and operations.' Parenthetically it took recreational divers nearly a century to show that there is more than a grain of truth in those words.

Ultimately then, where does this leave the heritage manager tasked under Article 22 of the Convention to inventory the underwater cultural heritage in their portion of the seas? It would seem that in the case of U-boats and therefore also among an unknown number of their thousands of victims, the original historical texts should be treated with caution. Alongside this realisation is the fact that many types of shipwrecks can be difficult to identify.

In both instances, a system to differentiate the verified identity of a wreck from a theoretical identification may prove useful. The author has devised the bracketing system in use in this paper and his other published works to function in this way. Aside from cases where known shipwrecks very obviously match the historical texts, there will be others that are not so easily resolved. In those cases it may be better to trust what emerges from the archaeological record of surveyed wreck sites, for it would appear shipwrecks have a lesser propensity to lie.

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Echoes from the Deep: Wrecks of the Dardanelles Campaign

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This paper is based on a recent project (and related book) on the wrecks of the Dardanelles Campaign, which is nearing its 100th anniversary next year.

A frequent question in the community of underwater researchers and diving enthusiasts, especially among those from England, is: ‘Why is there such a lack of detailed information about the wrecks of the ships that took part in the Dardanelles Campaign, which was one of the world’s most important naval battles; and why are these wrecks not open to recreational divers?’

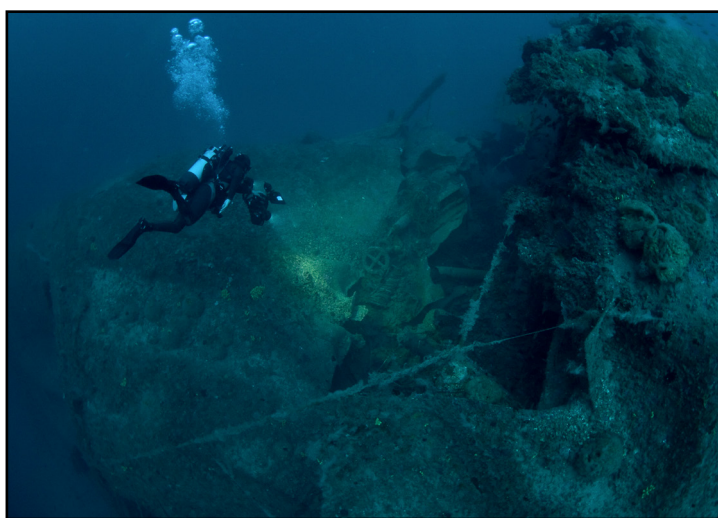


Figure 1. HMS Triumph © Adnan Buyuk

If one considers, however, the location of the Dardanelles (connecting the Aegean Sea to the Sea of Marmara in Turkey), a number of clear reasons stand out. First, the Dardanelles are one of the most important waterways in the world. As a result, there is constantly heavy sea traffic through the area, and there are many areas where sailing and diving are banned. Secondly, the current in the area, although differing according to the weather, can reach a speed of 5-6 knots. Additionally, many of the most important wrecks lie at depths exceeding 50 m, which is beyond the limits of recreational diving, and difficult to access. Finally, many of the ships wrecked in strategically important locations, and are therefore within protected military areas today, which can create bureaucratic problems.

The combination of these factors makes diving and research in the area incredibly difficult; it is, in fact, sometimes completely impossible. Despite these complications, the collection of the missing data related to the wrecks of the Dardanelles Campaign has continued; this has been of increasing importance as many of these wrecks are now approaching their 100th anniversary.

When one speaks of the wrecks of the Dardanelles Campaign, it is not entirely correct to refer only to the wrecks within the straits themselves. The naval battles of the campaign were not restricted to the unsuccessful attack of 18 March, in which many ships were lost as the Allied forces attempted to pass through the straits. It should not be forgotten that the ANZAC landings and later submarine attacks on the Sea of Marmara also produced a significant number of wrecks. Taking this in mind, our recent project and book have attempted to cover all the wrecks of the campaign.

The book itself has benefited not only from the research conducted over the past two years, but also from the archives of our group and from many previous field studies on the subject. Before work began on the book, between 1993 and 2011, the Turkish cruiser *Midilli*, Turkish submarine *Atilay*, Australian submarine *AE2*, French submarine *Joule*, Turkish gunboat *Nur-ul Bahir*, Turkish steamers *Bosforus* and *Rebber* (No. 40), sailing ship *Eleonora* and *Alcotepe* wreck were located and added to the list of already known wrecks from the campaign.

Since 2011, our research has focused on data from the Turkish, British (National Archives, London), French (Musée National de la Marine, Paris) and Australian (Australian War Memorial, Melbourne) archives. This research turned up many old, interesting photographs that had not been published previously. This research



also included new diving and filming techniques to produce better images than had previously been captured (Figure 1, Figure 2). The primary focus of the research, and the book, however, was 3D Multibeam Sonar Imaging.

Before the introduction of this technology, limited visibility had made it impossible to produce a single image of an entire wreck. 3D Multibeam Sonar Imagery has made it possible to capture a single image of each wreck in its current condition (Figure 3).

This has also led to a better understanding of the reasons why particular ships sank. The most interesting case is the rapid sinking of the 15,000 ton French battleship *Bouvet*. After striking a Turkish mine on the starboard bow, the

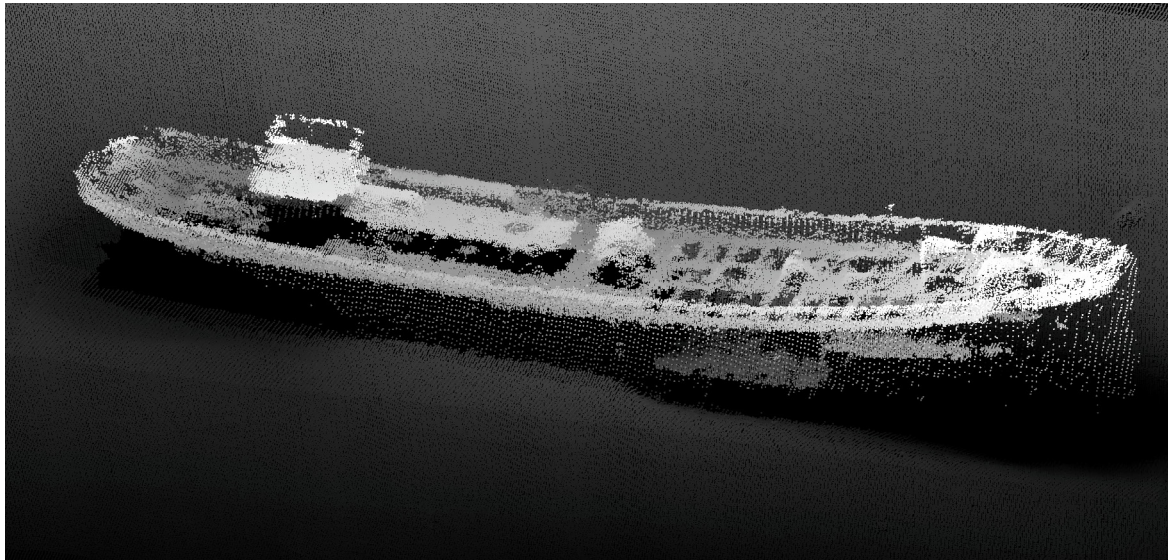


Figure 3. HMT Lundy Multibeam Sonar Image © Selcuk Kolay & Okan Taktak

Bouvet capsized and sank in 55 seconds, taking 603 of the 639 member crew to the bottom (Figure 4). Discussions have carried on for years about possible weaknesses in the ship's design or construction. With the recently collected 3D Multibeam data though, it has become clear that the mine was not the sole cause of the disaster. At almost the same time as the *Bouvet* struck the mine, a 12-inch shell from one of the Turkish batteries struck the ship near the waterline at amidships (Figure 5).

This recent research was carried out by two boats equipped with sonar: R/V *Beluga*, of *Derinsu Ltd* and M/Y *Milonga*, of *Kolay Marine Ltd*. These were crewed by a group of specialized sailors and sonar technicians, as well as an underwater film crew. They conducted an extensive in-depth study of 33 wrecks in the Aegean Sea, Dardanelles, and Sea of Marmara. Three of these, the French passenger ship *Carthage*, the British submarine *E14* and British minesweeper *Renarro*, were located and filmed for the first time during this expedition.

Although the Turkish submarines *Atilay* and *Dumlupinar* sank after the official end of the Dardanelles Campaign, they have been included in the book, as their relation to the wrecks of the campaign, although remote, cannot be ignored. The *Atilay* sank after striking a mine, which was left over from mines placed by the British during

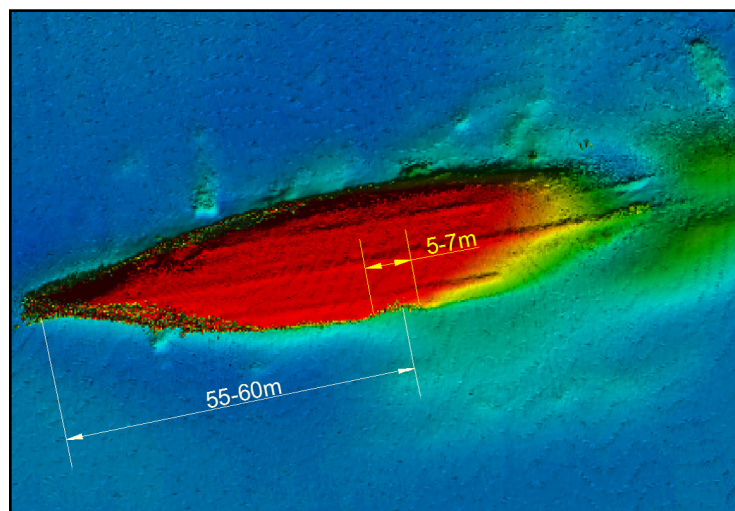


Figure 4. Bouvet Multibeam Sonar Image I (showing shell and mine damage) © Selcuk Kolay & Okan Taktak

the Dardanelles Campaign. This happened as the *Atilay* was executing a diving exercise near the entrance to the straits during World War II. Incidentally, this mine was part of the same minefield that sank the Turkish cruiser *Midilli* and heavily damaged the Turkish battleship *Yavuz* in January 1918.

In the case of the *Dumlupinar*, the ship fell victim to the Nagara passage. This passage, due to strong currents and other navigational hazards, had proved a nightmare for British and French submarines as they attempted to enter the straits during the Dardanelles Campaign. The French submarine *Saphir* and the British submarine *E7* were both lost while trying to pass this point. Today, all three submarines lie very close to one another in the depths off Nagara Point. The sandbanks of Nagara are also where the *Yavuz* ran was run aground to prevent the vessel from sinking. Coincidentally, it was this same sandbank that caused the *Dumlupinar* to sink while returning from an exercise in the Aegean sea, the *Dumlupinar* made an incorrect maneuver while attempting to avoid the bank and collided with the cargo ship *Naboland*.

The research of many previous years has, over the past two years, been compiled into our recently released book. It is hoped that this work will answer most questions raised by the topic of the Dardanelles Campaign, and that it will provide data regarding the shipwrecks of the campaign that has long been missing. A documentary about the research efforts has also been produced, and is provided on a DVD that accompanies the book.

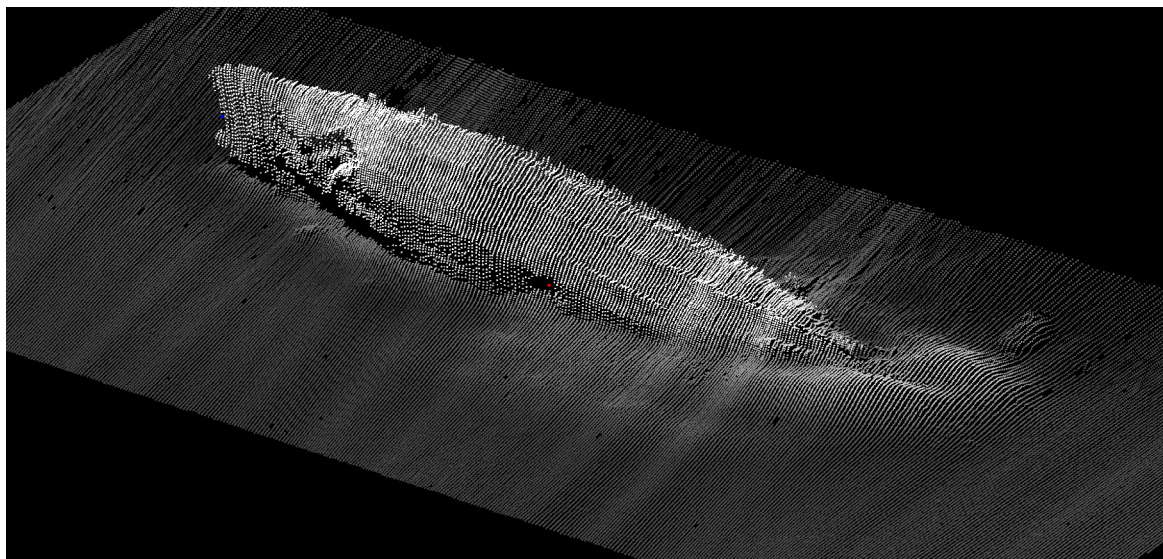



Figure 5. Bouvet Multibeam Sonar Image II (showing shell and mine damage)
© Selcuk Kolay & Okan Taktak

The research of the past years involved unfavorable weather, technical issues and bureaucratic problems that were distressing and saddening. Limited visibility, strong currents and cold, dark, murky waters all made the research difficult. Heavy shipping traffic through the area during sonar research tested the crew's

patience; it required a concentrated effort to follow the rules of safe navigation during these episodes. Through it all though, the sonar continued to provide new and exciting discoveries.

Finally, there is a charming anecdote from the research to conclude the paper. Lui was a tabby cat that had snuck under my car in Canakkale during research around Gaba Tepe Harbor. During one of the return trips to Istanbul, Lui miraculously travelled 350 km on the rear axle, and finally joined my family. Lying on my desk, Lui kept me company during the long days and nights spent working on the book. Robert Green, a British acquaintance of mine, told me that his grandfather had been a member of the crew on HMS *Irresistible*, one of the vessels mentioned in the book, which sank on 18 March 1915. Robert's grandfather had looked after the ship's mascot cat Togo, and noted that he had seen swimming towards the shore after jumping off the ship as it sank and was never seen again. I love to think that Togo's soul probably lives on in Lui...



The History and Underwater Archaeology of World War I: The Case of the Operations of U-35 off the Coast of Algarve, Portugal

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The First World War was tragically unprecedented in many aspects: the scale of destruction, the number of dead and the technology of war. Its cruelty still surprises us to this day.

Submarine warfare was one of the unprecedented aspects of the conflict that brought the war to the sea, especially in the North Sea, the Mediterranean and the North Atlantic. This new kind of naval warfare affected not only the Central and Entente powers, but all those countries that traded with them. As such, scores of people from various nations and cultural backgrounds were dragged into the conflict, many of whom subsequently lost their lives.

Nations tried to regulate naval warfare at the end of the nineteenth century, through the Declaration of Paris (1856)¹ and the Hague Conventions (1899 and 1907), which stated that passenger ships could not be sunk, and that merchant ships' crews should be taken to safety before any military action. It is relevant to know that, according to the Prize Rules, life boats were not considered as safe in such cases, unless in close proximity to land. The contraband of war goods was prohibited, and merchant ships were required to stop to present papers and undergo cargo inspection.

Merchant ships would be sunk on any suspicion of involvement with the enemy, regardless of their flag. The ship's captain was to be taken as a prisoner.

Nevertheless, Germany intermittently implemented unrestricted submarine warfare against the merchant ships of Britain and its allies between 1915 and 1918. In fact, it was this submarine warfare that ultimately brought the United States into the war, with the sinking of the *Lusitania* serving as a major catalyst.

At the beginning of the First World War, neither German nor British naval officers believed in the possibility of using submarines on long unescorted oceanic missions. The first U-Boats operated, with escorts, close to home bases

¹ The Declaration of Paris was intended to establish maritime law for times of peace, which would also be applicable during times of war.

such as the Heligoland Islands (Helgoland), to which they returned after a day on patrol. Their primary mission was to detect and warn the German admiralty of the arrival of the English Grand Fleet, which was expected to descend through the North Sea for an invasion of the German coast.

The first sign of change came on 6 August 1914, when an unescorted scouting formation of U-boats was sent into the North Sea up to the latitude of the Norwegian Orkneys. This unprecedented mission was planned and executed by the submarines *U-5*, *U-7*, *U-8*, *U-9*, *U-13*, *U-14*, *U-15*, *U-16*, *U-17* and *U-18*.

Not surprisingly, the first encounter between German submarines and British warships happened just some days later, off Fair Island, on 8 August, when *U-15* fired a torpedo at HMS *Monarch*, with no success. The next morning, *U-15* was cut in two by the bow of the light cruiser HMS *Birmingham* in the British counterattack.

The lack of faith in submarine warfare increased with the result of this first encounter.

But on 5 September, *U-21* sank the first ship ever to be sunk by self-propelled torpedo fired from a submarine, the scout vessel HMS *Pathfinder*.

The first attack without warning on an unarmed merchantman occurred on 26 October 1914, when SS *Amiral Ganteaume*, was attacked off Cape Gris Nez, by *U-24*. The ship did not sink, but 40 of the 2,500 Belgium refugees aboard the ship were killed.

The tremendous success of *U-9*, commanded by Otto Weddigen, on 22 September, with the sinking of no less than three large, but obsolete, *Birmingham*-class cruisers, HMS *Aboukir*, HMS *Cressy* and HMS *Hogue*, was therefore a complete surprise for both sides. This event opened a new era in naval warfare that forcibly introduced a new way of conducting war at sea. England and France had no other choice then but to deploy large numbers of anti-submarine destroyers to accompany their naval and merchant vessels. Such measures, on the British side, were only taken in 1915 in the case of the Grand Fleet, and in 1916 for screening cruisers. However, it was not the Fleet casualties that triggered British concern, it was the alarming rate of goods sinking with the merchant fleet, especially during the 1915 German campaign against trade and the German unrestricted submarine warfare against merchant shipping, which began in 1917.

This first phase was now complete. The Germans believed in the capabilities of their submarine flotillas, and the British feared them. To stem the tide of German success, the convoy system was implemented for the first time in

1917, with merchant convoys being escorted by warships and armed merchant vessels in convoy formation, with the added advantage of depth charges. These measures, among others, would prove quite efficient against submarines.



Figure 1. SS Norsøen © M/S Museet for Søfart (257:55)

The March-May 1917 *U-35* Mission and Cape St. Vincent, Sagres Attacks on 24 April²

The trade route between the Mediterranean and the British Isles, with Gibraltar as a key point, was a very busy and important sea route for the Allied Powers, linking the Eastern front with England. Because of its importance, the German Imperial Navy reinforced the Austro-Hungarian Navy's submarine force by establishing U-Boat forces at the Adriatic ports and the naval bases of Pola and Kotor (Cattaro).

It was in this context that on 31 March 1917, SM *U-35* set out from Kotor (Cattaro). It was part of the Austro-Hungarian Empire at the time, commanded by 'the ace of aces', Lothar Von Arnauld de La Perière (1886-1941).

Even though *U-35* had left its homeport with several battery problems, it managed to conduct a long-distance mission that lasted until 6 May, during which it sank 23 ships and avoided a torpedo attack by an enemy submarine.³ During this mission, La Perière passed through the Straits of Gibraltar on the

² The account presented here is based on the Imperial War Museum monograph on the *U-35* footage, Lloyd's War Losses, the Kriegstagebuch of *U-35* and the Diário Náutico of the *Galgo*.

³ This is not the attack by the French submarine *Farady*, which fired three torpedoes at *U-35* on 6 November of 1917. That time one of the torpedoes was fired at low depth and hit the bridge of *U-35* without exploding after jumping over the waves.

evening of 12 April, and made for Cape St. Vicent, Sagres, Portugal, sinking several ships during the transit.

In the early light of 24 April, *U-35* was just South of Sagres Cape, where it halted two steamers under British charter. At 08.50 the 1,055 ton Danish *SS Nordsöen* (Figure 1), bound from Bergen for Genoa with a cargo of herrings, and at 09.15 the 1,667 ton Norwegian *SS Torvore*, on route from Swansea for Naples with a cargo of coal. As usual, La Perière used *U-35*'s deck gun and demolition charges to send his prey to the bottom.⁴ With the use of demolition charges placed by the *U-35*'s crew, *SS Torvore* sank immediately, but *SS Nordsöen* remained afloat.

As *U-35* engaged these merchant ships, it was attacked by what La Perière thought to be an armed Portuguese fishing boat. It was, however, the armed Portuguese steam tugboat *Galgo*,⁵ commanded by First Lieutenant Alberto Carlos dos Santos. *U-35* exchanged gunfire with the vessel, with no consequences for either, as La Perière was able to keep outside the range of the *Galgo*'s light gun.⁶

Not being able to engage the submarine, on 24 and 25 April, the Portuguese tugboat rescued the crews of the sunken steamers, delivering them to Lagos.

Apparently that day, the *Galgo* was the only armed vessel operating in the area, although during the night before, an English naval force of one auxiliary cruiser and four torpedo boats passed nearby, sailing SE.⁷

After avoiding the *Galgo*, *U-35* then pursued three Spanish steamers, unintentionally hitting one of them, *SS Triana*, with a warning shell. All three ships - *SS La Castreja*, *SS Cataluña* and the damaged *SS Triana*, with one wounded and one dead from its crew, were released after inspection.

At 10.40, another British charter ship was halted and sunk. This time it was the 3,715 ton Norwegian *SS Vilhelm Krag*, sailing on ballast from Genoa to Barry.

4 *U-35* had two 105 mm guns mounted on the deck, with about 550 rounds.

5 The *Galgo* was built in Glasgow in 1857, and belonged to João António Júdice Fialho. It was commissioned on 27 September 1916 by the Portuguese Navy the south coast, from Lagos to Cap St. Vincent, a huge area for the 25.59 m 82.99 ton tugboat armed with a single 37 mm gun powered by a 200 psi tubular boiler and a 45 nominal horsepower double cylinder compound steam engine.

6 The day before, while passing the same area on transit to the West coast of Portugal, a watchman had heard the sound of a propeller in the water, without having seen any vessel; the sound had surrounded the ship and then disappeared. With the engagement with *U-35* the next day, the conclusion was that it would have been that same submarine.

7 Usually, either a British or French naval force patrolled the area, being anchored at Baleeira, near Cape St. Vincent.

This was in spite of the intervention of the French armed ship *SS Caravelles*, which exchanged fire with *U-35*. Although being low on shells, La Perière decided to sink the Norwegian steamer by gunfire (Figure 2), before proceeding after the French vessel, which managed to escape its hunter.

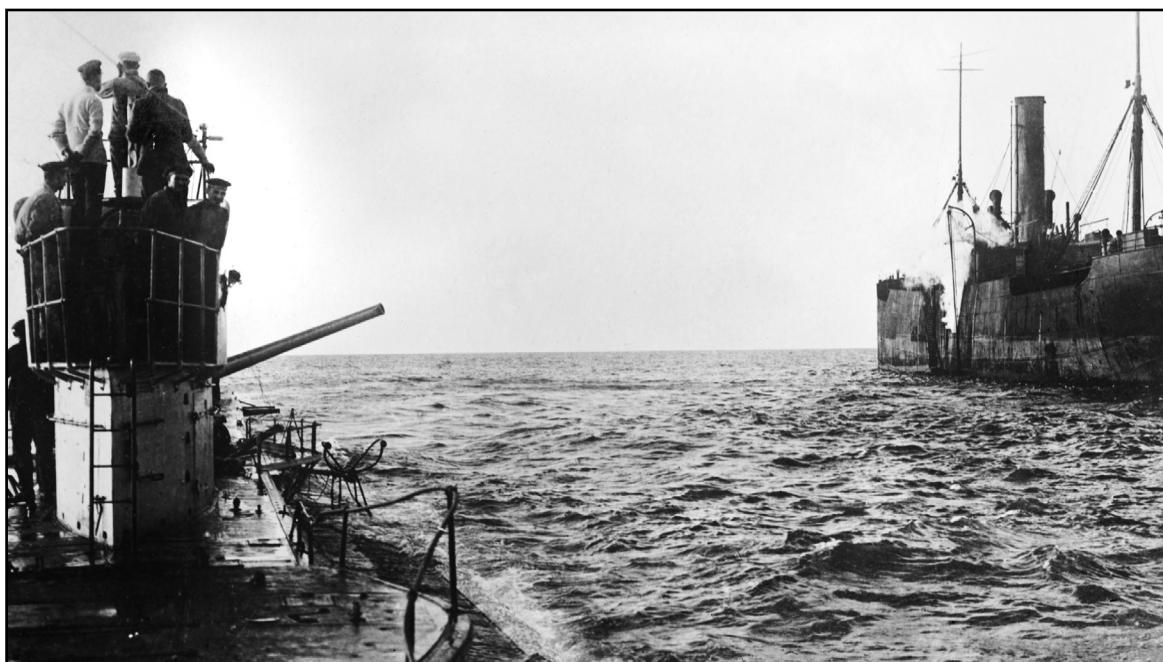


Figure 2. U-35 sinking a steamer by gunfire. © IWM (Q 24072)

Another steamer was halted, inspected, but this time released, as it was the neutral Spanish *SS Elvira*.

Meanwhile, *SS Nordsöen* remained afloat, as mentioned before, but adrift and abandoned by its crew after the morning attack, it went aground on the Portuguese coast, and needed an extra charge to be destroyed.

Another Spanish steamer, *SS Italica*, was halted, inspected and released.

That afternoon, at 16.10, the 265 ton Italian sailing ship the *Bieneimé Prof. Luigi*, which was sailing from Genoa to Fowey with a cargo of China clay, was halted, inspected and sunk.

By then, *U-35* had only 24 shells and no torpedoes, and La Perière decided to return to home base. The U-Boat passed back through the Straits of Gibraltar that same evening, sinking no more ships on the way back to Kotor (Cattaro), where it arrived 6 May, after 36 days at sea.

As usual for La Perière, all four ships sunk at Cape St. Vincent's were sunk, without firing a single torpedo, by gunfire or demolition charges set by his crew. All the ships were properly recorded in the *Lloyd's War Losses records*.

On this 36-day mission *U-35* sailed 5,551 nautical miles, fired all 9 torpedoes,

fired 541 10.5 mm shells and used 29 demolition charges. The allies lost 23 ships, for a total of 67,989 tons. 16 ships were from enemy countries (12 British and four Italian) and seven from neutral countries (three Greek, two Norwegian, one American and one Danish), with 44 lives lost.

This single U-Boat mission demonstrates the multinational and multicultural nature of the submarine warfare of the First World War, which is especially relevant from the perspective of culture and heritage.

In this mission, *U-35* had at least one cameraman on board, his name is unknown.⁸ A lot of still shots were taken and a film was made, both survived, being captured by British intelligence. The first edited Allied counterpropaganda commercial cinema version, based on the original movie, was released by the British at the end of October 1919.⁹

U-35

Between 1911 and 1915, 29 *U-23* class U-boats were built (*U-23* to *U-41*), *U-35* being one of the latest. This class was very similar to the Second World War Type VII, the backbone of the German submarine warfare, and was considered a very good ocean-going boat.

U-35 was launched on 18 April 1914 at Krupp's Germania dockyard in Kiel and commissioned on 3 November. With an overall length of 64.7 m and a breadth of 6.32 m, it was powered by a 6 cylinder diesel engine with 1,850 EHP on the surface, and 2 battery-powered electric motors with 1,200 EHP submerged, with maximum speeds of 16.4 knots and 9.7 knots respectively. It could dive in less than a minute, after improvements to the original design, with a maximum operating depth of 50 m.

It had four 50 cm torpedo tubes, two at the bow and two at the stern, and carried 9 torpedoes. Initially it was armed with a 7.5 cm gun, first upgraded to an 8.8 cm, and later, in 1916, with a 10.5 cm gun, carrying more than 500 shells.¹⁰

For the March/May 1917 mission, La Perière brought with him a very skilled gunlayer from the High Seas Fleet, which may explain *U-35*'s exceptional success.

⁸ La Perière mentions only one, but some sources also mention a photographer.

⁹ The Exploits of a German Submarine (*U-35*) Operating in the Mediterranean (1919)

¹⁰ In the Imperial War Museum photo Q24049 of *U-35* off Cattaro (1917), it is fitted with only one gun at the bow, but at some time it was fitted with two guns, one at the bow and another at the stern, as is the case in the photo from Richard Berger's photo album, that shows *U-35* in Brioni (No date).

Until early 1917, when the unrestricted warfare order was issued, it was common for submarines to save their torpedoes and sink their prey with gunfire or demolition charges, after unloading water, supplies and fuel from the ship. La Perière, however, continued using the 'old ways', which allowed him to considerably extend his missions.

With these rules, the crew was put to 'safety' and sometimes ship's captains were taken prisoner on the submarine (Figure 3). They were very well treated, as we can understand from the testimony of William McLellan Hunter, Master of SIS *Patagonier*, who appreciated the way he was treated by *U-35's* crew during his 23 days of captivity.



Figure 3. Crew of a sunken steamer being interrogated from the deck of the German submarine *U-35*. May 1917. © IWM (Q 20378)

He and another four captains, not from those vessels sunk at Cape St. Vincent, were taken prisoner on board *U-35*.

All of them were not only captains of British ships, but also of armed ships, thus combatants. Their imprisonment was a way of depriving Britain of its experienced fighting merchant captains.

U-35's total crew was, theoretically, 4 officers and 31 men, although this could be significantly different during the war. With the extra prisoners on board, it would have been a very crowded submarine (Figure 4).

U-35's first commander was Kapitänleutnant Waldemar Kophamel, until his promotion to Flotillenchef (Chief of the Flotilla), with Lothar Von Arnauld de



Figure 4. 1916 U-35's crew
© Courtesy of Allan Hunt

1-Kapt LT Lothar Von Arnauld de La Perière;
2-OBLTN ZS Otto Launburg;
3-OBLTN ZS Horst Obermüller;
4-OBERINGENIER Hans Fechter;
5-OBERLYN ZS Wolfgang Stein Bauer;
6-OB MADSCH MT. Hoch*;
7-OB STM Albert Neumann*;
8-OB MASCH Rochner;
9-OB BTS MT. Richard Berger;
10-Ratjens*;
11-Lehners*;
12-Karl Kettelhunt*.

*Austro-Hungarian Navy

La Perière assuming *U-35*'s command after him. On 17 March 1918, La Perière handed over command and was given a new command, the newly constructed *U-139*.

In addition to its brilliant role in the war on trade, *U-35* undertook some important diplomatic missions, such as one to Cartagena, 21 June 1916, to deliver a personal letter from the Kaiser to the King of Spain.

U-35 survived the war, sinking 224 ships, nearly 536,000 tons, and was broken up at Blyth in 1919-20.

The *U-35* Sagres Project

Almost 10 years ago, a diver named Paulo Costa suggested the relation between three wrecks and the *U-35* mission at Cape St. Vincent, Sagres. From that moment forward, the wreck locally called '*Vapor das 19*' or '*Bolo da Noiva*' ('19 fathoms steamer' or 'Bride's Cake', because the wreck lies 19 fathoms deep (35 m) or because of the fishing nets caught in the wreck's structure) and the wreck that lays 34 m deep known as '*Vapor da Luz*' ('Light Steamer', because of its location near Baía da Luz, Light's Bay), became known as SS *Torvore* and SS *Vilhelm Krag*. Additionally, the unknown shallow wreck near the shore became known as the SS *Nordsöen*. Looking at the *U-35* War Diary (*Kriegstagebuch*) and comparing the wrecks and log entries for these ships, the geographic

coordinates matched, so we now believe there is a very strong possibility of a correlation between these wrecks and those vessels sunk by *U-35*. Nevertheless, archaeological research must be conducted in order to scientifically determine the identities of these vessels, especially because several other ships were sunk in the area, particularly during WWII.

The fourth sunk ship, the 110 ft long Italian brigantine *Bieneimé Prof. Luigi*, according to the War Diary entry, should be approximately 10 nautical miles south of Cape St. Vicente, 650 m deep, in a very busy Sea Lane.

In this context, a historical-archaeological project was designed and is being conducted by the Portuguese Navy Research Centre (CINAV), with support from Vila do Bispo Municipality and the diving centre SUBNAUTA.

The main objectives are: research into the history of the events - both from a military perspective considering the U-Boats campaign, and from a human perspective considering those aboard the sunken ships and those ashore, archaeological survey and research into the four wrecks and the consideration of the possibility of their identification as those vessels sunk by *U-35*, mainly through the analysis of their propulsion machinery and the notable features of their structures.

The project started with the search for the sailing ship *Bieneimé Prof. Luigi* in a fortunate opportunity to test multibeam sonar and the ROV *LUSO* during an *EMEPC Estrutura de Missão para a Extensão da Plataforma Continental* (Task Group for the Extension of the Continental Shelf) mission on board the Portuguese Navy Hydrographic Ship NRP *Gago Coutinho*. The War Diary entry for the ship puts it on a muddy bottom, 650 m deep, which represents a set of problems. Apart from the depth at which the vessel lays, the other major problem is due to the nature of the ship's cargo, China clay, which could have completely covered the wreck. If the cargo of China clay, mixed with the sediment, is covering the ship's structure or the ballast mound, the wreck could be easily mistaken for a natural feature unless some part of the ship's structure remains uncovered.

Apparently this is the case, because on the first search that was conducted, no clear evidence of the wreck was discovered, apart from an unidentified two metre long wooden structure found on the presumed sinking location. However, the first visual analysis of this structure did not allow us to positively connect it to the ship in question.

Due to the multicultural and multinational context mentioned earlier, we intend to research the fates of the sunken ships' crews from the moment they reached shore, and the impact the sinkings might have had in their countries,

in Portugal and in the relationships between nations.

In this line of research, we located, in the United States of America, a great nephew of a crewmember of *U-35*, *Oberbootsmann* Richard Berger (Figure 5), who immigrated to that country after the end of the war. For this reason, we are presently working, with the kind collaboration of Allan Hunt, on a biography of Richard Berger and a testimony of his service on *U-35*. As Berger was a German High Seas Flotilla gunner, it might have been him that sank SS *Vilhelm Krag* by gun fire that day.

The project will additionally contribute to external projects and will integrate multidisciplinary resources and scientific areas: the *Stroke Project*, which is intended to determine the possible relationship between the stroke and height of compound steam engines; to test methodologies for applying electro-corrosion protection *in situ* in accordance with preservation methodologies for large metallic underwater cultural heritage; the application of remote sensing methodologies and ROV operation at great depths around underwater archaeological heritage, and several additional projects and approaches.

Finally, we would like to underline that all aspects of the project are oriented primarily towards the general public and to the fruition of the wrecks and the local history. We also hope to be able to return the cultural heritage to the local, national and international community as cultural and identity values, in accordance with the UNESCO Underwater Cultural Heritage principles, as stated and comprehended in the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage, which Portugal ratified, and which on 24 April 2017 will receive these four wrecks under its protection.

This project is also intended to build an extensive number of initiatives with outside partners for public, academic and scientific publishing, a permanent exhibition enriched with periodic additions and cultural initiatives, to adopt these wrecks in the spirit of the *Adopt a Wreck* scheme of the Nautical Archaeology Society, and to publish, in 2017, a full dedicated monograph



Figure 5. Olive footage from the ROV Luso, of the wooden structure, found on the location of the Italian Brigantine sinking. © Augusto Salgado

commemorating the 100th anniversary of the sinking of these four vessels.

The project is very well aware and will be focusing at all times on *'the importance of underwater cultural heritage as part of the cultural heritage of mankind and particularly important element in the history of peoples, nations and their mutual relations.'*

Conclusion

The *U-35* mission at Cape St. Vicent, Sagres, Portugal, is an exceptionally rich episode of the First World War submarine warfare, highlighting the Portuguese Navy's lack of defensive ships to defend the coast, but it also much more than that.

It is a multi-national episode of war that occurred with ships from several European nations engaging in Portuguese territorial waters, so close to shore that the national newspapers mentioned that inhabitants watched from the cliffs as *U-35* halted, inspected and sank these ships on 24 April 1917. Additionally, German and Portuguese warships clashed with gunfire, albeit timidly, on the Portuguese coast.



Figure 6. Oberbootsmann Richard Berger ©
Courtesy of Allan Hunt

Far away from the front lines in Belgium, or the Portuguese African colonies, where Portugal was engaging Germany much earlier than this event, war came to Portugal's continental doorstep.

It is then much more than a First World War episode, it is an episode of Human identity, culture and intangible heritage, more than just the tangible heritage in the form of the silent wrecks at the bottom of the ocean, it is multicultural and multinational.

The story behind a member of *U-35*'s crew, Richard Berger (Figure 5), through his great nephew Allan Hunt, and his great uncle's photo album, is a good example of this approach, that can be 'measured', if that is even

possible, through the enthusiastic and valuable contributions to our project of *U-35's* history that Allan is given us, and we thank him a lot.

We are very committed to work this layer into the project, and to return the research information to the local community, and give them back the episode, in order to allow them to understand why and how those wrecks are at the bottom of their ocean, where they used to fish and lose their fishing nets. This is the only way to motivate public awareness to the need for the preservation of underwater cultural heritage.

Divers, hundreds of divers, visit these wrecks every year, especially in the summer, with no clue on their significance. It is critical that they receive proper cultural briefings and that the wrecks be prepared to receive them. There is no better 'army' to defend underwater cultural heritage than aware divers.

So, the project and the episode return a profit to local tourism and to the diving industry, not only locally, but if worked properly, internationally.

The Vila do Bispo Municipality is very well aware of the importance that a rich cultural history can have to the local development, and has supported the project since the first day. The same happens to the diving industry. SUBNAUTA, the leading diving center at Algarve, is also supporting the Project.

Of course we intend to work the wreck's archaeology, and the episode's history, to work the scientific and academic layer of the project, as the base of support. In this layer we intend to extend the Project to other scientific areas, like the electro-corrosion field of chemistry and *in situ* conservation of underwater archaeological artifacts, or the contribution of data to *The Stroke Project*, which is gathering data from steam engines all over the world, in order to test the possible relation between the engine stroke and engine height, as a correlation wreck identification methodology.

The project already received support from the Portuguese MoD, through the "100 anos Grande Guerra 1914-1918" Commission, the Municipality of Vila do Bispo and SUBNAUTA, although the general trend within the academic community, which has shown little interest in the archaeology of contemporary iron/steel steam ships. Even the Centenary of the First World War has seemingly been unable to motivate further academic research into this field.

As a State Party to the 2001 Convention, Portugal will soon be charged with the protection of numerous WWI era shipwrecks. Increased academic and governmental interest in these wrecks will be necessary to ensure that they are properly protected and managed to the standards of the Convention.

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Submarine Warfare and Civilian Shipping on the Brittany Coast from Saint-Malo to Nantes

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Although naval warfare during the First World War has been the object of much research, and many books and articles have been written about it, particularly during the inter-war period, it has always been seen as a separate conflict and a somewhat secondary front; yet, land warfare and naval engagements were closely linked.

All the belligerent countries depended on external trade – and on their colonial empires, for those that had them – to supply their armies and feed their populations; no state was self-sufficient. Raw materials and food therefore had to be imported to supply the factories mobilized for national defence, and to sustain the civilian and military populations. These necessary, even vital, goods were mostly transported by sea. Great Britain, in particular, was entirely dependent on its shipping; its political and military leaders lived in dread of a naval blockade that would strangle its maritime trade, a blockade which they, meanwhile, were attempting to impose on Germany. To that end, the British set up very strict monitoring of goods transported across the North Sea towards the Netherlands, Scandinavia and the Baltic. Germany took great exception to this, fearing in its turn that the flow of its vital imports might dry up. For both of these two great rivals, it was a priority to impose dominance on the seas so that their ships could sail free from danger or constraint. The stakes of this maritime struggle were very high, and the way in which it developed into fierce submarine warfare is proof enough of the fact that victory or defeat depended on its outcome.

French generals appeared to be somewhat contemptuous of this outlying and dispersed warfare, a sort of parallel conflict, and the navy ministers had great difficulties in obtaining appropriations to renovate a naval fleet that was ageing, ill-assorted and far less formidable than the British navy. Nonetheless, alongside the modernized and more powerful British fleet, the French navy played a supporting role that was both appreciable and appreciated; the Royal Navy could not have overcome the enemy alone.

From the beginning of the war, direct engagements between the German and

British high-seas fleets (Heligoland, Dogger Bank, Jutland), as well as the engagements in the Dardanelles, quickly demonstrated the limitations and weaknesses of the battleships that, although imposing, were slow, cumbersome and vulnerable.

These fleet encounters, which are the subject of most studies of the war at sea, ultimately resulted in the German fleet being confined to its bases, opening up the way for shipping into the Allied ports. The idea of commerce raiding against Allied merchant vessels then took root gradually in the minds of the German naval command, which equipped motorized sailing ships and steamships for the purpose, but not in sufficient numbers to disrupt Allied trade across the world's oceans. It was then, after a few experimental raids revealing the fearsome efficiency of the submarine, that Germany opted for the submarine warfare that would decimate the Allied and neutral merchant fleets, particularly between 1915 and the summer of 1917. This took the Allies completely by surprise, especially since the deliberate destruction of unarmed civilian ships was against the most basic laws of naval warfare. Allied fleets, and even neutral fleets, paid a very heavy toll, being decimated to such an extent that the British Admiralty was plunged into despair. This submarine warfare had demonstrated its formidable destructive potential. The ships that fell victim to it, especially as they approached the British and French coasts, were too numerous to list. The *Lusitania*, the *Arabic*, the *Anconia* and the *Sussex* are generally mentioned, but, as will be made clear by the examples below, sailing ships and steamships from Breton ports were not spared; humble fishing boats and coasters were also sunk in acts of war. Some 260 vessels were sunk by enemy submarines between Saint-Malo and Nantes, 708 for the French civilian fleet as a whole.

My source on this subject is the exceptional book by Richard and Roignant, *Les navires des ports de la Bretagne provinciale coulés par fait de guerre, 1914-1918*, in two volumes of 446 and 477 pages (2012-2013) published by the *Bretagne 14-18* association.

These three examples show that no sector was spared: passenger transport, freight and fishing were all hit.

First was the *Calvados*, a passenger steamer registered in Saint-Nazaire and belonging to the Compagnie Générale Transatlantique. On 4 November 1915, having left Marseille on 2 November, as it was carrying an infantry regiment, it was shelled, and then torpedoed by the German submarine *U-38* off the coast of Oran. Some 712 passengers and crew perished, including the captain; some survivors were rescued by the British steamship *Lady Plymouth*, and two lifeboats reached the coast independently. A German submarine squadron had entered the Mediterranean, and was systematically destroying everything in

its path: not only the *Calvados* but also the *Ionio*, the *Dabra*, the *Tornio*, the *Woodfield*, the *Sidi-Ferruch* and the *Yser*.

Over a period of a few months in 1916, the Nantes fleet was hit hard. On 22 February, the three-master *Ernest-Reyer* was sunk with all hands off Ushant by *U-69*. On 7 March, the *Ville du Havre*, a four-masted long-distance barque sailing towards Buenos Aires was torpedoed in the Channel by *U-32*, losing one of its sailors. On 22 March, the *Bougainville*, a three-master carrying a cargo of barley, was torpedoed and sunk by *U-70* in St. George's Channel, off Ireland. The crew of 23 was saved, rescued by a British fishing boat. The next victims were the three-masters *Pilier*, *Françoise d'Amboise* (with a cargo of coke for Valparaíso) and *Maréchal de Villars*, which were lost on 2 May, 21 June and 23 July, sunk by *U-45*, *U-22* and *UB-18*, respectively, all in the Ushant area.

Fishing vessels, which were playing a major part in feeding the country, were not spared. To take just one example, on 1 April 1917, four boats from Audierne were fishing some 10 nautical miles south of the Île de Sein, when a submarine arrived at about 18.00, *U-105*, disguised as a fishing sloop. With no warning, it shelled the boats, two of which, the *Providence de Dieu* and *la Jolie Brise*, were completely destroyed, and sank with no survivors; 20 sailors were lost, leaving 43 orphans aged under 16. The incident had a great impact throughout the south coast of the Cornouaille area of Brittany, to such a degree that fishermen, with the support of their families, refused to go to sea, impairing the mackerel fishing season, which in turn resulted in a loss of about 300,000 francs. This benefited the sardine fisheries, which operated closer to the coast. It finally took a threat to revoke the deferment of their military conscription to force the fishermen back to work. Taking the French fishing fleet as a whole, 44 boats were the victims of submarine warfare.

By the end of 1915, Allied anti-submarine measures were organized, using weapons such as depth charges, mines and torpedoes, and many of the German submarines named above were destroyed.

This insidious and inhuman submarine warfare, with its goal of ruining enemy trade and, therefore deliberately destroying civilian targets and lives, has come to symbolize total war. It is not a new idea; an anonymous text dated 1339, preserved in the manuscript department of the *Bibliothèque nationale de France* and probably originating in the entourage of King Philippe VI of Valois, proposes that England should be subjected to a blockade to deprive it of vital supplies. Historically, the most usual means of such a blockade would be raids on enemy ports to destroy fleets, warehouses, markets and all other places where goods were stored. Vauban was on the same track in the late seventeenth century, arguing that enemy trade should be ruined through intensified commerce

raiding. The total war concept, theorized by Clausewitz, was revived in France by the *Jeune École* in the late nineteenth century, prefiguring what was to occur some years later, as well as the characteristics of present-day conflicts.



The Shipwreck of the Takachiho, Japanese Cruiser Sunk off China in 1914

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World War I and Japan

After the UK declared war against Germany on 4 August 1914, it asked Japan, as a member of the Entente Powers, to participate in the war in accordance with the Anglo-Japanese Alliance. This alliance was signed on 30 January 1902, just before the Russo-Japanese war of 1904-1905. Article III of the treaty provided a 'Promise of support if either signatory becomes involved in war with more than one Power'. Although the UK requested Japan to enter World War I only around the Asia-Pacific region, the Japanese Government answered that a war within a restricted area would not be possible. On 23 August, Japan officially proclaimed war against Germany, and then on 25 August against Austria-Hungary. German colonies in the Asia-Pacific region were found mainly in three areas, namely German New Guinea, German Samoa or western Samoa and the German-leased territory of Tsingtao in China. German New Guinea consisted of the northeastern part of New Guinea and the nearby islands of the Bismarck archipelago, the northern Solomon Islands, the Caroline Islands, Palau, the Mariana Islands excluding Guam, the Marshall Islands and Nauru. After September 1914, the Japanese forces quickly occupied the Caroline Islands, Palau, the Mariana Islands and the Marshall Islands with virtually no resistance from Germany, while Australia took New Guinea, the Bismarck archipelago, the northern Solomon Islands and Nauru. On 11 September, however, the Australian Naval and Military Expeditionary Force faced strong German counter attacks on New Britain island. At the Battle of Bitia Paka, six Australian soldiers fell; they were the first Australian casualties during WWI. On German Samoa, New Zealand troops landed on 29 August 1914.

In contrast, the Japanese forces waged a fierce battle with the German Army and Navy at Tsingtao. Germany had entered into the lease treaty with China in 1898 to occupy the region around Jiaozhou Bay. The German administrative centre was placed in the town of Tsingtao, which became the home base of the German Navy's East Asia squadron. German governors of the territory intentionally built European suburbs and fortified the naval port. When WWI broke out, most German battleships were not at Tsingtao, but spread out among

several islands around the Asia-Pacific region. On 13 September 1914, three German battleships left Pagan island in the Mariana Archipelago, where the East Asia squadron had been gathered, for Germany. At the same time, one battleship, the famous *Emden*, left for the Indian ocean. To begin, the Imperial Japanese Navy, together with the Royal Navy, started to blockade Jiaozhou Bay on 27 August 1914. In September, a German Rumpler Taube engaged several times with French-made Japanese fighter planes; these were the first aerial battles in Asia. The Imperial Army, together with a small contingent of British troops, started shelling Tsingtao on 31 October, and the German colonial Government of Tsingtao surrendered on 7 November 1914. Meanwhile, the Rumpler Taube succeeded in escaping from the besieged town on 6 November. The German and Austrian casualties numbered about 200 and the British 160. The Japanese casualties numbered 600, a considerable number of whom died on board the sunken cruiser *Takachiho*. After finishing in the Asia-Pacific theatre of WWI, the Japanese navy dispatched several cruisers and destroyers to the Indian Ocean and subsequently to the Mediterranean to carry out escort duties for the Entente Powers' transports and anti-U-boat operations.

WWI ended in November 1918. On 18 January 1919, the Paris Peace Conference began; the principle characters from the Entente Powers were American President Woodrow Wilson, British Premier Lloyd George, French Premier Georges Clemenceau, Italian Premier Vittorio Emanuele Orlando, and Japanese Ex-Premier Kinmochi Saionji. According the Treaty of Versailles, which was signed between these Entente Powers and Germany on 28 June 1919, Japan received the northern part of the former German New Guinea as a League of Nations mandate, Australia and the UK received the southern part, and New Zealand received former German Samoa. On the issue of the former German-leased territory of Tsingtao, however, China and Japan did not manage to reach an agreement. Therefore, China did not sign the treaty, whereas Japan gained rights in the former German-leased territory of Tsingtao. At the Washington Naval Conference, held from November 1921 to February 1922, Japan peacefully agreed to revert the territory to Chinese control. Because the US neither ratified the Treaty of Versailles nor became a member of the League of Nations, Japan became one of the Big Four or a member of four permanent members of the League Council.

IJN *Takachiho*

The Japanese cruiser *Takachiho* (Figure 1) was built in 1885 by Armstrong Mitchell and Company, UK. During the First Sino-Japanese war, it participated in the battle of the Yalu river against the Chinese Beiyang fleet. On 17 September 1894, the Japanese flying squadron on the Yellow Sea consisted of the cruisers, *Yoshino*, *Takachiho*, and *Naniwa* in the front, with the main fleet

consisting of the cruisers *Matsushima*, *Chiyoda*, *Itsukushima*, *Hashidate*, and *Fuso*, with the cruiser *Hiei* in the rear. The ships were formed into a single column. This squadron encountered the Beiyang fleet, which was arranged in a line-abreast formation. After an engagement lasting four hours, the Chinese cruisers *Jingyuan*, *Zhiyuan*, and *Chaoyong* had been sunk while no Japanese ships were lost. The cruiser *Takachiho* is said to have succeeded in rendering extraordinary service during the battle. During the Russo-Japanese War, it first made an appearance in the Battle of Chemulpo bay. At the beginning of the war, the Imperial Navy was composed of the cruisers *Naniwa*, *Akashi*, *Niitaka*, *Takachiho*, *Asama*, and *Chiyoda*, an aviso, and eight torpedo boats. This fleet faced three Russian ships, including the cruiser *Varyag*, all of which were scuttled in the end. On 14 August 1904, the 4th Unit of the Imperial Navy, composed of the cruisers *Naniwa* and *Takachiho*, and the 2nd unit, composed of the cruisers *Izumo*, *Azuma*, *Tokiwa*, and *Iwate*, both of which belonged to the 2nd fleet, encountered the Vladivostok independent cruiser squadron, consisting of the cruisers *Rossia*, *Rurik*, and *Gromoboi*, off the town of Ulsan. *Naniwa* and *Takachiho* attacked, in particular, the *Rurik* which was later scuttled; about 600 Russian bluejackets were rescued by the two Japanese cruisers. In the battle of Tsushima, during which the Russian Baltic fleet was completely destroyed, the

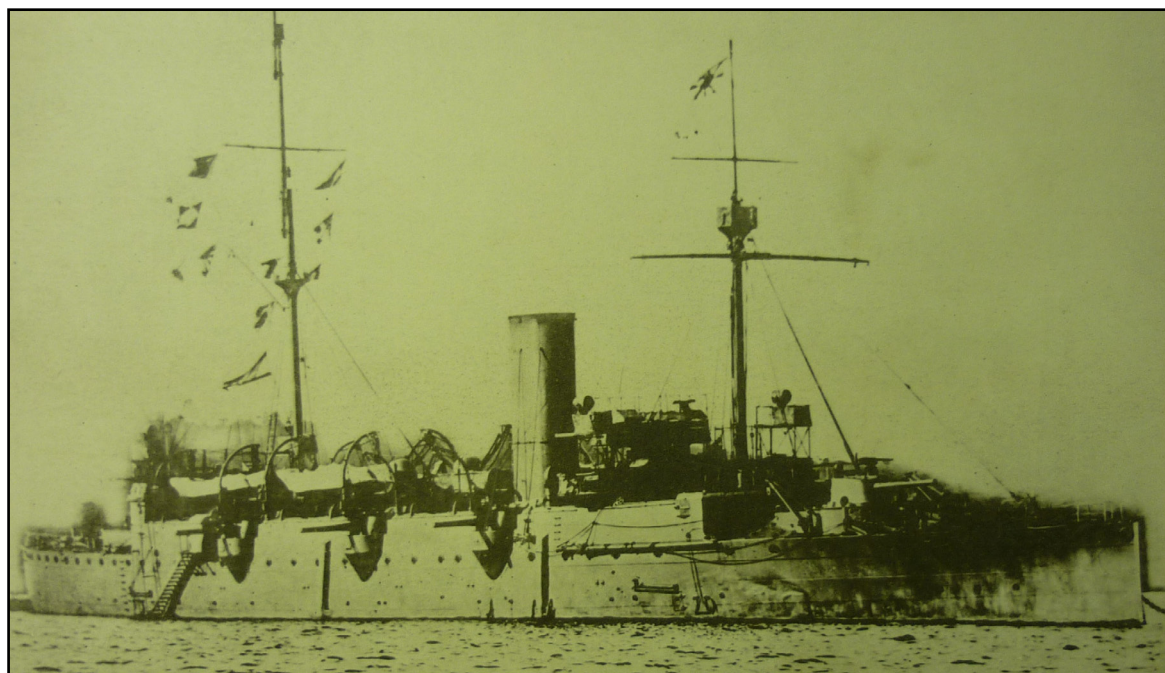


Figure 1. IJN Takachiho © Public Domain

Takachiho participated as one of four cruisers belonging to the 4th unit.

As soon as WWI started, the 2nd Fleet of the Imperial Japanese Navy, led by Baron Sadakichi Kato and including the *Takachiho*, established a naval blockade of Tsingtao, together with HMS *Triumph* and the destroyer HMS *Usk*. Although most German battleships had already left the port at the outbreak of the war, some including the torpedo boat *S-90* (Figure 2) and



Figure 2. The German torpedo boat S-90 © Public Domain

the Austro-Hungarian cruiser *Kaiserin Elisabeth* held out bravely in the port against the Royal and Imperial fleets. Around 13.00 on 18 October 1914, *S-90* tried to escape from the port under cover of night. As soon as it confirmed the *Takachiho* by sight, it succeeded in sinking the Japanese cruiser with a single torpedo. After the attack, *S-90* went aground, being put out of action,¹ and its naval ensign was captured by the Japanese force (Figure 3). The *Takachiho* sank almost immediately, mainly because a cargo of submarine mines on board was detonated by induction. Approximately 300 bluejackets died, and only a few survivors were rescued. Although some human remains, including those of the captain, were recovered on the sea surface, many sank with the ship. This was not only the largest single loss of life for the Japanese forces during WWI, but it was also the first Japanese naval vessel sunk by an enemy attack, rather than mines, in the history of the Imperial Japanese Navy. The shipwreck remains at a depth of 25 m on the seabed, approximately 10 nautical miles southeast of Jiaozhou bay, which is now within the territorial waters of the People's Republic of China.

All of the fallen soldiers on the *Takachiho* have been enshrined in the Shinto shrine of Yasukuni. Until recently, the war-bereaved association of the *Takachiho* was active, for example, in visiting the Shinto shrine every year on 18 October, but due to aging, only one member remained alive in 2012. To



Figure 3. Naval ensign of the German torpedo boat S-90 © Public Domain

1 Miyahara, J. 1914, 'The Story about Shipbuilding "the Takachiho"' Seikatu, December, p. 8.

date, however, neither underwater archaeological research by academics nor the recovery of the human remains of the soldiers by the Japanese Government has been undertaken. A number of factors have contributed to this lack of action concerning the wreck. First of all, before WWII, underwater technology was indeed underdeveloped. Due to technical and financial difficulties, it was then natural that nobody tried to salvage the wreck of the *Takachiho*. Secondly, since 1949, the location of the wreck has been annexed into the territorial waters of the People's Republic of China. According to Chinese domestic law, all wrecks inside its waters are to be managed by the Chinese Communist Party. Even though the party has allowed Japanese access to the wreck, the use of any advanced underwater survey machines or vehicles, such as AUVs or ROVs, by Japanese researchers in Chinese waters would be forbidden, in conformity with the Wassenaar Arrangement. Thirdly, in general, most Japanese people, including the war-bereaved association and almost all clubs of war veterans, have a negative opinion toward surveys or research upon warship wrecks containing human remains, which are believed to be untouched war graves or religious graveyards. The word 'untouched' means that neither diver nor underwater camera should identify any wrecks with human remains. Similar opinions regarding warship wrecks are to be found not only in Japan, but also in the reservist legions of foreign countries.

Human Remains Inside Japanese Battleship Wrecks

At Pearl Harbour in Hawaii, there is the famous wreck of USS *Arizona*, which was sunk in 1941. Most Japanese people are extremely confused to see this shipwreck, or war grave, because it still contains the unrecovered remains of approximately 900 individuals. Indeed, it is not possible to see human remains directly from the USS Arizona Memorial. As soon as Japanese people realize that many human remains are still inside this final resting place, however, they are usually frightened. According to Japanese Buddhist tradition, human remains should be interred properly in the ground. In Japan, under the influence of the Pure Land sect of Buddhism, this sort of sepulture custom was introduced at the middle of the eleventh century, especially among the upper social class.² As 'our pollution behavior is the reaction which condemns any object or idea likely to confuse or contradict cherished classification',³ it makes all Japanese people uneasy just to hear that human remains lay not under gravestones, but within a shipwreck. On the other hand, Americans seem to have no such feeling toward the USS *Arizona*, although 'matter out of place'⁴ must be common to all. Supposedly, this difference in thinking relates to the differences between

2 Nakamura, K. 2001, 'The Worship of White Bones and Ashes', Iwate Gobun, vol. 8, p. 5.

3 Douglas, M. 1966, Purity and Danger: An Analysis of the Concepts of Pollution and Taboo, Routledge and Kegan Paul, London, p. 37.

4 Ibid, p. 40.

Christianity and traditional Japanese beliefs. Before the eleventh century, no custom of visiting graves existed in Japan, neither among commoners nor the imperial families. In 842 CE, natural disasters occurred continuously because the Japanese Imperial Court confused one emperor's tomb mound with another emperor's mother's tomb mound, to which they should have offered altarage;⁵ this story tells us that even the Imperial family members did not go regularly to their ancestors' tomb mounds at all.

Why did the ancient Japanese not visit graves? The Japanese myth or tradition says that human remains or bones represent impurity. In principle, no Japanese person is allowed to see, touch, or even approach them. In order to avoid impurity or to avoid losing purity, ancient Japanese emperors did not go to their ancestors' tombs. This belief is still present in Japanese Shintoism. Even now, human remains, bones or women with menstruation are completely forbidden to be brought into the precincts of Shinto shrines. Most Japanese people still believe this kind of indigenous faith of impurity. For example, almost all Japanese are nervous while their parents' ashes are at home, even if only temporarily before burying. During WWII, many soldiers did not want to take their comrades' bones or ashes back to Japan, since they did believe that if they had taken them to Japan, they themselves would have died in the battlefields.⁶ In other words, many took, or still take, precautions against being possessed by impurity or bad luck from human remains. As in the case of USS *Arizona*, most Japanese people are absolutely confused to see the bones of saints exhibited in Christian churches in Europe. Because Japanese human remains are forbidden to be seen by living human beings, no shipwrecks with human remains, which are deep on the bottom of the sea, should be investigated or excavated. As long as they are there, the Japanese consider the wrecks to be untouched war graves. Once underwater archaeologists or vehicles succeed in detecting and observing them, however, they are not untouched war graves or sacred places anymore; the Japanese then have to start recovering all human remains within the wreck by all means possible in an attempt to place them underground properly. Otherwise, the Japanese would be afraid that foreign divers may be stained by impurity.

The Japanese Army and Navy had a firm policy of taking all remains of Japanese soldiers who died on foreign battlefields back to Japan, in order to return them to the bereaved families. Even in the case of burial at sea, their hairs or at least finger nails were taken back to the families. These human remains were then, and are still, to be buried in the ground under grave stones in family graveyards, which are normally by Buddhist temples. In contrast, The Royal Navy, for

5 Mori, K. 1965, *Excavations of Ancient Tomb Mounds*, Chuo-koron, Tokyo, p. 147-148.

6 Hamai, K. 2014, *Post-war History of the Oversea War Dead: Ashes Return and Memorial*, Yoshikawa-kobunkan, Tokyo, p. 62.

instance, traditionally neither recovers human remains from any shipwrecks nor returns them to their homeland; there are many Commonwealth War Graves in foreign countries. It is said that because the Imperial Army and Navy did not want the widows of soldiers to remarry, while the Royal Navy encourages remarriage, the former took the principle of repatriating the bodies of the dead while the latter does not. A Japanese maxim says, 'A faithful wife does not marry a second husband'. In actual practice, however, many Japanese widows married again, especially after WWII; they sometimes refused to receive their former husbands' bones or ashes.⁷

In Japan, moreover, all fallen soldiers, including those of the *Takachiho*, have been deified or made 'gods' in the Shinto shrine of Yasukuni. The bones and spirits of dead Japanese soldiers are believed to have special supernatural power and significance. The names of all dead Japanese soldiers are on the book of souls in the shrine. In the 1950s, the Japanese Government adopted an exceptional policy toward soldiers' remains or 'only token disinterment', succumbing to the Allies' pressure; as innumerable soldiers' remains lay scattered over the Asia-Pacific region, returning only a part of the human remains to Japan was seen as better. However, the governmental policy has been changed again since the end of the 1960s, and since that time it has continued to recover all soldiers' remains in Siberia, India, and New Guinea at enormous cost. Hopefully, in the very near future, Japan will be able to recover all human remains from its warship wrecks by making full use of underwater technology. Many Japanese people think that WWII cannot end until all Japanese soldiers' remains return home from the battlefields.

Conclusion

Article 1 of the UNESCO 2001 Convention provides that 'Underwater cultural heritage means all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years such as: sites, structures, buildings, artefacts and human remains, together with their archaeological and natural context'. In addition, Rule 5 of the Annex provides that 'Activities directed at underwater cultural heritage shall avoid the unnecessary disturbance of human remains or venerated sites'. E. Perez-Alvaro insists that, in conformity with the principle of preservation *in situ*, we should declare shipwrecks as funerary monuments or underwater cemeteries, which could lead to dark tourism, attracting tourists to a place with special meaning to the friends and relatives of the people who lost their lives in the disaster.⁸ Japan does not accept

⁷ Ibid, pp. 62-64.

⁸ Perez-Alvaro, E. 2014, 'Human Remains on Underwater Cultural Heritage: Ethics, Values and Law' in Proceedings of the 2nd Asia-Pacific Regional Conference on Underwater Cultural

her opinion at all. Now, with the development of deep sea technology, almost all shipwrecks could be accessed by underwater vehicles, and if we try, we could recover almost all human remains from them. According to governmental policy and custom, the remains of Japanese soldiers should be recovered in spite of the rules of the convention. Many Japanese, as well as maybe many other Asian people, would be annoyed with the thought of displaying their ancestors' remains at museums on the bottom of the sea. The issue of human remains is one of the greatest obstacles preventing the Japanese Government from ratifying the convention; Japan is worried that once it ratifies, no soldiers' remains from shipwrecks, in particular, from those of WWII, would be allowed to be recovered. In Japan, this matter is known as the Year 2045 problem.⁹

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9 Iwabuchi, A 2012, *Cultural Heritage under the Sea: An Introduction to Underwater Archaeology*, Kagaku-dojin, Kyoto, pp. 88-89.

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A Kingdom Saved by the Sea

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The Belgian Army had been fighting a defensive war since the German invasion of Belgium on 4 August 1914. In quick succession the fortified position of Liège fell, and the Belgians withdrew to the outer fortifications of Antwerp. As commander in chief of the armed forces, Belgium's King Albert intended to maintain his nation's independence during this essentially Franco-Prussian conflict. Bound by a pledge of neutrality, he aimed to expell the Germans without favouring the French; he knew to fear post-war French dominance as much as German victory. Although Article VII of the Treaty of London (1839) promised European aid to protect Belgian neutrality, the king did not know when help would arrive, as the Anglo-French forces had troubles of their own in northern France. To show his support, the king launched 2 sorties from Antwerp,¹ which succeeded in diverting 60,000 German soldiers destined for France. Despite the valiant efforts of little Belgium, foreign military assistance was not forthcoming. First Lord of the Admiralty Winston S. Churchill suggested that the Dutch hold the River Scheldt open to allow supplies to reach Antwerp, but the Dutch insisted on maintaining their neutrality. The British, with much more at stake in the defence of Antwerp, began sending guns and ammunition.

Unfortunately, German artillery bombardments began in late September. Just as at Liège and Namur, Antwerp's defences were no match for German guns. The Belgian clearance of the suburbs looked even worse than the aftermath of the San Francisco earthquake. For the military it was 'dégorgement du champ de tire', the destruction of mansions, castles, villas, parks and lanes. There was no real purpose though, as the shelling and aerial bombardment resulted in:

- the evacuation of the Belgian army and British naval troops into Flanders
- the flight of civilians and up to 40,000 disarmed soldiers into the Netherlands
- the diversion of French and British aims.

Although the coast had not been a German priority, they sent in reserve corps in October, which started the run to the sea. As a result, the Belgian army was stretched over a 130 km front from Antwerp to Ostend. The Belgians could not

1 25-26 August 1914 and 9-13 September 1914.

maintain such a deployment for long.

Towards the West and the Yser Front

The Belgian High Command and Royal Family gradually withdrew to Nieuwpoort, arriving on 13 October. As the Army was transported by rail and on foot, a cavalry division diverted German attention along the Scheldt. The arrival of a brigade of French Marine Fusiliers and a British Infantry division in Ghent then formed a rear-guard.

The High Command now needed to establish a temporary camp, preferably in a well-defended region of Belgium. Amidst competing suggestions by the French, including one to integrate the Belgian command under the Allied command, King Albert maintained that he must retain control of the army and the right to assert Belgian jurisdiction in the remaining free areas of the country.

This left the Veurne-Ambacht region² as the only viable option for a temporary command post. Lying in the western corner of Belgium, enclosed by the Yser River, this region was comparable in size to the Antwerp national refuge. It was well situated along the coast, between the fortified position at Dunkirk and the British bridgehead at Ostend. The High Command therefore agreed that, for the time being, this region offered the best temporary refuge within Belgium.

The recently arrived head of the French mission was Colonel Brécard. Unlike his predecessors, however, who had dealt with the Belgian High Command, he would now have to communicate directly with the king. On Wednesday 14 October, he presented a message from General Foch;³ the Belgian Army needed to offer a stubborn resistance.

Late in the evening, in Nieuwpoort,⁴ the Army Orders were issued. Three Belgian divisions, together with the French Marine Fusiliers, were to move behind the Yser River and prepare the defence of the crossings between Nieuwpoort and Dixmude. Two divisions were to deploy east of the river, to the south of Dixmude. In the east, they would be covered by the First Cavalry division, while the Second was to patrol south of Ostend. Only one Army division was to be kept in reserve.⁵

2 Ambacht = Middle Dutch equivalent of the Latin *Ministerium*, a judicial subdivision.

3 Commander of the Northern sector of the French Army.

4 The beginning of the Western Front on the Belgian coast.

5 The Belgian Army had only six Infantry divisions and two Cavalry divisions in the theatre.

Nieuwpoort (Nieupoort)

The scene at Nieuwpoort was indescribable. The main road from Ostend to Dunkirk passed over the Five-Bridges route⁶ just outside town. A constant stream of horses, soldiers and refugees flowed across the narrow bridges. Any manoeuvring of the drainage structures, let alone opening a bridge and blocking the main 'escape' road was impossible. The situation for lock-master Gerard Dingens grew more tense by the hour, with orders and counter-orders creating confusion.

The Belgian Government had left the country for Le Havre; only the Minister of War remained near the border to keep contact with the monarch. The King and Queen left Nieuwpoort for De Panne and the High Command for Veurne.

The defensive preparations on the Yser were now well advanced. The Second Army division, under General Dossin, was responsible for a sector stretching from the river's mouth to the 4th kilometre stone along the river. Three advance posts were set up in front of this sector. The military became increasingly nervous about the presence of the locks men in this strategic location. They felt that these civilians did not realize the danger that they and their families would soon face. The first shell hit the town on 18 October, and the next day the civilians on the locks had to endure: 'Don't try to save your furniture, but save your life! Come back in eight days when the battle will be over.'

Inundation as Strategy

Nieuwpoort had a 400-year history of flooding the region for defensive purposes. This peculiar tactic had been employed dozens of times. However, due to changes to the National Defence Programme in the nineteenth century, the locks, doors and sluices had been altered so that they could only be used for normal drainage purposes. The strategy of flooding was known to the military, but not in the coastal area. They made attempts in August and September on some rivers in and around Antwerp. Some British officers also learned from Dingens about the history of the strategy in Ostend in the eighteenth and nineteenth centuries. In fact, a farmer, a schoolteacher and a magistrate had suggested the idea to the generals.

The Battle on the Yser

At noon on 17 October, a message arrived that 6,000 enemy troops were advancing on Nieuwpoort from Ostend. King Albert was not confident. He sent his adviser, Captain Commandant Galet, to Colonel Bridges to inquire

⁶ This name was used on old maps, but there were actually six bridges.

about support from the British Fleet on the Belgian left flank. This request was transmitted to Winston Churchill at the Admiralty. Following a similar request from Joffre, Rear-Admiral Hood received his orders the next day. Two cruisers and some destroyers were sent with three monitors. The latter had a shallow draft and low freeboard, allowing them to approach within a few hundred meters of the Belgian shoreline. They could then precisely shell German positions four or five kilometres inland. This bombardment would soon force the Germans to shift their attacks away from the coast.

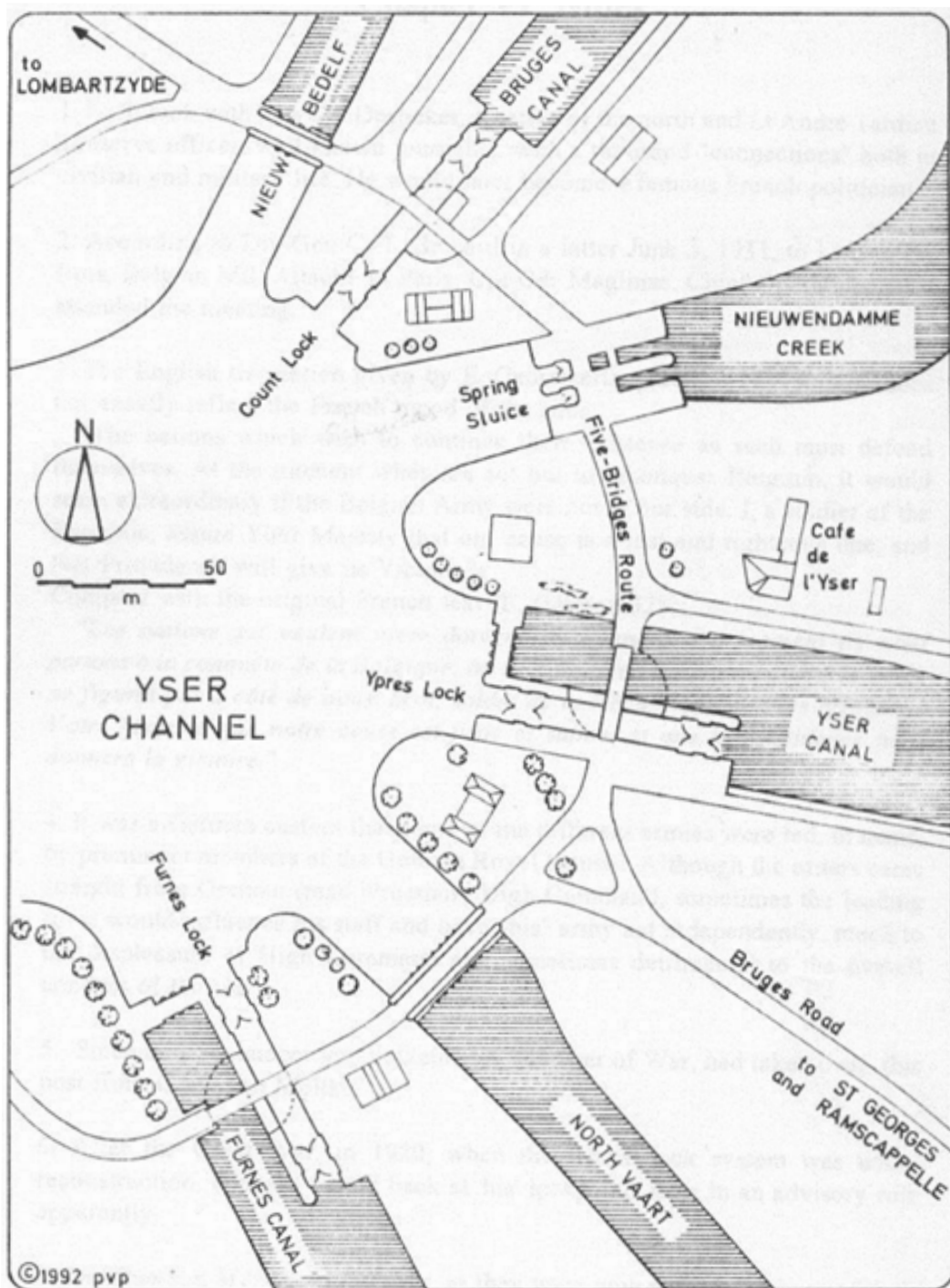


Figure 1. Plan of the 'Ganzepoot' © P. Van Pul

A First Tactical Inundation

Owing to the loss of the advance outpost of Lombardsijde, north of Nieuwpoort, the Belgian HQ missed accurate information about the *Goose Foot*.⁷ This range of locks, doors and sluices of six waterways in the tailbay obtained that nickname because of its outline on a map. It consists of the canalized Yser, two navigation canals, and three watercourses used to drain the *polders*⁸ of the coastal plain (Figure 1).

Rumours spread that the right bank of the Yser could be flooded. Three officers gathered in Nieuwpoort to discuss the defence of the lower part of the Yser. Flooding the land between the canalized river and the dyked Bruges Canal [Brugsevaart] would prevent the enemy from moving in their artillery to bombard the areas around Saint Georges [Sint-Joris], east of Nieuwpoort. The proposal seemed feasible to the officers, and a major submitted the request to Lieutenant-General Dossin. He granted permission, but the army needed more technical assistance. Among the few civilians remaining in Nieuwpoort, there was Henry Geeraert (Figure 2), a bargeman in his early fifties. During the recent confusion, and eager to stay in the city, he had managed to obtain an assistant lock keeper's *kepi* and was able to circulate undisturbed.

Questioned about the Spring Sluice on the Nieuwendamme Creek, he reassured a subaltern officer, who then brought him in contact with the officers who planned to flood the area. The Spring Sluice was the only one capable of draining and flooding without any modifications. The Nieuwendamme Creek is what remains of the winding Yser as it was before the canalization in the seventeenth century. On the night of 21 October, Geeraert joined an officer, 2 subaltern officers and 15 soldiers, equipped with the appropriate tools to carry out the task. Geeraert signalled a peculiar precaution on a culvert, and that the flooding during high tide should be fixed before low tide. The next morning, the Germans were presented with buffer of inundated land. But those were rainy days, and the flooding had worked slowly over the course of five hours.

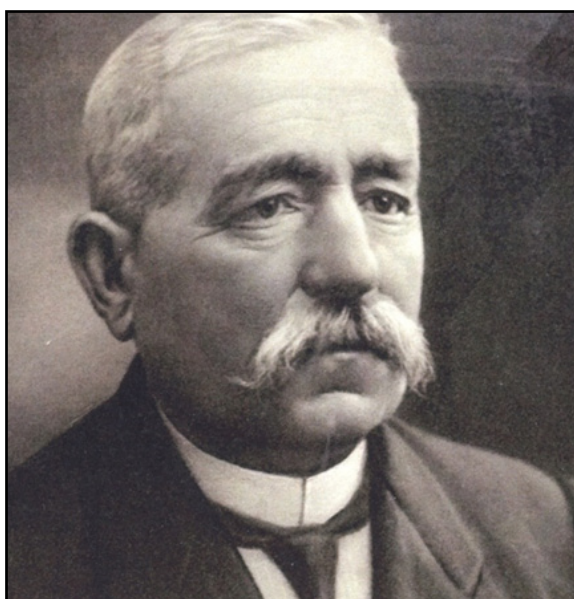


Figure 2. Henry (Hendrik) Geeraert (1863 - 1925) © Public Domain

7 Dutch *Ganzenpoot*, French *Patte d'Oie*

8 English 'Fens'

Debacle on the Yser Line

The same night as the tactical flooding, two German battalions managed to sneak into the thinly occupied outposts of the First Army division on the east bank. The Belgian HQ did not find this alarming. A local counter-attack was considered, as before, to be underway. The need to send virtually all dispatches 14 km by foot or horseback resulted in a lack of reliable communication between headquarters and the defenders along the Yser.

That same morning, French General d'Urbal arrived in Veurne [Furnes], with bad news for the Belgian staff. The French supporting forces were to launch an offensive from Nieuwpoort, Diksmuide, and Ypres the next day. Apparently overconfident, he continued saying that this offensive would clear the Belgian front. With the king's approval, orders were drawn up to recapture Lombardsijde and to hold the bridges of the Yser at all cost. Despite incessant Belgian artillery support, however, the situation had been deteriorating steadily. German guns had been moved in close to the eastern river embankment.

In the occupied Tervate loop, Belgian Grenadiers and Carabineers heroically attacked two battalions armed with a dozen machine guns. The flat, treeless countryside did not offer much protection though, and countless ditches prevented a rapid advance. The assault became stuck, and the High Command had to concede that the Tervate Loop was lost.

On 23 October, the sixth day of relentless combat, the bridgehead at Schoorbakke became untenable. Before daybreak, the defenders evacuated and blew up the bridge. The Germans were building footbridges in several locations, and were able to penetrate the front line in many places. Only one major bridgehead on the east bank held out: the town of Diksmuide, held by Ronarc'h's brigade of French Marine Fusiliers. The results of the French offensive were also not encouraging. In Ypres, where the French Ninth Corps was supposed to attack, the British were still awaiting their arrival. Near Diksmuide, Rear-Admiral Ronarc'h was convinced that '... any offensive undertaken with exhausted troops will lack vigour ... An offensive will be halted at a hundred metres from its starting line ...'

At Nieuwpoort, the first promised French aid arrived. The 42nd division crossed the lock system at the harbour. They were able to press the enemy a hundred metres behind, thanks to the British Naval artillery. Colonel Brécard, French liaison, wrote the following in his daily report:

In the centre the enemy had progressed significantly. It arrived at 500m of Pervyse and occupies Schoorbakke and Stuivekenskerke. So I evaluated the situation as serious.

Finally, the arrival of the French at Nieuwpoort allowed the Second Army division to withdraw. They were the only Belgian reserves remaining.

The Railway Embankment

On the morning of 24 October, the situation seemed grim. The German Sixth division had crossed the Tervate loop. Due to Franco-Belgian shelling though, the German artillery had not yet been able to cross the river. At general headquarters everyone was pessimistic about the collapsed defensive line. The First Army division, on the north side, fell back to the Grote Beverdijk Vaart:⁹ a drainage canal parallel to the Yser, but less than half as wide. Captain Commandant Nuyten was sent to serve under French General Grossetti. At Pervijze, he noticed a railway embankment between Nieuwpoort and Diksmuide, a little west of the front. He perceived that the embankment could be transformed into a new defensive obstacle. Shortly after noon, General Foch arrived to investigate the situation. On the one hand, the general noted the possibility of flooding the area, on the other, he mentioned that shortening the frontline could be preferable. At the end of the day, an order was issued:

The positions held from Nieuwpoort to Diksmuide will be held as long as possible. One will hold, in any case, at any price, on the line of the railway Nieuwpoort-Diksmuide.

One Day in Veurne

On Sunday 25 October, at the Belgian HQ in Veurne, a major decision was made. That morning, Colonel Brécard called on the HQ and announced that the Military Governor of Dunkirk was preparing to flood the perimeter of his fortified position. He warned: 'These inundations could spread onto Belgian territory and extend on a scale we are unable to determine.' This prompted an outburst from Captain Commandant Nuyten:

'So, under those conditions we will have the enemy in front of us and water in our rear!'

Maglinse, chief of operations at Belgian HQ, quickly grasped the seriousness of the situation, which called for prompt action. He ordered Nuyten to collect all available information on the drainage system of the area to avoid a disaster on the Belgian side of the border. Nuyten then asked the Mayor if he knew the name of any engineer who could advise him regarding the local *watering*.¹⁰

⁹ The local meaning of dyke is a ditch with a ramp on both sides. Vaart is the local name for man-made canal.

¹⁰ From medieval times the maintenance of dykes, waterways and related structures in the Flemish polders was entrusted to local polder boards called *watering*.

The Mayor replied that all such men had left town, but directed Nuyten to Charles [Karel] Cogge (Figure 3).¹¹

Cogge was sent for, but as it was Sunday, he did not arrive until after mass and a beer at a nearby tavern. Just before noon, Nuyten began by asking Cogge technical questions about the management of a large polder adjacent to the French border.¹² Cogge attempted to find the necessary details on a 1:40,000 scale map of the area, but requested to return home to get a dedicated map of his own. Cogge dismissed the French suggestion of a freshwater inundation out of France by the Bergenvaart,¹³ due to the fact that the Belgian section was normally higher.¹⁴ On the question of flooding the section between the Yser and the railway embankment, Cogge had a clear plan. The Noordvaart Gates could be used to flood that section. Therefore, all the underpasses of the railway embankment had to be closed. After checking its location on a map, Nuyten concluded that this structure was too exposed to enemy observation and bombardment.¹⁵



Figure 3. Charles (Karel) Cogge (1855-1922) © Public Domain

Seeking an alternative, Cogge suggested that the Spanish Lock could be used instead. The result would be slower, but could still work.

1. On the partly disused Spanish Lock they needed to improvise. It was out of sight of the enemy. The water could flow with a detour to the same sector.
2. But the railway underpasses needed to be closed: two dozen small and four large ones.
3. An extra dam had to prevent the flooding of the Belgian side of the front.

11 An elderly supervisor (59) of the NWV (Noord Watering Veurne) authority. At least on two other occasions his name was mentioned to Staff Officers.

12 The ordnance of the maps in France and Belgium are different.

13 Even with extra supply this curling long narrow brook would need days and the only Belgian base would be effected.

14 Cogge was obviously not aware of inundation manoeuvres out of Dunkerque on the French side.

15 The intelligence at that moment was very poor for that matter.

Nuyten agreed and informed the staff. Galet, close advisor to the king, but then the deputy chief of staff Wielemans who heard the plan from Cogge himself. He told that the inundation level could be set at 3.00 m to 3.25 m just behind the railroad embankment. Now, events began unfolding rapidly. Chief of Operations Maglinse, and Head of Transport Masure were informed, as was King Albert, who approved of the plan. That day, the 'Directorate of the Inundation Service' was created.

Nieuwpoort, a Nautical Knot

In the flat coastal region, water management is a matter of centimetres. Drainage is accomplished through a network of ditches, brooks, and *vaarts*,¹⁶ all of which terminate in the Noordvaart via eight gates. It should be emphasized that there are in fact two separate waterway grids superimposed on the region. The upper grid is the 'navigation layer', underneath which a series of ditches and *vaarts* constitute the drainage basin. Tidal fluctuation on the Belgian coast can be up to five metres. For altimetry, a zero level is chosen so that sea level is almost always higher. French, Dutch and German ordnance maps set their level approximately two and a half metres higher.¹⁷

Over the centuries, a vast system of dykes was constructed in the region to hold back the sea. Most have been flattened since the Middle Ages, because the *impoldering* has long been complete. Some traces can still be found on rural trails though. As a result, Nieuwpoort has had to build fortifications, sometimes against England,¹⁸ and often against France.¹⁹ With their knowledge of the local water sources, the magistrates of the town could initiate inundations to keep approaching enemies at a safe distance. Apart from a freshwater inundation, authorities could also use seawater. This was deemed disastrous for agriculture, however, and the peasants dreaded such measures.²⁰

The Alternative Inundation

Sunday 25 October, Cogge was picked up by officers Jamotte and Thys. They needed information regarding the 200 m dam that needed to be built that night. The next morning Cogge was again needed to inspect the critical points of the railway embankment (Figure 4). Cogge guided two officers to the huge

16 Flemish meaning an elaborated old creek with traces from the Middle Ages.

17 P. Van Pul suggested this as one of the reasons for the confusion by the German invaders in 1914.

18 Starting in the Hundred Years war between England and France in the 14th and 15th Centuries.

19 Especially during the 17th Century of Louis XIV and the French assault from 1793 on.

20 For obvious reasons farmers in general opposed any flooding and often they sabotaged attempts.

underpasses, ranging between six metres and nine metres in width. Meanwhile, the Germans bombarded areas beyond the embankment. The trip finally ended in Booitshoeke because some German pioneers had broken through at Ramskapelle.

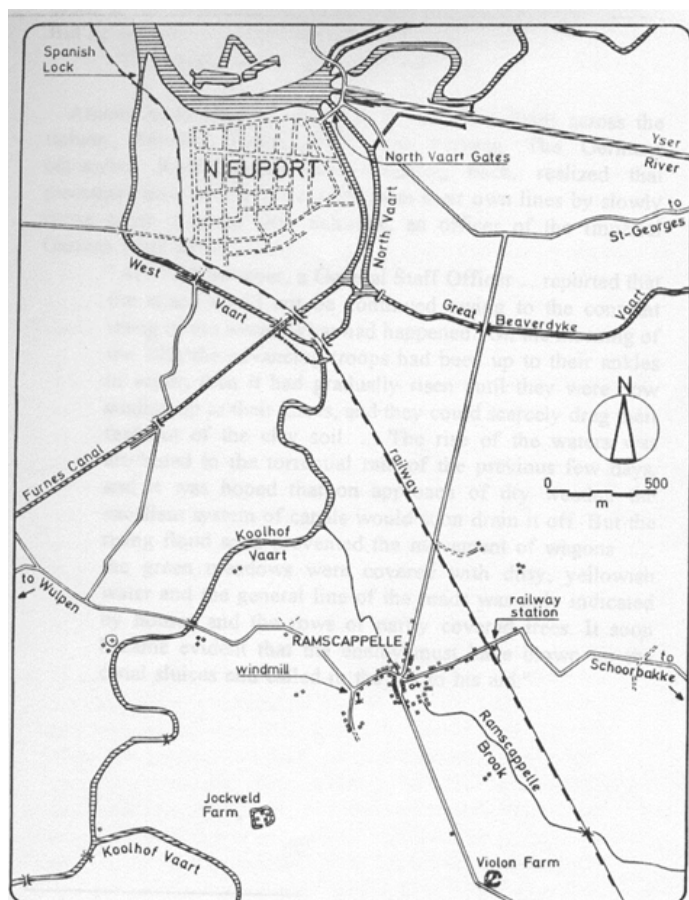


Figure 4. Map between Nieuwpoort and Ramscapelle
© P. Van Pul

At noon they reached Veurne, but it is now that there is some confusion in the reports. The officers had decided to use the Spanish Lock to create the flood. On the evening of 26 October Captain Thys retrieved Cogge from Veurne. That afternoon Colonel Brécard had wired an alarming message: ‘... Belgian High Command intended to order a retreat and meant to include the French troops...’ There was panic in Veurne: ‘kwade maandag’.²¹ Civilians saw a retreating Belgian unit, and fled out of the town.

Captain Thys and Cogge went by car to Nieuwpoort, and picked up a few soldiers. They then hid from the

bombardment for four hours until high tide, after midnight. The Spanish Lock was in disuse as a navigation device, and tools for operating the doors were no longer available. The doors had to be opened manually, but the rising tide made it difficult to hold them open. At first, seawater rippled through, and the set-doors began to open. Cogge was not a lockkeeper though, and even Thys was unable to keep the doors open. The rising tide slowly increased the pull on the doors, and the soldiers had a hard time holding them in place.

The flood attempt, at least for the time being, had failed. Captain Thys decided to open the small gate paddles in each door. It was the best they could do.

At daybreak, 27 October, there was some relief after two weeks of heavy rain, showers, drizzle and fog. The enemy seemed to be taking some time off. The shelling was lighter, sporadic, and concentrated mainly on

²¹ Flemish “Frightening/angry Monday”.

Nieuwpoort, Ramskapelle and Pervijze. Two enemy attacks had taken place on the embankment. Later on, reconnaissance troops were spotted in front of Ramskapelle.

Cogge was summoned again that afternoon. With advice from the only lockkeeper in Veurne, they collected tools for the second attempt. They waited until shortly after midnight the next day for high tide. Accompanied by a corporal and a soldier, Captain Thys and Cogge reached the lock. To their astonishment, HQ had sent an artillery captain and a 75 mm gun to destroy the lock, and a lieutenant of engineers to blow up the doors if the attempt failed. Captain Thys sent them away.

Work began around 02.00. The soldiers dug foxholes on either side, and tied ropes to the flood doors. They then waited for the rising tide to reach the level of the old Veumevaart. At 06.15, the set-doors slowly opened, and seawater began to flow inland. The set-doors could now function automatically, opening with the high tide and closing with the low tide. In the evening, a second high tide began pushing its way inland, but the results were not encouraging. The width of the Spanish Lock was acceptable (5.6 m), but the shallow Old Veurnevaart was constricted by two bridges. Secondly, water had to pass through the old culvert under the Veurnevaart. There was also the weir on the Koolhofvaart. Above and on both sides, Cogge had advised making a dam to prevent flooding the Belgian side of the railroad. As a result, the water first began to fill up the Noordvaart and the ditches in the fields along the embankment. In the evening, the water level had not changed much at the Venepevaart underpass, five kilometres south of Nieuwpoort.²² This was distressing to many on the Franco-Belgian side. The total area to be flooded comprised some 30 km, stretching as far as 12 km inland.

The Key Inundation

The news of the flooding circulated among the military, and Henri Geeraert was frustrated that no attempt had been made at the Noordvaart, where the gates were three times larger. He implored his military friends for assistance. When Captain Borlon and Geeraert made their move towards Noordvaart, Captain Thys informed High Command and the action was cancelled.²³ Thys was unsure if the Germans had occupied the locks, and thought that if they made the correct deductions, they could ruin the whole enterprise.

²² Nevertheless German reports mentioned that they could only move on the scarce tracks and country roads and for the rest trudged up to their ankles through the water on a clay surface. All of them thought it was the rainy weather that was to blame.

²³ Captain Thys was the only engineer with some experience in such matters.

On the morning of 29 October, after heavy shelling between Booitshoeke and Pervijze, the Germans launched another assault on the First Army Division, but were repelled by the Fourth Regiment. A more vigorous attack followed in the afternoon, accompanied by a diversion by the Second Army division near Ramskapelle. The Third and Fourth regiments were able to beat back the enemy. Several German artillery batteries were now located on the left bank of the Yser, providing close support to the infantry. It was obvious that a break through the Belgian lines was imminent.

With the threat of a German offensive to the south, and the unsatisfactory inundation from the Spanish Lock, High Command decided to allow an attempt at opening the Noordvaart Gates. Soon after dark, Captain Thys' assistant, Captain Umé, and Geeraert crossed the Veurnevaart on top of the lock doors and proceeded to Noordvaart. Some of the same soldiers from the Spring Sluice accompanied them, and a platoon of Carabineers fanned out to guard against a German encounter. With high tide approaching, there was no time to waste. Geeraert wound the windlasses and set five men to work. The same procedure was repeated 16 times to raise the doors.²⁴ With each gate the water flowed faster, and soon seawater was rushing inland. They retreated after 20 minutes to wait at a nearby tavern. 'We were sitting there, pale with fear', Umé confessed later. Before midnight, the men returned to lower the doors, by releasing the safety pins. A massive load of seawater was trapped in the polder.

Not a Day too Soon

The news from Ramskapelle was not good on the morning of 30 October. The Germans had reached the railway and set up machine guns to enfilade the line. At the same time, the Belgians learned of the horror of hand grenades. The Germans were halted at a cluster of houses 400 m past the line with a counter attack by the remnants of the 5th and 6th Belgian and 151st French regiments. After 11.00, an amalgamation of four battalions tried to regain a foothold. The Germans had captured a windmill, and set up machine-guns to cover the entire area west of the railroad. The loss of Ramskapelle and the fighting near Pervijze were detrimental. Rear Admiral Hood kept up his incessant bombardment to cover the French left wing, which now stretched from the coast to Nieuwpoort.

Around noon, bogs began to form in the fields across the railway from Ramskapelle to Pervijze. The Germans occupying Ramskapelle realized that they were slowly being cut off from their lines by the rising water. Captain Otto Schwink reported:

The attack could not be continued owing to the constantly rising water . . . On the

24 Eight double doors – for safety – in eight gates each 2m wide.

morning of the 30th the advancing troops had been up to their ankles in water, then it had gradually risen until they were now wading up to their knees, and they could scarcely drag their feet out of the clay soil.

The Germans first believed that the recent torrential rain was to blame.

But the rising flood soon prevented the movement of wagons . . . the green meadows were covered with dirty, yellowish water and the general of the roads was only indicated by houses and the rows of partly covered trees. It soon became evident that the enemy must have blown up the canal sluices and called in the sea to its aid.

That last remark soon travelled around the world, and stands out in the collective memories of many people, but it was not true.

A Lasting Success?

That afternoon, the water emerged into the Belgian trenches across the railway, 11 km from the Spanish Lock. Although the Noordvaart gates had only been opened once, five tides had now passed through the Spanish Lock. That evening, Captain Umé, Geeraert and their three assistants repeated their endeavour at Noordvaart. Surprisingly, they accomplished it without being detected.

The assault on Ramskapelle was renewed on 31 October with French artillery support. By 14.00, the exits of the village, and the last Germans were killed or driven out (Figure 5).

That night the doors of Noordvaart were opened again. The Germans were now in full retreat. By Nightfall they held only a few sites west of the river.

On 1 November, the last Germans around Oud-Stuivekenskerke retreated. The Noordvaart gates were opened for a last time that night. Belgian troops then reoccupied the locks, and this bridgehead remained in allied

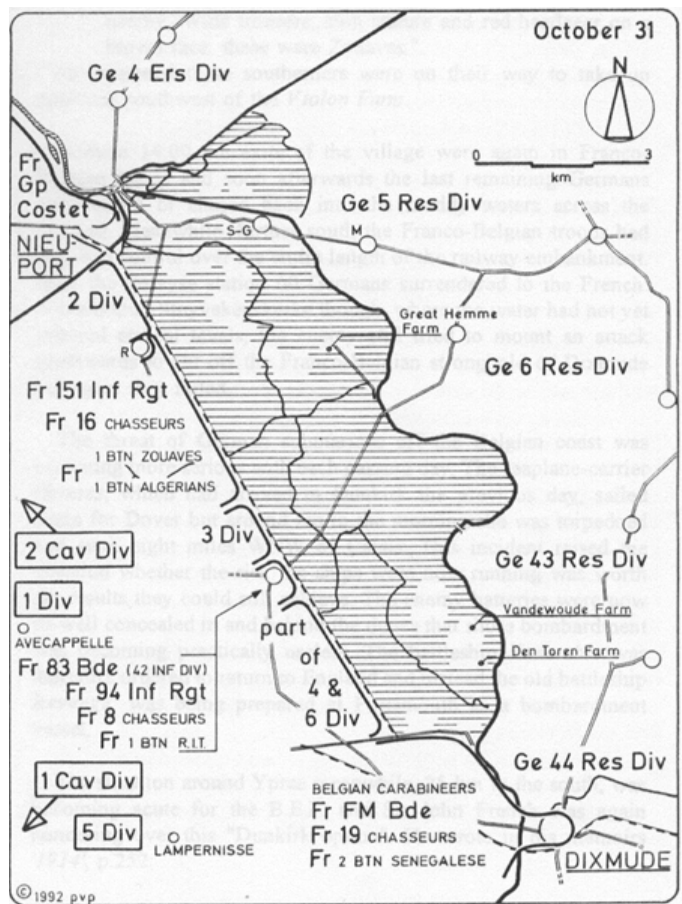


Figure 5. Situation on the defensive line, 31 October 1914 © P. Van Pul

hands for the rest of the war. The Germans dealt one last blow to the Yser front on 10 November when they captured the bridgehead at Diksmuide. At the end of the battle of the Yser River, the front was stabilized from the North Sea to Diksmuide, but at a heavy price to the Belgian army. Nearly one third of the infantrymen who had entered the battle were now killed, wounded or missing.

For the next four years, Captain – later Captain Commandant – Thys, led a company of sappers-pontooners to maintain the inundation. He surrounded himself with experts in hydraulics and mathematics. Together, they succeeded in extending the flooding east and south of Diksmuide into occupied territory. Despite frequent artillery bombardments, the structures at Nieuwpoort were kept operational.

Epilogue

On 1 November Colonel Wielemans suggested that Nuyten and Cogge should be promoted to Knights of the Leopold Order. Three days later, Cogge was called before the King, who thanked him in Dutch (uncommon at the time) for his help. Because there was no medal at hand, King Albert borrowed one from Colonel Wielemans' tunic. The official army report reads:

The plan to flood the area between the Yser and the Nieuwpoort-Diksmuide railway is the brainchild of Staff Captain-commandant Nuyten of the HQ, after close collaboration with the lockkeeper (sic) Cogge of the waterway-grid in the surrounding of the Yser.

At the age of 51, Henry Geeraert stayed to operate the locks for the remainder of the war. He became known as 'le père Henri' (Father Henry), and worked as an equal under dangerous circumstances, becoming a legendary figure. The French honoured him with a medal in 1914. When he passed away in 1925, a Leopold Order medal was placed on his coffin.

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World War I Underwater Cultural Heritage in the Belgian part of the North Sea: A Preliminary Overview

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In the autumn of 1914, the western front of World War I came to a standstill. At the northwestern end of this frontline, the Belgian army and its allies relied on their defensive infrastructure formed by the river Yser, and the associated inundation of the adjacent coastal plain. This strategy prevented the German troops from crossing this river and reaching the French Channel harbours.

The occupied part of the Belgian coast, 30 km in length and squeezed between the western frontline reaching the coast at Nieuwpoort and the Dutch border, lay at the doorstep of Great Britain's harbours, supply routes and fleet, and it would not take long before the Germans established naval bases in Bruges, Zeebrugge and Ostend, from which they could efficiently attack the enemy at sea. In the meantime, the occupied part of the Belgian coast was strongly fortified with a special focus on the harbours. A very well preserved example of a coastal defensive battery (the battery 'Aachen') can still be visited at Raversijde (Ostend, Belgium).

This paper presents the most important information related to the underwater cultural heritage present in the Belgian part of the North Sea. The following topics are discussed: German U-boats, operations of minelaying, WWI aircraft remains and the British raids on Ostend and Zeebrugge. The paper concludes with a discussion of the overall picture related to WWI underwater cultural heritage present in Belgian waters and its significance to society.

U-boats of the so-called 'Flottille Flandern'

At the onset of the war, Germany had only one type of submarine available, the so-called 'U-class-submarine', a large ocean-going submarine armed with torpedoes. When the Flemish coastline fell into German hands, there

was a necessity to develop different U-boat types which would be suited to the circumstances of shallow water operations, and a coastline riddled with sandbanks. As a result, the German Admiralty designed a 'coastal submarine'. the so-called 'UB-Boat'. This UB-type had three variants: UB-I, II and III. The UB had a shallow draught, and its compact features were ideal for operating in the shallow waters of the southern North Sea. The UB-I type submarine was the smallest U-boat designed by Germany during WWI. It displaced only 130 tons, measured 27 m in length and was armed with 2 bow torpedo tubes. The necessity to increase the offensive character and the operational range resulted in the further development of the UB-II and UB-III type submarines, which were fitted with more torpedo tubes and a deck gun. The large UB-III type U-boats almost tripled the size of the UB-I type, and had an operational range of 10,000 miles.

U-boats not only allowed for attacks from beneath the waves with torpedoes, but also with mines. Mine laying submarines (UC-class) were designed and built in Germany by the end of 1914, and saw their first action in the waters of the southern North Sea in the early part of 1915. The UC-class consisted of two types: UC-I and II. UC-I was similar in design to the UB-I , but instead of torpedo tubes it carried six vertical mineshafts in the bow section, with a total storage capacity of 12 mines. The Royal Navy was baffled to discover minefields in areas that no enemy surface craft could possibly have reached undetected. It was only six months after the start of the mine laying campaign, in July 1915, that the British discovered that U-boats were laying mines close to their harbours and shipping lanes. The UC-boat *UC-2* had accidentally struck one of its own mines and sank. This incident allowed Royal Navy divers to study the wreck and its mineshafts. Immediately, the order was issued to incorporate mineshafts in six British E-class submarines that were being built at that moment. Although the UC-I type U-boat wreaked havoc amongst Britain's merchant fleet, it had no other offensive armament than mines, and was limited in range to the Thames Estuary and the UK East coast sea areas. At the end of 1915, the UC-II type U-boat became operational. It was moderate in size, displacing almost 500 tons, and had a length of 50 m. It could stay longer at sea, and could reach many more enemy ports. Most important was its armament: 18 mines, 3 torpedo tubes and a deck gun.

For the North Sea, two submarines bases were in operation during WWI: Helgoland/Wilhelmshaven in Germany and Ostend/Zeebrugge/Bruges in Flanders. The bases in Flanders would prove to be the most important ones strategically due to the short distance to the western front. The harbours of Bruges, Zeebrugge and Ostend were adapted to accommodate a large fleet of U-boats. In Ostend and Zeebrugge, there were dry docks and wharf facilities, but the actual operational center was located in the harbour of Bruges. Here,

the Germans built the 'Kaiserliche Werft' (Imperial Wharf), which contained torpedo and engine repair workshops, storage facilities for ammunition and mines, wharfs, dry docks, bunkers and all kinds of accommodation for U-boat personnel. By 1918, a total of 5,000 people were employed in order to keep the U-boat fleet operational. Next to the Bruges docks and in the Bruges city center, many buildings were related to staff and crew of the U-boat fleet.

By the end of 1918, 93 U-boats had taken part in the activities of the 'Flottille Flandern'. 76 of these never returned to their base. A large number of U-boat wrecks thus lie scattered in waters around the British Isles, off the coasts of France, Holland and Belgium. In Belgian waters, 10 or 11 wreck sites of German WWI submarines have been identified, with at least one example from every U-Boat type present.

The U-Boat wreck on the Fairy Bank for example (Figure 1), in the western area of the Belgian continental shelf, seems to be well preserved, as only the conning tower and part of the former deck protrudes out of the sand. On the other hand, the identification of the wreck of *UC-62* situated on the Thornton bank is interesting as this U-Boat was reported in German as well as in British written sources as mined off Portland, but was actually torpedoed by HMS *E-45* only 20 miles off Zeebrugge.

The Flanders based U-boats had a large impact on the war, as they managed to sink 2,554 allied ships. U-boat losses were also very high, as almost 80 per cent of the U-boat fleet would fail to return to their base.



Figure 1. Conning tower of U-boat III type on the Fairy Bank on the Belgian continental shelf © Flanders Heritage Agency, photo: Dieter Decroos

Antwerp was important, as the place where the UB-I boats were reassembled after their transportation from Germany by rail. On the quaysides of Ostend and Zeebrugge, there were numerous protective shelters and in the Bruges docks there were lots of installations, such as a massive U-boat bunker, which could house eight large U-boats at a time. Today, very little material evidence is left of these important land facilities. The nearly complete destruction of the land facilities related to this part of our history raises the heritage value of the still existing relics at sea. In the following section, the story of the UB-10 will be briefly dealt with as an example showing

how, until the relatively recent past (1980s) this heritage was still completely neglected in Belgium.

The Search for *UB-10*

During major construction works in the Zeebrugge harbour back in 1980, divers stumbled upon a big obstacle embedded in the sand. Because it had to be removed, it was lifted from the seabed and brought towards the historic mole (Figure 2). Soon, it became clear that a rather small submarine had been brought to the surface. Its single bronze propeller was sawn from the rear end – the name *UB-10* was inscribed on it.

The vessel was scuttled 62 years before, after an exceptional career in the



Figure 2. *UB-10* raised to the surface and brought towards the coast to be sunk again in 1980 © Dirk Van Mullem

Unterseeboots Flottille Flandern. *UB-10* was part of the *UB I*-class, rather tiny submarines, with just two torpedo tubes forward, carrying a single officer and 13 crew members. The development of this type of submarine was spurred by the need for a smaller submarine better adapted to the waters of the Belgian coast, and one that could be transported by rail and assembled nearby its naval base in Flanders, as explained above.

The wreckage found in 1980 clearly showed the characteristics of the *UB I*-type: the single pressure hull was riveted up from cylindrical and truncated conical boiler plate sections, giving the boat a distinctively angular shape below water. Unfortunately, both the narrow, free-flooding deck casing which ran the full length of the hull, and a relatively large conning tower were gone.

Construction of *UB-10* started in 1914 at AG Weser in Bremen. The submarine was transported in sections by rail to the Cockerill yards at Hoboken (Antwerp), where German technicians assembled and tested the boat for watertight integrity in the Scheldt river. *UB-10* was then towed via the Ghent-Bruges Canal to the base at Bruges, where it arrived in March 1915, as the first submarine of the *U-boot Flottille Flandern*.

A few weeks later, the ship was operational. During the night of 14 April the, the Dutch vessel *Katwijk* (2040 BRT) was sunk, the same fate struck the Belgian steamer *Menapiër* (1886 BRT) on 7 June. During the summer of the same year, tens of English fishermen's cotters were scuttled by the *UB-10* crew. The activities continued at a steady pace – in August 1916, HMS *Lassoo* was torpedoed, and by September of the following year, *UB-10* had already sunk 37 ships, a total of 23,614 BRT. Two of its commanders were Otto Steinbrinck and Reinhold Salzwedel, both awarded with the *Pour le Mérite* (aka the *Blue Max*). By then *UB-10* was considered obsolete, and during the remaining years of the war it was used as an instruction ship. When the British troops, leaving the mud of Passchendaele behind them, finally neared the Flemish coast, the officers of the *Marinekorps Flandern* decided to scuttle the, by then legendary, *UB-10* at the mouth of the harbour from where it started its raids, rather than to leave it in the hands of the allies.

Almost exactly 62 years later, diver Dirk Van Mullem, much to his regret, could only assist in sinking *UB-10* again, since due to a lack of time and interest, no one seemed to care about the historic vessel. With the upcoming centenary of WWI, a few enthusiasts started to study photographs and press releases of the failed recovery in 1980. Former harbour authorities and divers, who remembered vividly that unique historic encounter, were interviewed. Unfortunately, there is no unanimity as to where exactly *UB-10* might be found under the sand. However, the search site was reduced to the container terminal along the historic Zeebrugge mole.

The major challenge now is finding the 30 m long submarine again under a layer of 8 m of sand. Since 2012, the research group Brugge 14-18, started geophysical research on the site. The surface was scanned with a specific magnetometer (VET Vallon) and a Ground Penetrating Radar (Zond Python), both designed specifically for deep surveys.

A few zones were detected which have to be further investigated with bore hole magnetometry; the story remains to be continued.

British Seaborne Raids on Ostend and Zeebrugge and HMS *Vindictive*

In 1918, the British executed seaborne raids on the harbours of Zeebrugge and Ostend in an attempt to stop the U-boat attacks on shipping in the North Sea area and beyond. Several obsolete and heavily ballasted warships were sunk as blockships inside or just in front of the harbour entrances. Most of these ships were already salvaged or destroyed during or shortly after the war, although some of them, like HMS *Brilliant* and HMS *Sirius* are still partly in place

outside the Ostend harbour.

HMS *Vindictive*, which suffered heavy damage during the raid on Zeebrugge, was patched up and served again during the second raid on Ostend, where it was scuttled inside the harbour entrance. Since it was salvaged shortly after the war, the bow section has been preserved as a monument in honor of the fallen British seamen. Until recently, this monument stood somewhere in the inner harbour, completely out of sight. In 2013-2014 the preserved part of HMS *Vindictive* got a new location on the eastern part of the harbour entrance (Figure 3), a much better place for this valuable monument. In fact, the remains of the *Vindictive* constitute the only substantial part of a WWI battleship to be seen on land in Flanders. In this respect, besides its role as a monument to remember the victims of the war at sea, it can



Figure 3. Fragment of the bow of the HMS *Vindictive* preserved as a monument in honor of the soldiers died at sea © Flanders Heritage Agency, photo: Marnix Pieters

also draw attention to and raise the profile of the numerous other wreck sites related to WWI at sea, which are indeed frequently considered as ‘war graves’.

Mine Laying

As already touched upon in the first section of this contribution, the sea mine also played a major role in the war at sea. The North Sea quickly became a place of great danger to all ships.

The North Sea, and more specifically the Belgian part of it, was subject to intensive sea mine laying activity during WWI. Both belligerent parties laid mines, and by the end of the war, the channel formed a dense, almost impenetrable web of minefields. Based on Swedish and German mine databases, historical maps from the United Kingdom Hydrographic Office and numerous documents from German and Belgian military archives, the ABNL Naval Mine Warfare Mission Support Centre from Ostend came to the interim conclusion that 8,759 mines were dropped in Belgian waters during WWI: 6,074 of them were

German, 2,075 British and 610 French. Figure 4 gives an overview of all mine fields in Belgian waters by the end of the war in 1918.

The mines were laid by purpose-built minelayers, but also by refitted ships. However, surface minelayers could not always reach their target areas in the enemy territory without being noticed, which presented a major problem. The only solution was the use of submarines. The French-British minefields in the Strait of Dover were considered such a threat that the German Admiralty ordered their large U-boats not to pass through the channel anymore in April 1915. Other types of vessels were required. Small UB and UC-type U-boats

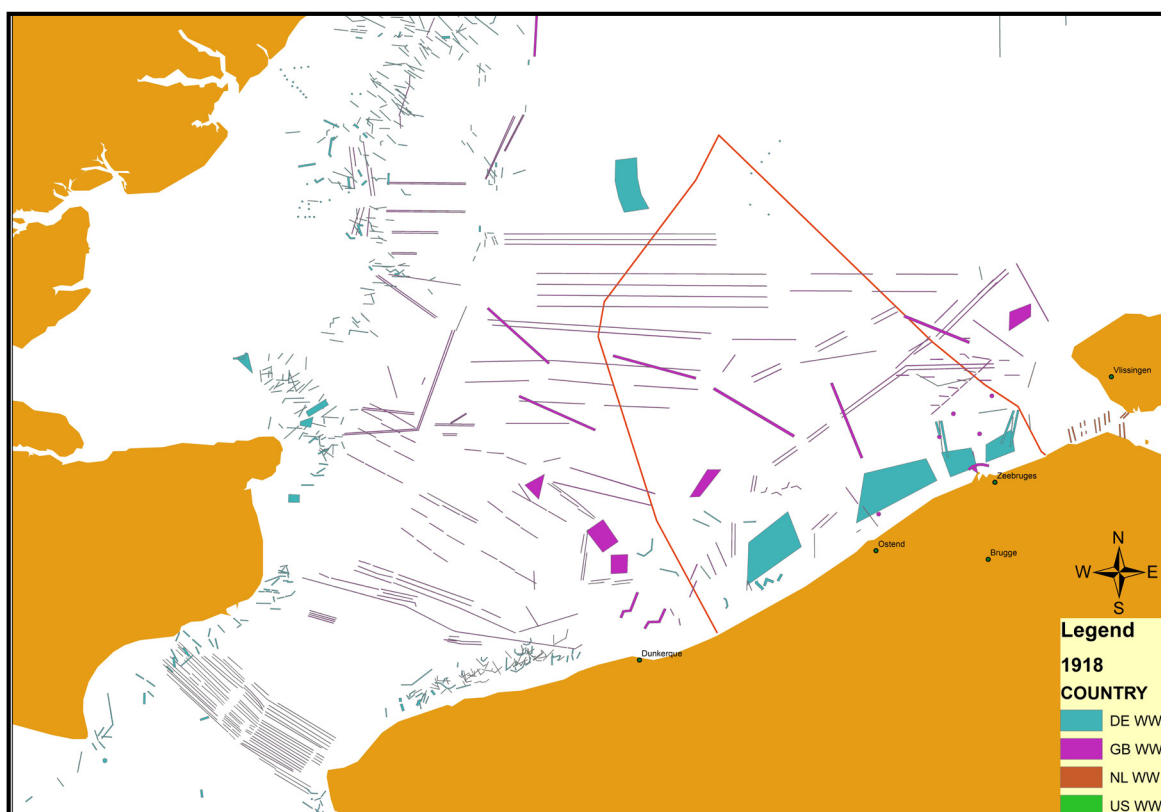


Figure 4. Overview of all the minefields present in Belgian waters by the end of the war © Frank Janssens and Gino Deceuninck

were designed for this area. While UB-boats carried torpedoes, UC-boats were specialized in laying mines on enemy shipping routes. A large number of UC-type minelayers were commissioned. German Mine Laying submarines (UC-I and UC-II) operated from the Naval bases in Bruges, Zeebrugge and Ostend. The submarines could drop mines close to enemy harbours without being seen. Of course, the Allies used new techniques to defend themselves against the German submarines. The sonar and the depth charge would both turn out to be very powerful anti-submarine weapons. Numerous other measures also hindered German shipping, such as the anti-submarine nets with mines installed. U-boats in the English Channel were faced with the risk of getting entangled in mine nets. All 12 UC-I type submarines were lost. *UC-4* was scuttled off Zeebrugge. 17 UC-II boats were lost in the last two years of the

war. Most were mined or sunk by British warships.

The mines were employed as offensive or defensive weapons in rivers, harbours and seas, but they also had a big psychological impact. Offensive mines were placed in enemy waters, outside harbours and across important shipping routes, sinking both merchant and military vessels. Defensive minefields safeguarded key stretches of coast from enemy ships and submarines, forcing them into more easily defended areas, or keeping them away from sensitive ones. The best-known are the moored mines, spherical metal devices with characteristic protuberances (Hertz horns). Quite a few of these mines broke from their moorings and went adrift after a while. A lot of them washed ashore, which made the beaches very dangerous places. This was often the case with the British Mark 3 naval mine; hundreds of these mines washed up on the surrounding beaches. Other mines seemed to be more effective. A big amount of ships, both merchant and military, including ships from neutral countries, were sunk by mines. The allies lost no fewer than 284 ships due to German mines. The Belgian part of the North Sea still contains the remains of numerous shipwrecks, such as the German torpedo boats *Senator Holthusen* and *A58*, the French torpedo boat *P319* and the British Freighter *Ardmount*, all sunk by mines.

It took several months and a lot of minesweepers, either purpose-built military ships or converted trawlers, working around the clock, to clear the mine fields after the war. But, despite those post-war clearance operations, the sea bottom is still littered with unexploded ordnance (UXO) such as sea mines. Still today, mines are found by fishermen and dredging vessels. Due, however, to extensive trawling activities and seabed dynamics, such as moving sand ridges, there is, in most cases, no clear relation between the position of found mines and the location of historical minefields.

World War I Aircraft Wrecks Underwater

Contrary to popular belief, WWI aviation was rather sophisticated and subject to a fast technical evolution.

Especially along the Flemish and Channel coast, the air war was fierce. In a pre-radar era, both the Royal Navy and the *Kaiserliches Marine* had to rely on information supplied by aerial reconnaissance. Fighter pilots had to protect the important harbours of Zeebrugge, Bruges, Ostend and Calais not only against these reconnaissance planes, but also against enemy bombing missions. By 1917, both the Germans and the allies were using multi-engine aircraft, crossing the Channel waters in order to drop aerial bombs up to 1000 kg.

Attentive visitors of war cemeteries along the coast might walk along the graves

of sailors and airmen – most of them washed ashore. The number of aircraft losses in coastal waters is yet unknown, but is to be estimated between several hundreds and a thousand.

Due to the fragile construction of aircraft – most of them are only made of wood and canvas, the chances of finding remains a century later, are very limited. The only identifiable remains might be the engines and the armament. Due to corrosion, the identification down to plane or crew seems virtually impossible.

Documented WWI aircraft crashes in water are very scarce. The best documented case dates back to 1963. In the mud of the then recently created Flevopolder near Dronten (the Netherlands), someone thought to have found the remains of an old bicycle. When a Parabellum machine gun was picked up near the wheels, the Dutch authorities realized it might have been an old airplane wreck. In autumn 1917, the bodies of a few German airmen washed ashore in what was then the Zuiderzee. The connection was made to a German Gotha twin engine bomber, which took off in September 1917 from its base near Ghent to bomb strategic targets in England. During their mission, they were lost and ran out of fuel, almost 300 km astray from their route.

There are indications that the remains of the wrecks of one or more German seaplanes are to be found in the mud of the Ostend water basin (the so-called ‘Spuikom’), where such units were stationed during WWI.

It is not known whether WWI aircraft wrecks exist in Belgian North Sea waters, but it is likely. Several allied air raids, for instance, were carried out on the harbours of Ostend, Bruges and Zeebrugge. The Germans did some bombing raids on England and there are some reports of airmen washed ashore. The chances of finding WWI Aircraft remains underwater are very slim due to their fragile construction and the impact of corrosion.

World War I Underwater Cultural Heritage in Belgian Waters: An Overview

In the Belgian part of the North Sea, 292 positions of shipwrecks are registered in the database www.maritieme-archeologie.be. This database has been accessible online in four languages since 2006. For 237 shipwrecks (corresponding to 80 per cent of the registered positions) an identification of the ship has been proposed based on survey data combined with published information and archival documentation. The remaining 55 positions have, to date, only been identified as a wreck site, probably a shipwreck site without any idea about the date nor the identity of the shipwreck in particular.

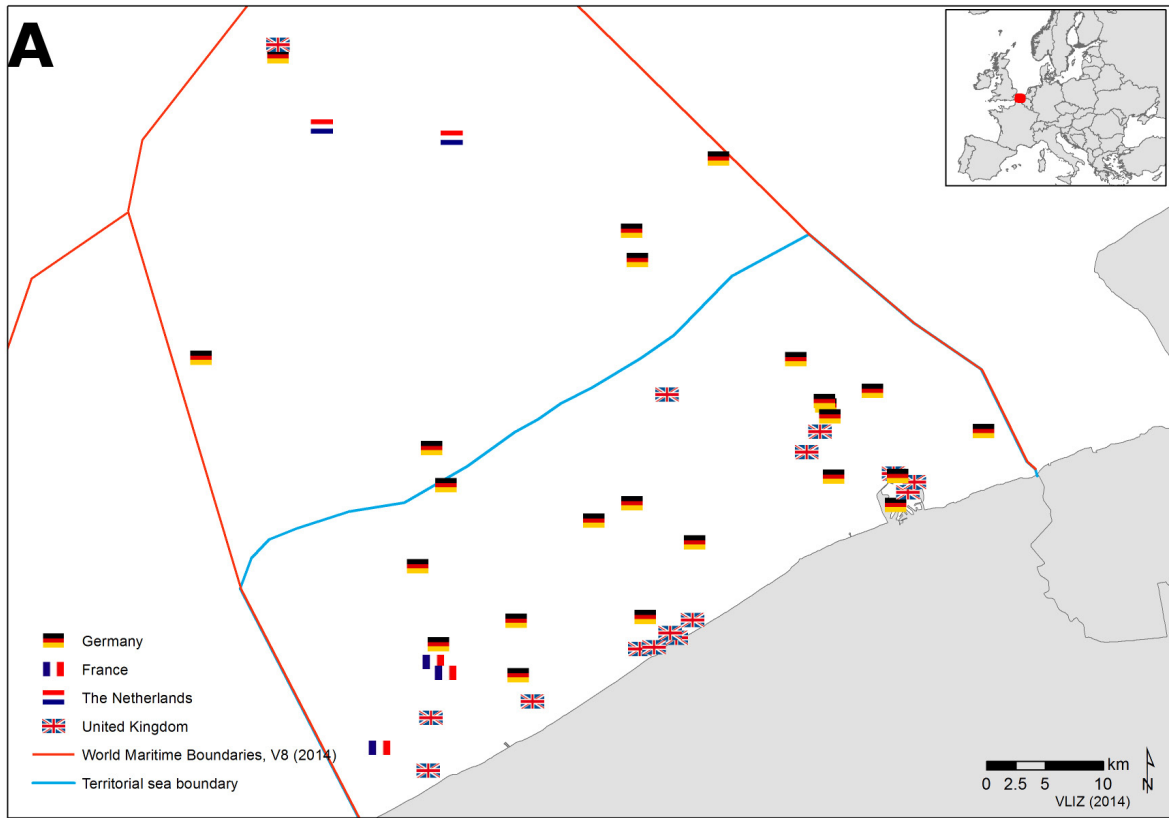


Figure 5 a. Location of all WWI wrecks in Belgian waters categorized by nationality © VLIZ, maps: Nathalie De Hauwere

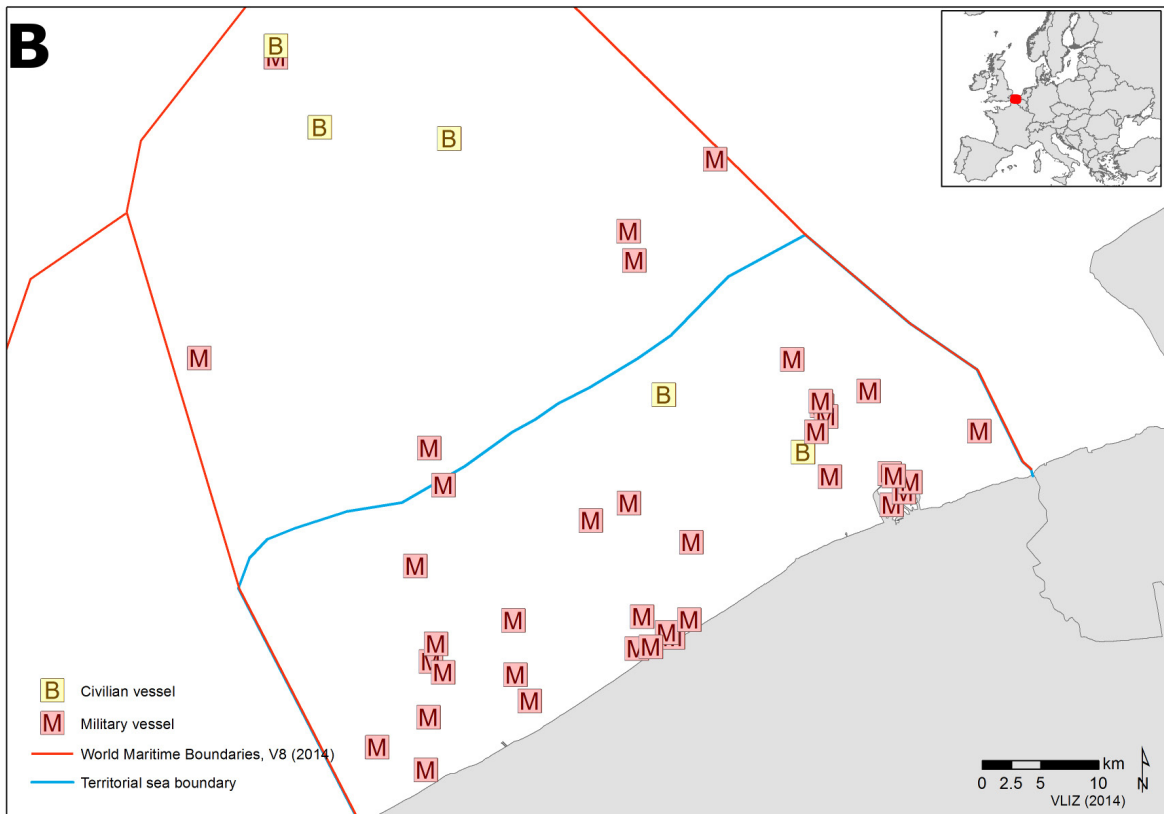


Figure 5 b. Location of all WWI wrecks in Belgian Waters categorized by military / civilian status © VLIZ, maps: Nathalie De Hauwere

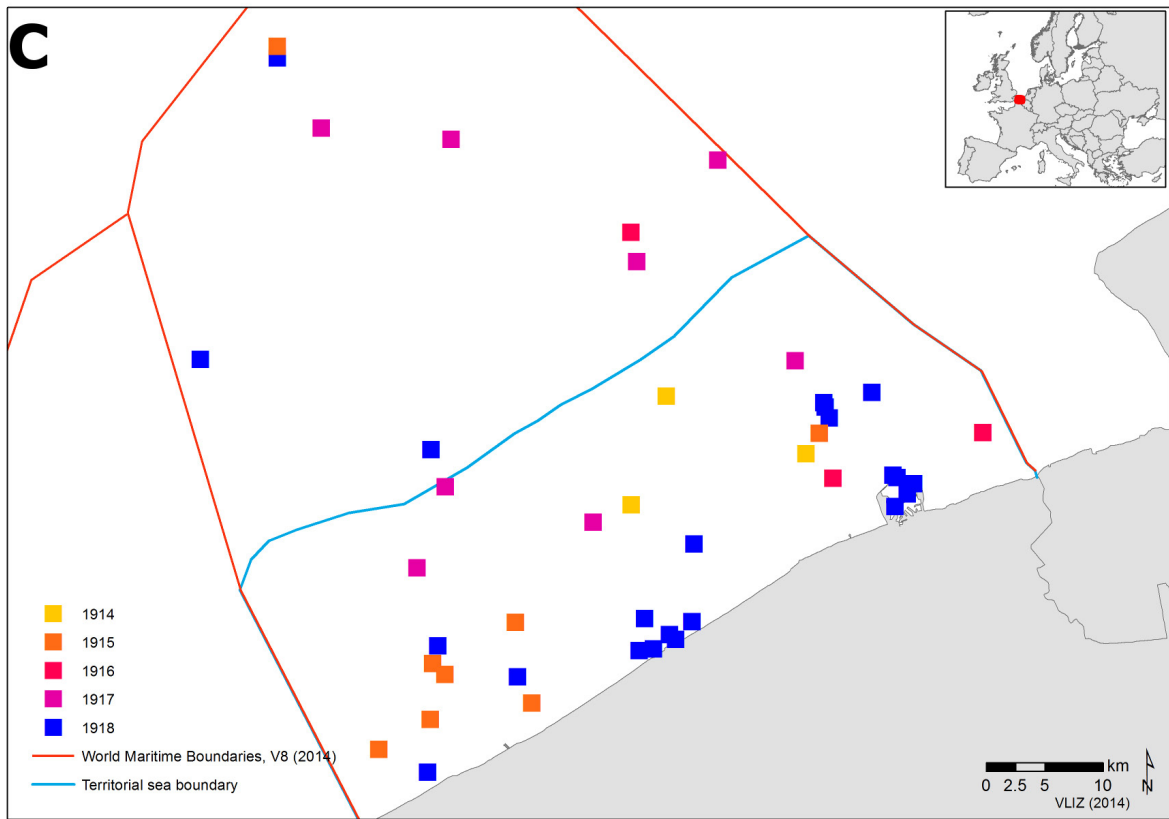


Figure 5 c. Location of all WWI wrecks in Belgian Waters categorized by year of sinking © VLIZ, maps: Nathalie De Hauwere

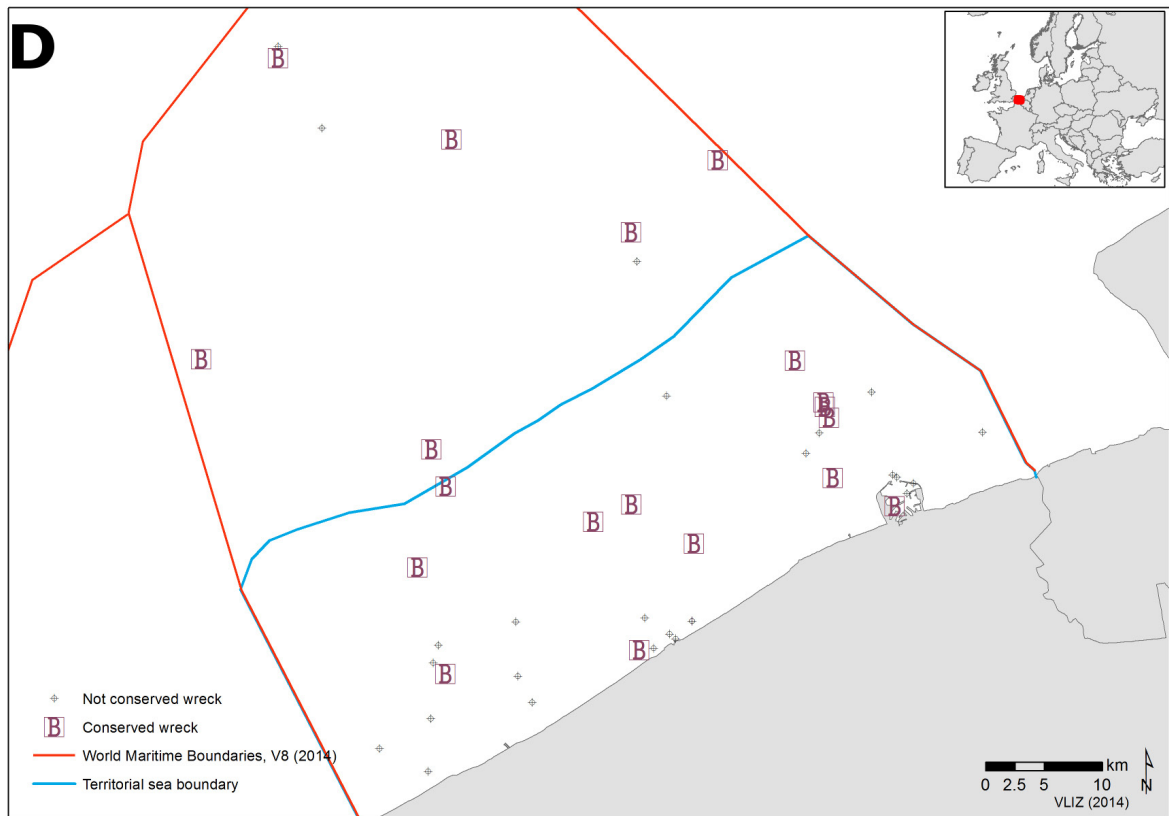


Figure 5 d. Location of all WWI wrecks in Belgian Waters categorized by state of preservation © VLIZ, maps: Nathalie De Hauwere

46, or about 20 per cent of the identified shipwrecks, are related to WWI. These 46 sites constitute, for Belgium, the core of the material archive of WWI at sea. This number of sites is quite low compared to the numerous heritage sites on land related to WWI, even by adding a similar percentage from the unidentified sites and arriving at the total hypothetical number of 59 sites assignable to WWI.

These 46 sites correspond to 44 shipwrecks, as 2 German torpedo boats broke into 2 halves during their sinking, with both parts settling in slightly different positions on the seafloor. These disastrous events produced four archaeological sites, but are to be related to only two shipwrecks. In the identified shipwrecks only four nationalities (Figure 5 a) are represented: German (23 sites), British (16 sites), French (3 sites) and Dutch (2 sites). Curiously, no Belgian wreck sites of WWI have been identified in Belgian waters to date. Belgian wreck sites of WWI are known to be present in French, British and Irish waters. Most of the wreck sites are identified as military vessels (Figure 5 b). Only five wreck sites belong to civilian vessels (3 British and two Dutch). This is in sharp contrast with the situation in UK waters related to WWI, where merchant vessels clearly dominate the material record. Looking at a map with the years of sinking of the ships (Figure 5 c) gives some interesting information: 1914: 3, 1915: 8, 1916: 2, 1917: 8 and 1918: 23. Years with low numbers of shipwrecks (1914 and 1916) seem to alternate with years with higher numbers (1915 and 1917) and 1918 is by far the most productive year in regards to shipwrecks. This is due to several factors: at the end of the war, several German U-boats were scuttled to keep these out of the hands of the enemy, and in 1918 the raids on Ostend and Zeebrugge took place. These two elements, together with the fact that some WWI shipwrecks could not be dated precisely, and were assigned December 1918 as a *terminus ante quem*, explain the higher number of sites assigned to 1918. On the location map, indisputable concentrations of 1918 wrecks occur near the harbours of Ostend and Zeebrugge (Figure 5 a-d).

It has already been stressed that the number of underwater cultural heritage sites related to WWI in Belgian waters is relatively small. This number decreases still more when one takes into account only the wrecks that are well or rather well preserved (Figure 5 d). Due to the postwar salvaging activities, merely 19 WWI sites remain more or less in a coherent state on or in the seabed. When looking to the better preserved wreck sites, German wrecks dominate even more, with 16 out of the 19 better preserved sites. This better situation for the German wrecks is mainly due to the 10 or 11 U-boat wrecks which are systematically better preserved, as they are mostly buried, and never constitute a hindrance for shipping. Besides these 16 German wrecks there are one French, one Dutch and one UK wreck dating from WWI which are rather well preserved: all in all a very manageable number of valuable sites. Action is needed now to be sure

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The Wreck of SS Mendi (1917) as an Example of the Potential Transnational Significance of World War I Underwater Cultural heritage

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On 21 February 1917, the Liverpool-registered steamship *Mendi* sank after being involved in a collision in the English Channel, roughly 11 nautical miles south-west of the Isle of Wight. The collision occurred in thick fog, shortly before 05.00, when the *Mendi* was rammed between the bridge and bow by another British vessel, the *Darro*. At the time of its loss, the *Mendi* was under charter to the British Ministry of Transport for government service as a troop transport; it was carrying 823 black enlisted men and white officers of the 5th Battalion, South African Native Labour Corps (SANLC) from Cape Town to Le Harve in France, where they were to serve behind the lines on the Western Front as non-combatant labourers.¹

Such was the damage sustained by the *Mendi* that it sank in 20 minutes. Within an hour of the collision, 607 black servicemen, 9 of their white countrymen and 30 members of the *Mendi's* crew were dead.² Most of the SANLC members had no experience of the sea, and many had probably never seen it before they had embarked on *Mendi* in Cape Town six weeks earlier. As a consequence, very few could swim.

Although it is likely that some of the men died in the *Mendi's* damaged forward hold, the majority of the deaths were the result of drowning and hypothermia in the mid-winter waters of the English Channel.

Eye-witness accounts suggest that many refused to leave the sinking vessel, and

1 Board of Trade, Wreck Reports 1914-20: 7732, London; Elder Dempster & Co. LTD. 1921, The Elder Dempster Fleet in the War, 1914-1918, Coltishall, UK.

2 Clothier, N 1987, Black Valour: The South African Native Labour Contingent, 1916-1918, and the sinking of the Mendi, University of Natal Press; Wessex Archaeology 2007, SS Mendi Archaeological Desk-Based Assessment. Unpublished Report. Ref. 64441.01. Available from: <<http://www.wessexarch.co.uk/files/projects/ss-Mendi/ssMendiReport.pdf>> [Accessed on 21 August 2014].



Figure 1. The Mendi depicted on a British and African Steam Navigation Company postcard © John Gribble

oral tradition describes an interpreter with the Battalion, the Reverend Isaac Wauchope Dyobha rallying those on the deck saying:

Be quiet and calm, my countrymen, for what is taking place is exactly what you came to do. You are going to die, but that is what you came to do. Brothers, we are drilling the death drill. I, a Xhosa, say you are my brothers. Swazis, Pondos, Basutos, we die like brothers. We are the sons of Africa. Raise your war cries, brothers, for though they made us leave our assegais in the kraal, our voices are left with our bodies.³

According to the story, the men then danced a death dance as the *Mendi* slipped beneath the waves, taking them with it. Reverend Dyobha was one of the casualties.

Wartime Labour

To understand how the *Mendi* and its passengers came to be in the Channel on that fateful February morning, one must turn back the clock to the opening months of World War I.

When the British Expeditionary Force landed in France in 1914, it did so without any formal labour component or Pioneer formations within its ranks. As a result, the movement of stores and munitions, the repair or construction of roads and railways and the building of defences fell to the fighting troops. It rapidly became an established part of their 'fatigue' routine, and often took precedence over periods of rest behind the lines. This had an increasingly

³ Clothier, 1987; Swinney, G 1995, 'The Sinking of the ss Mendi, 21 February 1917', The South African Military History Society Military History Journal, vol. 10, no. 1.



Figure 2. South African Native Labour Corps members digging sand in France © National Library of Scotland (X.35060)

detrimental effect on the physical and mental condition of the frontline troops. As the war escalated, the army grew and casualties mounted, so more and more men were needed for the vital logistical support that was required to keep the army moving.

The War Office reacted in 1915 by creating a number of Labour Companies within the Army Service Corps. The members of these companies were drawn from sources within the United Kingdom, and formed the nucleus of what was to become the British Labour Corps (BLC). By the end of the war in November 1918, the BLC was some 389,900 strong and made up 11 per cent of the total strength of the British army.⁴

The unprecedented scale of the conflict and its toll in men, however, particularly on the Western Front, meant that far more labourers were required than could be supplied from within the UK. Between late 1916 and the end of the war, roughly 300,000 foreign labourers were therefore engaged on fixed-term contracts from British overseas territories and elsewhere across the globe.⁵ Of these, 195,000 served on the Western Front, including more than 21,000 black South African labourers, who served with the SANLC in France between 1916 and 1918. Other foreign labour contingents on the Western Front came from China, Egypt, Fiji, Madagascar, Mauritius, Seychelles and the British West Indies.⁶ In almost all circumstances, the foreign labour corps were employed outside the UK due to trade union pressure not to allow foreign labour into Britain.

Despite the enormous contribution to the success of the war effort by the BLC and the foreign labour contingents, the entire system is today almost unknown in the UK, and is an aspect of WWI which, with a handful of exceptions, seems to have been largely ignored in the vast literature devoted to the conflict.

4 Starling, J & Lee, I 2009, *No Labour, No Battle: Military Labour during the First World War*. Spellmount. Stroud, UK.

5 Ibid.

6 See: Willan, B P 1978, 'The South African Native Labour Contingent, 1916-1918', *Journal of African History*, vol. 29, no. 1, pp.61-86; Fawcett, B C 2000, 'The Chinese Labour Corps in France 1917-1921', *Journal of the Hong Kong Branch of the Royal Asiatic Society*, vol. 40, pp.33-111; Starling and Lee, 2009.

Commemoration and Significance

The loss of life on the *Mendi* is still South Africa's single largest catastrophic loss of life and, in terms of WWI casualties, is only eclipsed by the losses (2536 men killed, wounded or missing) suffered by the South African Brigade during their engagement at Delville Wood on the Somme in July 1916. Despite this, the story of the *Mendi* was, until relatively recently, virtually unknown in the United Kingdom, and the wreck was known only as one of the more than 450 WWI shipping casualties in the English Channel.⁷

The wreck site itself was identified in the 1970s, and since then has been regularly dived despite its relative inaccessibility, depth (40 m on the seabed) and a very short slack water window between strong tidal currents which run over the site. Few of the divers who visited the wreck were, however, aware of its significance to South Africa or its wider context; as a consequence, the site has been extensively looted.⁸

By contrast, in South Africa commemorations of the loss of the *Mendi* became a rallying point in the black political struggle for freedom and equality both before and under the apartheid regime.⁹ Although remembrance of the event and its commemoration dwindled during the latter half of the twentieth century, since South Africa's first democratic elections in 1994 the story of the *Mendi* has again come to feature strongly in public life. It is seen as a reflection or embodiment of the sacrifices made by black South Africans in their long fight for justice and political freedom, and as a national symbol of unity, solidarity and bravery.



Figure 3. Mendi Memorial at Attridgeville outside Pretoria, South Africa © John Gribble

Official annual commemorations of the event take place at a number of *Mendi* memorials around South Africa - for example those in Avalon Cemetery in Soweto, New Brighton in Port Elizabeth and at Attridgeville outside Pretoria

7 Wendes, D 2006, *South Coast Shipwrecks: East Dorset and Wight 1870-1979*, Dave Wendes.

8 Wessex Archaeology, 2007.

9 Grundlingh, A 1987, *Fighting their own war: South African Blacks and the first World War*, Ravan Press, Johannesburg, SA.

(Figure 3) - usually involving descendants and families of SANLC veterans and *Mendi* victims and survivors. More recently, commemorative events have been organised at cemeteries in the UK and France where *Mendi* victims and members of the SANLC who died on active service are interred.¹⁰ The event is also commemorated by a plaque installed at South Africa's war memorial at Delville Wood in France in 1986, and more recently by the naming of two South African Navy vessels, the corvette SAS *Mendi* and the strike craft SAS *Isaac Dyobha*. South Africa's highest award for bravery is now named the Order of Mendi, and is awarded by the President of South Africa to citizens who have performed extraordinary acts of bravery.¹¹

In 2006, after joining Wessex Archaeology in the United Kingdom from the South African Heritage Resources Agency (SAHRA), one of the authors of this paper, John Gribble, initiated a project to learn more about the *Mendi*. This desk-based appraisal of the wreck and its history¹² and a subsequent high level geophysical survey,¹³ had their genesis in Gribble's exposure to the story of the loss of the *Mendi* whilst serving as the maritime archaeologist at SAHRA. The two projects gathered information from an archaeological perspective about the wreck of the *Mendi*, using the physical site as a focus for investigating the history of the vessel - its construction, use and loss - and also for exploring the less tangible aspects of what makes the *Mendi* a significant underwater cultural heritage site: its wider social and political context, both historical and current.

In addition to generating new information about the wreck and its own special story, the projects demonstrated that this seemingly ordinary wreck has an international and trans-national significance and meaning, and a range of potential stakeholders with an interest in the site which extends far beyond the coastal state in whose waters it is located and the immediate story and circumstances of its loss.

A shipwreck can attract a wide interest and have significance for stakeholders ranging from divers, whose interest is recreational, to heritage managers, for whom it forms part of the coastal state's underwater cultural heritage. In cases where a wreck was accompanied by the loss of human life, the site may also be viewed as either a *de facto* or symbolic grave. Furthermore, a wreck may have historical or political associations that give it a trans-national or international

10 See: <http://www.saspresidentkruger.com/commemoration-events-2/commemoration-events-2013/sas-mendi-parade-portsmouth/>; <http://www.thesouthafrican.com/news/south-africa-remembers-her-fallen.htm>

11 See: <http://www.thepresidency.gov.za/pebble.asp?relid=7616>

12 Wessex Archaeology, 2007.

13 Wessex Archaeology 2008, SS Mendi Geophysical Survey: Data Processing and Assessment. Unpublished Report. Ref. 64442.02. Available from: < http://www.wessexarch.co.uk/files/projects/ss-Mendi/ssMendi-Report-final_64442-02_Apr-08-figs.pdf > [Accessed on 21 August 2014].

significance, tying it into much wider events and making it of interest to an international audience, which may range from foreign governments to local communities elsewhere in the world with a tangible or verifiable link to the site. The trans-national nature of shipwreck sites is reflected in the physical evidence of wrecks themselves and the artefacts they contain, in the historical and documentary evidence associated with sites, or in their intangible associations, such as the oral traditions linked to the wreck or event.¹⁴



Figure 4. Diver approaching a boiler on the wreck of the Mendi © Sabido Productions

The wreck of the *Mendi* is an example of the range of stakeholder interests possible in a single wreck and the trans-national or international significance attributable to a wreck site. The work done in respect of the wreck thus far has demonstrated that as a physical link with the SANLC, the wreck of the *Mendi* can act as a focus for interrogating its wider socio-political context and black South Africans'

contributions during WWI. It also serves as a portal to other hidden histories that ripple out from this wreck and its particular story – namely the largely forgotten and neglected story of Britain's WWI military labour force. This type of trans-national significance is likely to be common to other wrecks that form part of the roll call of WWI maritime casualties; sites whose stories can link countries and communities in potentially new and exciting co-operation and projects as the centenary of the war is commemorated over the next four years.

An example of such a site was identified during the 2007 *Mendi* appraisal referred to above. One of the areas highlighted by the project with potential for further study was the other troopships involved in carrying the foreign labour contingents to the various theatres of war. One particular vessel stood out in this regard: the wreck of the French steamship *Athos*, which was torpedoed and sunk in the eastern Mediterranean on 17 February 1917, only four days before the loss of the *Mendi*.¹⁵

14 Gribble, j 2012, 'The SS Mendi, the Foreign Labour Corps and the trans-national significance of shipwrecks', in ed. Henderson, J, IKUWA 3: Beyond Boundaries, Proceedings of the 3rd International Congress on Underwater Archaeology, pp. 169-174.

15 <http://www.wrecksite.eu/wreck.aspx?134938>

The *Athos* was carrying a contingent of more than 1000 Chinese Labour Corps members to France. Also aboard was a battalion of Senegalese infantry and a small contingent of Cambodian troops.¹⁶ In preparing this paper, the authors were put in touch with the UNESCO office in Phnom Penh which has done some initial research into the Cambodian troops on the *Athos*. The hope is that this could result in exciting collaborative work in the coming years in respect to colonial involvement in, and experience of, WWI as seen through the lens of underwater cultural heritage.

With regard to plans for further work in relation to the *Mendi* during the commemoration of WWI, Sea Change Heritage Consultants, the African Centre for Heritage Activities and Wessex Archaeology have together submitted proposals in both the UK and South Africa for funding to further investigate the wreck. This work is also driven by changes to the status of the wreck of the *Mendi* since the original assessments. In 2009, the wreck became one of only two non-Royal Navy vessels designated under the United Kingdom's 1986 Protection of Military Remains Act, and it will soon also qualify for protection under the terms of the 2001 UNESCO Convention for the Protection of the Underwater Cultural Heritage.

Together, the organizations mentioned above plan to carry out detailed survey and recording of the wreck for archaeological purposes and to generate data which can in future be used to inform the management of the site and the monitoring of its condition.

The knowledge generated by the survey work, as well as further archival and oral history research will also be used to engage with the public in South Africa, the UK and beyond, to build a strong youth education and engagement component, and to create clear and sustainable legacy outcomes in respect of this largely forgotten and neglected part of the history of WWI.

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World War I Underwater Cultural Heritage and the Loss of HMS Aboukir, HMS Cressy and HMS Hogue 1914

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This paper addresses the protection and commemoration of the underwater cultural heritage of the First World War and the ultimate sacrifice made by thousands of men and women from many nations around the world.

The Royal Navy lost 1,060 warships in the waters of 34 countries worldwide, and these wrecks are still owned by the United Kingdom Ministry of Defence (MOD). It is estimated that 4,837 British merchant vessels were sunk, about 11.1 million tons of shipping. In addition, tens of thousands of lives were lost: Royal Navy sailors, merchant seamen and civilian passengers. This is a huge legacy which must not be forgotten.

About 2,500 of the merchant vessel wrecks are still owned by the UK Department for Transport. For a long time, this department has had a policy of selling First World War and Second World War wrecks for salvage, irrespective of any loss of life at the time of sinking. An example from WWII is the SS *Gairsoppa*, from which a cargo of 100 tons of silver was recently recovered.

These World War I wrecks have been out of sight and out of mind for nearly 100 years. Beginning on 4 August 2014, however, these wrecks will gradually come under the protection of the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage, in the case of those countries that have already ratified.

The UK has not yet ratified the convention, but it has adopted the annex to the convention as its policy for managing historic wrecks, particularly those designated under the Protection of Wrecks Act 1973. Recently, the UK Government has issued a new guidance for managing Royal Navy wrecks in international waters, in accordance with the annex to the convention, which is a very positive step forward.¹

¹ <https://www.gov.uk/government/publications/protection-and-management-of-historic-military-wrecks-outside-uk-territorial-waters>

The Sinking of the Three Cruisers

The issues surrounding the protection of WWI wrecks can be illustrated with a study of the sinking of His Majesty's Ships *Aboukir*, *Hogue* and *Cressy* (Figure 1) on 22 September 1914, some 22 nautical miles off Scheveningen on the Dutch coast.¹

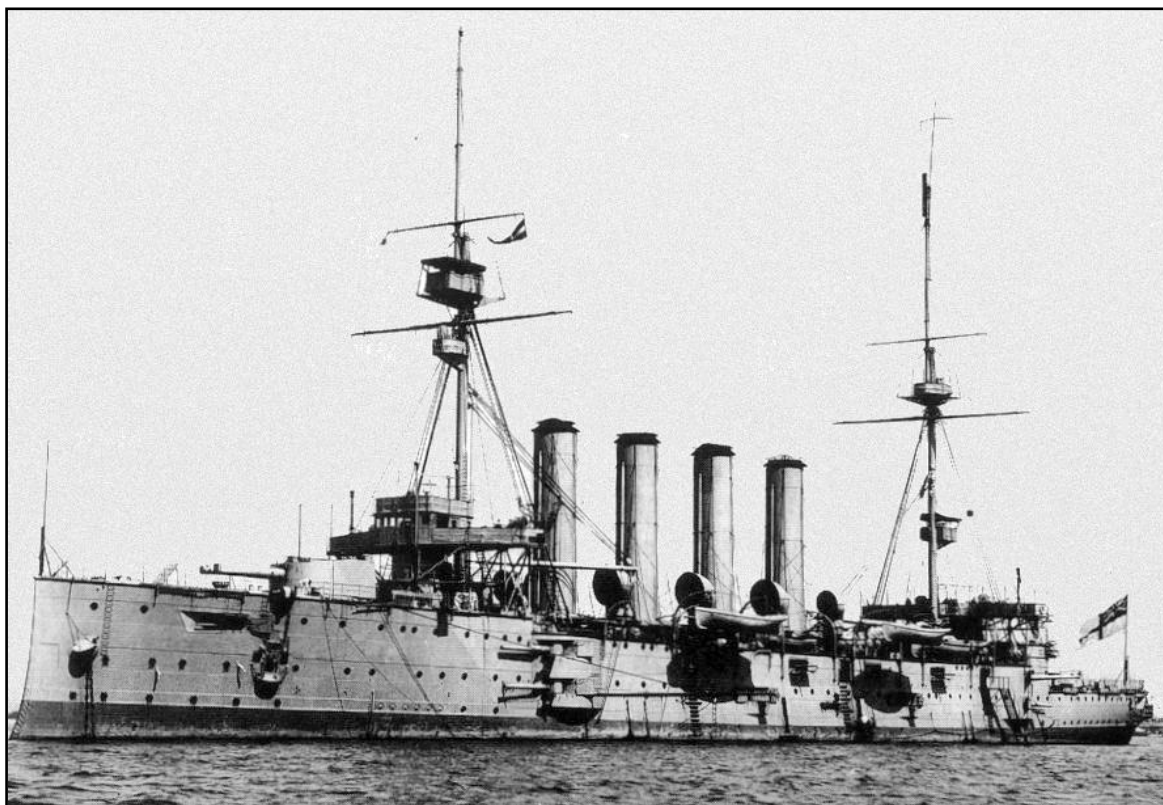


Figure 1. HMS Cressy © IWM (Q 38576)

Just 7 weeks after the outbreak of war, these three identical obsolescent 12,000 ton armoured cruisers, launched about 1902, were sent to patrol an area of the North Sea called the 'Broad Fourteens', between Holland and the UK. Their role was to protect the cross-channel passage of the British Expeditionary Forces to France and Belgium. Because of recent bad weather, they had been sent out without their normal destroyer escort, which should have protected them against torpedo attack.

At about 06.00 that morning, however, unknown and unseen, the German submarine *U-9*, under the command of Kapitänleutnant Weddigen, observed their smoke on the horizon, correctly identified them as three British cruisers and dived to action stations.

At 06.20, HMS *Aboukir* was torpedoed amidships, started to sink and the crew abandoned ship. Initially, it was thought that it had hit a mine, but it was soon

1 Coles, A. 1979, *Three before breakfast*, Kenneth Mason Publications Ltd, Emsworth, UK.

realised the ship had been torpedoed. Nonetheless, HMS *Hogue* and HMS *Cressy* approached the stricken vessel, stopped engines and launched all their boats to pick up survivors.

As HMS *Aboukir* was sinking, HMS *Hogue* was hit by two torpedoes, and at 06.55 it sank. However, HMS *Cressy* still remained on site picking up survivors from the water, despite the risk of being torpedoed.

Then, at 07.20, HMS *Cressy* was hit by a torpedo, but appeared not to be badly damaged until 10 minutes later, when it was fatally struck in the engine room by a second torpedo and started to sink.

15 minutes later, at 07.35, its job done and having fired all its six torpedoes, *U-9* departed at full speed on the surface to Wilhelmshaven.

Finally, *HMS Cressy* sank at 07.55. The whole action had taken only 95 minutes, and 3 British armoured cruisers now lay on the seabed.

The Rescue Operations

The survivors of this tragic event owed their lives to 2 Dutch merchant vessels, the *Flora* and the *Titan*, which saved over 430 men, and to 2 British sailing trawlers, the *Coriander* and the *JGC*, which picked up about 400 men. 837 crew members survived, but 1,459 died.

The crew were mainly reservists, older family men, and there were also a number of young cadets from Britannia Royal Naval College, Dartmouth. Many reservists came from the Chatham area in North Kent, and a large number were members of the local Coastguard; *U-9* wreaked havoc in many family lives in this small community in Southern England.

Aftermath of the Sinking

This disaster was final proof to the British Admiralty that the submarine was a very potent weapon, and that naval warfare would never be the same again. The loss of the 'Three Cruisers' was the second single largest loss of life during WWI, second only to the losses from the Battle of Jutland in 1916; coming so soon after the outbreak of war, it was a severe blow to the morale of the navy.

In Germany, Kapitänleutnant Weddigen and his crew were heroes, and the great feat of *U-9* was celebrated with the issue of the Weddigen Medal. Postcards were printed illustrating the 'Victories of *U-9*' showing HMS *Aboukir* sinking, HMS *Hogue* being torpedoed and HMS *Cressy* steaming in to help its compatriots before suffering the same fate.

Salvage on the Wreck Sites and UK Government Reaction

These wrecks hit the headlines in Holland and the UK late in 2011, when two Dutch vessels were reported to be undertaking salvage on the wrecks – an interference that was deemed inappropriate to their status as the last resting place of so many seamen, a status popularly referred to as ‘war graves’.

The wrecks have been popular dive sites for many years, and the Dutch diving community raised a petition requesting the Dutch Government to stop the salvage; there was considerable media interest in both countries. The Dutch Culture Ministry did attempt to prosecute the salvors, but was unable to do so under their existing heritage legislation.

The Joint Nautical Archaeology Policy Committee (JNAPC) was contacted by Henk van der Linden, the author and Dutch expert on the ‘Three Cruisers’.² The JNAPC raised the issue with the Ministry of Defence, which responded in late 2011 and early 2012 by saying:³

Her Majesty’s Government does not condone any unauthorised interference to military wrecks which sank with loss of life.

The wrecks were apparently sold for scrap to a foreign purchaser in the 1950s. There are no records to identify the purchaser nor circumstances or provisions of sale. Therefore our options are limited.

Since ownership appears to have been transferred we would not seek to designate / protect them under the Protection of Military Remains Act 1986 (PMRA). However PMRA would only apply to British passport holders and/or British flagged vessels.

The wrecks can no longer be considered ‘Sovereign Immune’ and thus are no longer eligible for protection under international law. We are working with the Dutch authorities and others with the aim of preventing inappropriate activity on military wrecks.

However, it has always been the view of the JNAPC that designating these wrecks under the UK legislation of the Protection of Military Remains Act 1986 would send a strong signal that the UK Government does not condone the salvage of these wrecks, and wishes them to be left alone and respected as ‘war graves’. Despite a number of requests, the Ministry of Defence did not appear to take further action to protect these vessels.

New Evidence

Recent research on other Royal Navy wrecks, including that of HMS *Empress of India*, came across references to the salvage contract for the ‘Three Cruisers’. The

2 van der Linden, H. H. M. 2012, *The Live Bait Squadron*, Uitgeverij Aspect, Soesterberg, NL.

3 UK Ministry of Defence, Personal Communication, 2014.

UK Hydrographic Office Wreck Cards also show that salvage was undertaken on the wrecks of HMS *Cressy*, HMS *Hogue* and HMS *Aboukir* in 1956 and 1961.

The first piece of evidence was a letter (Figure 2) from Mayer, Newman & Co. Ltd., a London salvage company, to the Director of Navy Contracts on 17 September 1963, stating:

We propose however that at the end of our salvaging operations the Wreck [i.e. the Empress of India] shall once again become your property.

We are, in other words, proposing that we should be liable in just the same way as we were when we salvaged the three Cruisers, the 'ABOUKIR', 'CRESSY' and the 'HOGUE', for yourselves some years ago.

This was the first indication that Mayer Newman had been the salvors of the three cruisers, and that after their salvage operations, the ownership of the cruisers had reverted back to MOD.

The second piece of evidence was an internal MOD memorandum (Figure 3) dated 28 November 1963, in which the Director of Navy Contracts wrote:

They [Mayer, Newman] propose, however, that on completion of their work any remains revert to us and we shall be liable for any subsequent actions which may arise involving these remains. The same kind of arrangement was made once before – see C.P.56228/54 attached – and this Department feels that this arrangement will bring the greatest return to Navy Votes.

The names Aboukir, Hogue and Cressy had been handwritten in the margin, indicating that MOD was aware that the three cruisers had reverted back to them after salvage. The salvage file appears to have been dated 1954.

It has not been possible to locate file C.P.56228/54, so unfortunately, no information on the actual salvage contract for the three cruisers is available today.

The third piece of evidence was a letter from the Director of Navy Contracts (Figure 4) to Mayer, Newman dated 17 March 1964, which said that the Department was prepared to enter into an arrangement whereby:

The wrecks to be sold to your firm ... subject to the attached conditions of sale (wrecks) ... except that on completion of your salvage operation, the ownership of the vessel will revert to the Admiralty. You would be required to inform this Department of the date when you have completed salvage operations, and until such notification the wreck shall remain your property.

In this letter, MOD was confirming that it would enter into a salvage contract

for the *Empress of India*, whereby ownership would revert back to the MOD once salvage operations had been completed.

The final piece of evidence was a letter from Mayer, Newman to the Director of Navy Contracts (Figure 5) dated 26 March 1964, accepting the contract of 17 March for the salvage of the wreck of HMS *Empress of India*, but very importantly adding:

For the salvaging of this Wreck we intend doing the same as we did during the salvaging of the Admiralty Vessels – HMS ‘HOGUE’, ‘ABOUKIR’ and ‘CRESSY’. We intend tackling this Wreck in conjunction with Messrs. Eisen und Metall AG., Korbmachersand 32, Hamburg, Germany. We have talked over this matter with your Mr. Coare and we presume that you will have no objections to this. It is of course understood that we ourselves accept responsibility under the contract.

This was the first indication that Eisen und Metall AG of Hamburg had been involved with the salvage of the three cruisers, and is consistent with MOD’s suggestion that the wrecks had been sold to a foreign purchaser, although by their own admission, no records survived to confirm this. It is also consistent with information received from Holland that Eisen und Metall had actually undertaken the salvage of the wrecks.⁴ However, it should be noted that this would have been in their capacity as sub-contractors to Mayer, Newman.

Records show that Mayer, Newman went into liquidation in 2001, so it would appear that no continuing salvage contract can still exist with them. It has not been possible to trace Eisen und Metall AG, which no longer exists in Hamburg. The company was sold to Hoechst and then Krupp, but even if they still existed, they were not the prime contractor, and could not claim any ownership of the wrecks.

Since the UK Hydrographic Office Wreck Cards do not show that any salvage took place after 1961, and the correspondence from Mayer, Newman dates from 1963 and 1964, it would appear that no further salvage contract was subsequently granted. Also, there can be no reason to disbelieve the claim by Mayer, Newman that it was the salvor of the three cruisers, because if this had not been true, MOD would undoubtedly have disagreed; on the contrary, MOD concurred with the claim throughout the correspondence.

It would appear, therefore, that Mayer, Newman & Co. Ltd. was in fact the salvage contractor for HMS *Cressy*, HMS *Hogue* and HMS *Aboukir*, and that sometime between 1961 and 1963, when their salvage operations had been completed, the ownership of the wrecks reverted back to the Ministry of Defence.

4 Klaudie Bartelink, Personal Communication, 2014.

The conclusion can therefore be drawn that the UK Government is still the owner of the wrecks of HM Ships *Cressy*, *Hogue* and *Aboukir* after all.

With the commemoration of the 100th anniversary of the sinking of these vessels taking place on 22 September 2014, it is recommended that the UK Government should:

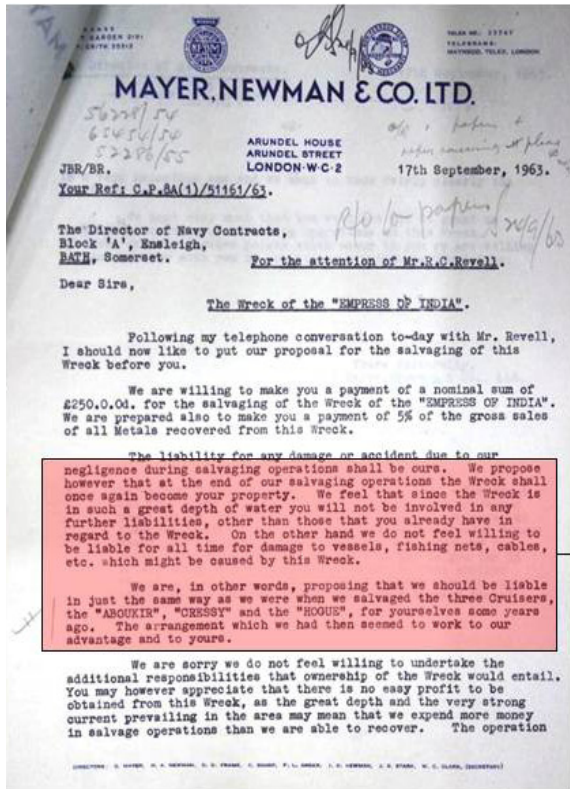
1. Claim Sovereign Immunity for the wrecks in order to attempt to prevent illegal salvage. It should, however, be recognised that claiming Sovereign Immunity does not always protect military wrecks from salvage, because it has been ignored by salvors.
2. Designate these wrecks under the Protection of Military Remains Act 1986, and thereby send a strong signal to all salvors that it does not condone interference with 'war graves'.

Recent correspondence from the First Sea Lord to the JNAPC indicates that the Ministry of Defence is re-considering the designation of these wrecks under the Protection of Military Remains Act.⁵ This is a very encouraging development.

However welcome these measures may be, the reality of the situation is that the wrecks of these 3 cruisers lie totally unprotected, a state that they and their 1,459 dead do not deserve.

The only realistic way that protection can be achieved for these historic wrecks, and other underwater cultural heritage from the First World War, particularly the Battle of Jutland wrecks in the North Sea, is for the United Kingdom, the Netherlands, Ireland, Germany, Denmark and Norway to ratify the UNESCO 2001 Convention as soon as possible, and follow the excellent examples set by Belgium, France, Spain, Italy and Portugal.

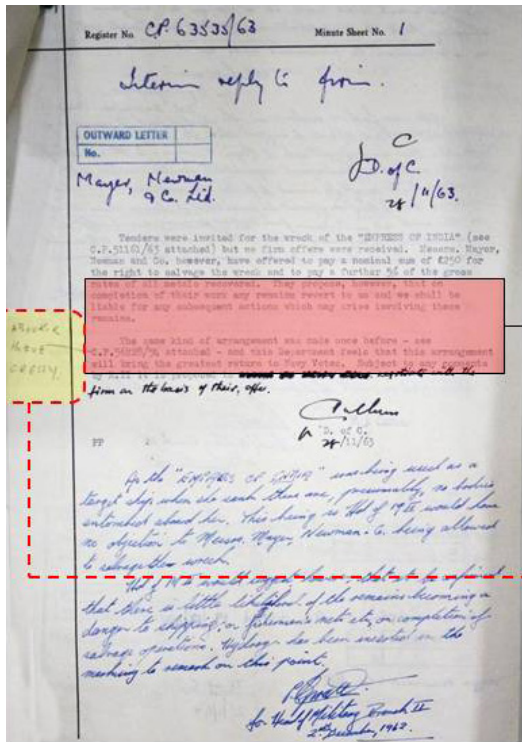
5 First Sea Lord, Personal Communication, 19 March, 2014.



We propose however that at the end of our salvaging operations the Wreck shall once again become your property.....we do not feel willing to be liable for all time for the damage to vessels, fishing nets, cables, etc. which might be caused by this wreck.

We are, in other words, proposing that we should be liable in just the same way as we were when we salvaged the three Cruisers, the "ABOUKIR", "CRESSY" and the "HOGUE", for yourselves some years ago. The arrangement which we had then seemed to work to our advantage and to yours.

Figure 2. Letter from Mayer, Newman 17 September 1963 © National Archives UK



They propose, however, that on completion of their work any remains revert to us and we shall be liable for any subsequent actions which may arise involving these remains.

The same kind of arrangement was made once before - see C.P.56228/54 attached - and this Department feels that this arrangement will bring the greatest return to Navy Votes.

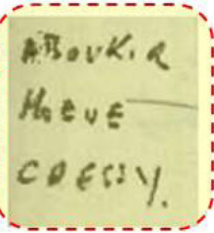
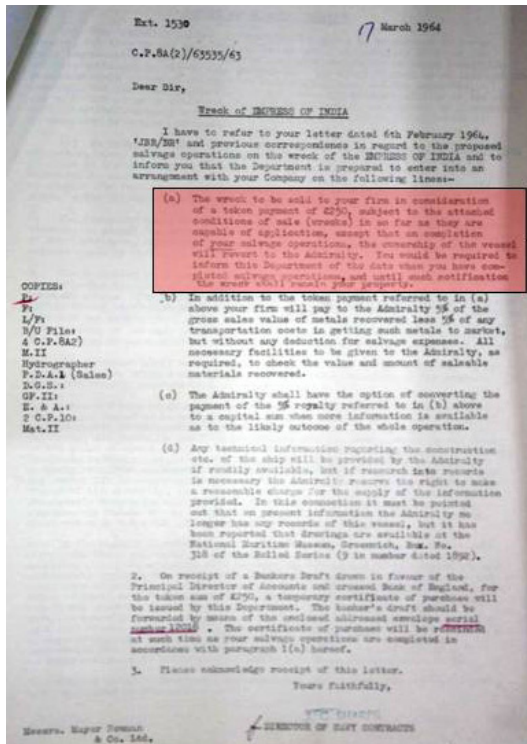
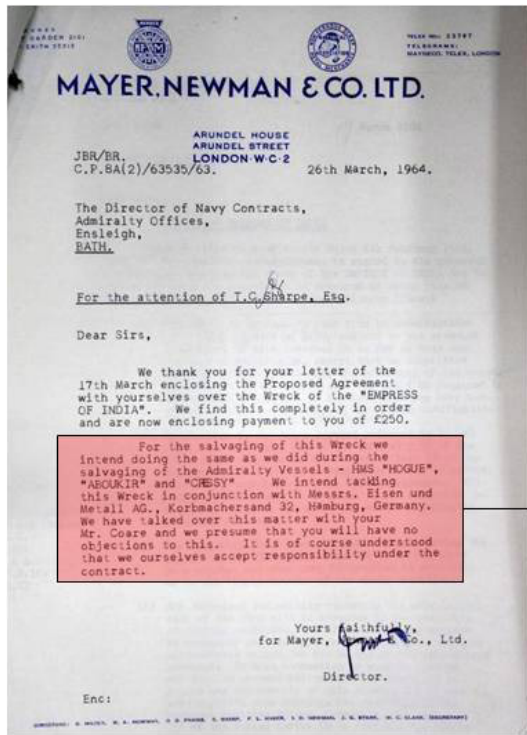


Figure 3. MOD Memorandum 28 November 1963 © National Archives UK



The wrecks to be sold to your firm subject to the attached conditions of sale (wrecks) except that on completion of your salvage operation, the ownership of the vessel will revert to the Admiralty. You would be required to inform this Department of the date when you have completed salvage operations, and until such notification the wreck shall remain your property.

Figure 4. Letter from MOD 17 March 1964 © National Archives UK



For the salvaging of this Wreck we intend doing the same as we did during the salvaging of the Admiralty Vessels – HMS "HOGUE", "ABOUKIR" and "CRESSY". We intend tackling this Wreck in conjunction with Messrs. Eisen und Metall AG., Korbmakersand 32, Hamburg, Germany. We have talked over this matter with your Mr. Coare and we presume that you will have no objections to this. It is of course understood that we ourselves accept responsibility under the contract.

Figure 5. Letter from Mayer, Newman 26 March 1964 © National Archives UK

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Section II: Threats and Challenges

Despite being an invaluable historic source and an important legacy of the war, the underwater cultural heritage of World War I has been subject to many threats over the past century. Natural processes such as corrosion weaken the metal hulls, causing them to fall apart over time. Human-induced processes such as commercial salvage and fishing further degrade sites. WWI shipwrecks have been salvaged nearly continuously since the end of the war, often resulting in major damage to the wrecks.

In addition to these direct threats to WWI underwater cultural heritage, there are numerous legal challenges making the full protection of this heritage difficult. Many states offer no legal protection to underwater cultural heritage from this period, other states offer insufficient protection. Furthermore, national legislation cannot protect underwater cultural heritage lying in international waters. The United Nations Convention on the Law of the Sea, 1982 (UNCLOS) offers limited protection, but still allows commercial salvage to take place. The UNESCO 2001 Convention on the Protection of the Underwater Cultural heritage was designed to make up for the shortcomings of UNCLOS in this matter, but states must ratify and implement the convention in order for it to have any real effect.



Figure 1. The Saraceni, a steamer sunk during WWI.
© Nicolas Job

Other challenges include developing methods of cataloging and protecting underwater cultural heritage, raising awareness about the importance of WWI underwater cultural heritage and the issue of maritime war graves. The papers in this section outline these threats and challenges, and propose solutions to overcome them. Only concerted international and national efforts can preserve this important cultural legacy for future generations.

Underwater Cultural Heritage from World War I: A Vast, Neglected and Threatened Heritage

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Exactly 100 years ago, on 28 June 1914, two shots fired in the streets of Sarajevo plunged the entire world into war. As a result, 70 million men took to the battlefield, and 19 million lost their lives.

In the century since that mindless slaughter, historians have concentrated on describing feats of arms and recounting the atrocities. They have thoroughly documented life in the trenches, the birth of aerial warfare and the development of the tank; the major battlefields have since been transformed into poignant remembrance sites. However, despite the profound interest in the First World War, one particular aspect of its heritage, that of underwater artefacts, has been largely ignored. Yet, during the conflict, fleets of every kind —military, merchant, and fishing — paid an extraordinarily heavy price. It is patently clear

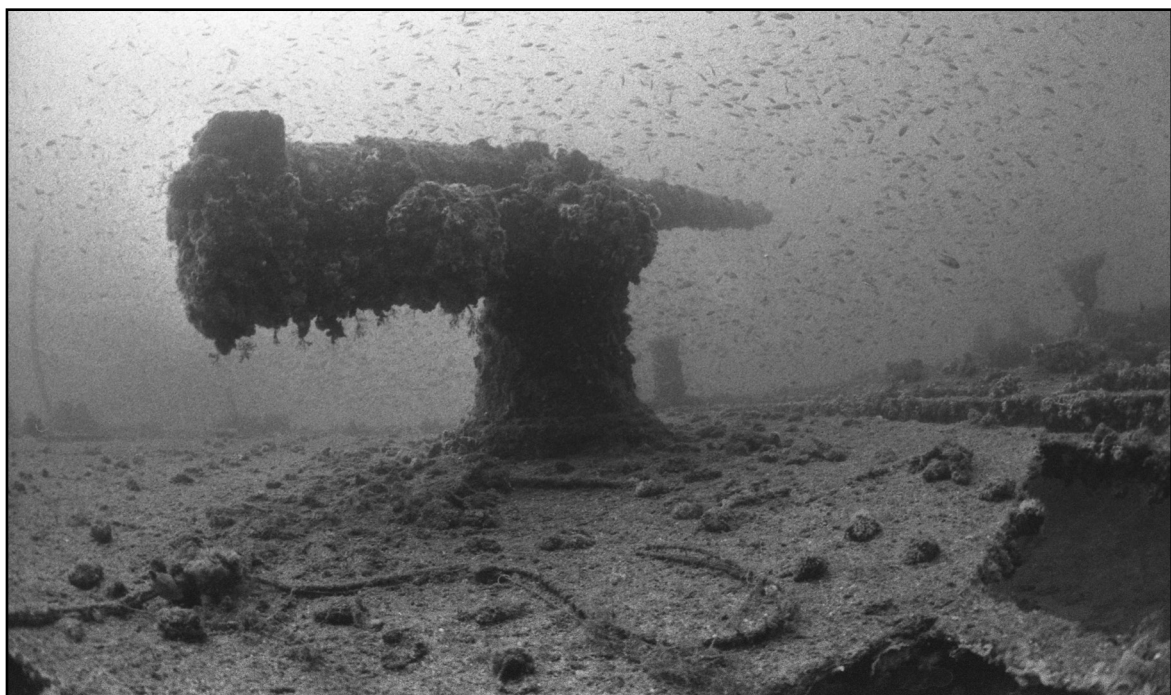


Figure 1. The Drôme, Marseilles, 23 January 1918. Struck a mine laid by UC-67.
© Patrice Strazzera/DRASSM

that, until very recently, the maritime archaeological remains of the First World War have aroused little enthusiasm among historians (Figure 1).

Worse still is the general indifference that greets news of the destruction of wrecks or their systematic looting by individuals whose only interest is to sell their finds on the maritime antiquities market.

Silent, tragic witnesses to one of the darkest moments in the history of any civilization, these ships, whose loss was often marked by acts of real heroism, are surely worthy of the spotlight that can be shone upon them. At a time when crisis after crisis is shaking the planet, it is perhaps not too presumptuous to suppose that reminding the public of some of these events, carefully chosen for their symbolic value or memorability, could lead to a heightened awareness of the horrors of war, horrors of which this underwater cultural heritage remains a stark reminder.

An Inventory Facilitated by the Work of Enthusiasts

It was, in any case, this conviction that, in the 1980s, prompted the archaeologists of France's Underwater Archaeology Research Department, known affectionately as 'le DRASSM', to map these archaeological deposits, and research the history of the wrecks they contain.

DRASSM owes much of its current interest in the wrecks of the WWI and



Figure 2. For decades WWI and WWII wrecks were being looted. Seized artefacts 2007. © Élisabeth Veyrat/DRASSM

WWII to the increasing number being reported by amateur divers. Indeed, more often than not, it was thanks to recreational divers that DRASSM specialists learned the exact position and history of a large number of contemporary shipwrecks located in French territorial waters. Most of these were found in the Channel and off France's Atlantic coast, where many enthusiasts had been diving on the wrecks of the two World Wars for many years. Several of these diving

groups have been systematically publishing the results of their research, notably on the internet. This is an initiative that we should be encouraging, because it

can only raise awareness among the public.

Unfortunately, for this very same reason, by 1980, looting was taking place on the most accessible of the sites (Figure 2). Thus began the inevitable hunt for steering wheels and chadburn telegraph devices.

Thankfully, the situation has improved considerably, and the diving community is much more respectful today of the integrity of these wrecks.

Without a shadow of a doubt, over the last 30 years, DRASSM's work has made good progress. There is now much more information available about WWI artefacts in French waters than at that time. Numerous wrecks remain, however, to be explored and researched; the task is immense. It is estimated that around 10,000 ships were sunk from 1914 to 1918, and a great many of them lie in French territorial waters. It was the increasing use of underwater weapons, submarines and mines, which accounted for such huge losses.

The figures speak for themselves: nearly 7,000 ships were sunk by submarines during the First World War, of which almost 2,000 foundered in French waters. Formidable weapons they may have been, but submarines themselves also suffered terribly during the war; the great majority of them, in both the First and Second World Wars, were lost in action.

A Threatened Heritage

In addition to the illegal removal of artefacts, several factors have contributed to the degradation of wrecks dating from the First and Second World Wars.

Industrial Salvage

The first of these factors involves the work of specialist companies, which, after each of the wars, legally obtained the right to salvage metal from the most accessible of the wrecks for scrap.

In France, such legislation is indeed particular to this category of underwater heritage, and separates it somewhat from the rest of the big family that constitutes maritime cultural property. Wrecks falling into this category have often been the subject of methodical dismantling and removal conducted by private firms, and even directly by the state, such as was the case in the aftermath of the Second World War (Figure 3).

Initially, operations to level and destroy what were deemed dangerous wrecks was guided by the legitimate concern for shipping safety. However, the fact that concessions continued to be awarded by the French authorities up to the

AFFAIRES MARITIMES
17, Rue de la Miséricorde
14000 CAEN

CONVENTION
=====

VU le décret n° 61-1547 du 26 décembre 1961, modifié par décret n° 78-847 du
03 Août 1978 ;
VU la circulaire ministérielle n° 6661/FC EN.6 du 22 août 1974 ;

ENTRE

Monsieur le Préfet, Commissaire de la République du CALVADOS

ET

Monsieur J. LEMONCHOIS, Entrepreneur de Travaux Maritimes à
PORT EN BESSIN,

Il est convenu ce qui suit :

Article 1 :

Monsieur LEMONCHOIS est autorisé à exploiter à son bénéfice, selon les modalités, qui seront exposées aux articles suivants, les épaves désignées à l'article 2.

Article 2 : EPAVES A EXPLOITER

L'autorisation concerne, sans exception ni réserve, toutes les épaves ou restes d'épaves métalliques ou en bois qui gisent dans les eaux territoriales bordant le littoral du Département du CALVADOS et délimitées comme suit :

- à l'Ouest l'axe du chenal d'ISIGNY délimite vers le large par le point de coordonnées 49° 23' 50" Nord et 1° 07' 40" Ouest, et depuis ce dernier point par une droite le joignant au point de coordonnées 49° 39' 32" Nord et 0° 55' 40" Ouest.

- à l'Est par le parallèle de latitude 49° 25' 25" Nord compris entre le littoral et le point de longitude 0° 03' 48" Ouest, et depuis ce point par une droite le joignant au point de coordonnées 49° 23' 05" Nord et 0° 23' 05" Ouest.

The authorization concerns, without exception or restriction, all the wrecks or remains of wrecks, both those made of metal and those made of wood, lying in the territorial waters along the coast of the Department of Calvados...

- à l'Ouest par le méridien passant par la pointe de Tracy
- à l'Est par le méridien passant par l'épave du navire "DURBAN",

- au Nord par l'ancienne limite des eaux territoriales françaises fixée à 3 milles

Article 3 : DEGAGEMENT IMPOSE DU PLAN D'EAU

Au terme de la convention, Monsieur LEMONCHOIS s'oblige à arasement des épaves dangereuses à la navigation du plan d'eau défini à l'article 2, à l'exception des épaves en béton armé formant les jetées des lieux-dits "OMAHA BEACH et UTAH BEACH".

Les conditions d'arasement en profondeur seront fixées en accord avec l'Ingénieur chargé du Service Maritime.

Monsieur LEMONCHOIS s'oblige également à nettoyer le littoral et les ports du Département du CALVADOS des épaves reconnues dangereuses et qui lui seront signalées par l'Ingénieur du Service Maritime ou l'Administrateur des Affaires Maritimes.

Figure 3. Document granting permission to salvage all wrecks, regardless of their age. Such agreements led to the salvage of many WWI wrecks in the aftermath of WWII. © DRASSM

early 1990s suggests other motivations were at work. Even today, specialist companies, often British, continue to apply for the permission to salvage cargoes of raw materials dating from the First World War.

In the last two years, three salvage requests were submitted to DRASSM for the wrecks of the *King Bleddyn*, sunk in 1916, as well as the *Eumaeus* and the *Barsac*, both lost in 1918. In all 3 cases, the companies concerned claimed to be interested only in the raw materials contained in the holds of these ships: copper in the case of the *King Bleddyn* (1,370 tons), tin in the case of the *Eumaeus*, and nickel in the case of the *Barsac* (2,000 tons). In addition to the cases we are already looking into, we know that many other commercial salvage operations are currently in preparation. Global shortages of raw materials are to blame.

These cases are, plainly, very difficult for archaeologists, because it is never easy to argue that a 2,000-ton cargo of copper or nickel ore is of the utmost historical, artistic or archaeological interest. In most cases, a representative sample of the cargo, perhaps a few hundred ingots or a few hundred kilos of ore, would be sufficient to satisfy our scientific requirements. Especially since most of the companies which now apply for these permits have stopped using the grab and the bucket in favour of methods that cause no damage to the wreck. For example, the *Barsac* is lying open on the seabed, and the salvage company claims that it can easily suck up the ore without touching the rest of the wreck. It is clear that, in such conditions it is, and will continue to be, difficult for many countries to protect these wrecks. Fortunately for the French, it is not the case, because the law gives DRASSM the power to approve or refuse any commercial operations on a given wreck. However, what happens in a country that does not have suitable legislation to protect underwater artefacts nor a specialist department to ensure the proper management of underwater cultural heritage?

In addition to the looting and industrial operations, there are at least three other factors that threaten the preservation of underwater heritage dating from the First World War.

Natural Deterioration of Metal Hulls

The first of these involves the deterioration of shipwrecks through corrosion. Unlike more ancient wrecks, generally made of wood, the ships that sank during the World Wars were mostly made of metal. Marine corrosion eats away at metal relentlessly, at a rate which is rarely less than 0.1 mm per year (1 mm every decade or 1 cm over a century). Even in very deep water, where corrosion is limited to the point of being practically non-existent, there are metal-eating

bacteria that have a voracious appetite. Indeed, the deterioration of iron hulls, armour plating, explosives and sealed containers is inevitable. As such, all metal wrecks are destined to disappear. It is just a question of time.

Trawlers: a Significant Source of Destruction

The second threat is linked to the fishing sector, and in particular, trawlers. It is easy to see the destructive effect this business has on shipwrecks (Figure 4). Every so often, we see the damage done by trawls on rust-weakened shipwrecks, and just as often a trawler will break off and drag up artefacts in its nets. Another consequence of fishing operations is that many wrecks today are covered in trawl-nets. This makes them difficult to reach, even rendering them dangerous to survey, both by humans and submersibles.

Furthermore, the fact that fish congregate around these wrecks explains why trawlers operate around them. It should not be forgotten that ships of the First World War sometimes carried very dangerous cargoes: tons of mercury and mustard gas, and thousands upon thousands of artillery shells. Through the relentless action of corrosion, some of these cargoes are today readily accessible and end up in the nets of fishing boats and even

in the stomachs of fish, thus entering the food chain. The consumption of fish that have ingested mustard gas could be very harmful to humans. Therefore, some wrecks dating from the First World War constitute a real danger for public health.

Leisure Activities: a Growing Threat on the Seashore

The last of the threats first appeared in France at the beginning of the new millennium, with the sharp increase in works to render beaches safe for certain leisure activities, such as swimming or sand-yachting (Figure 5). Numerous

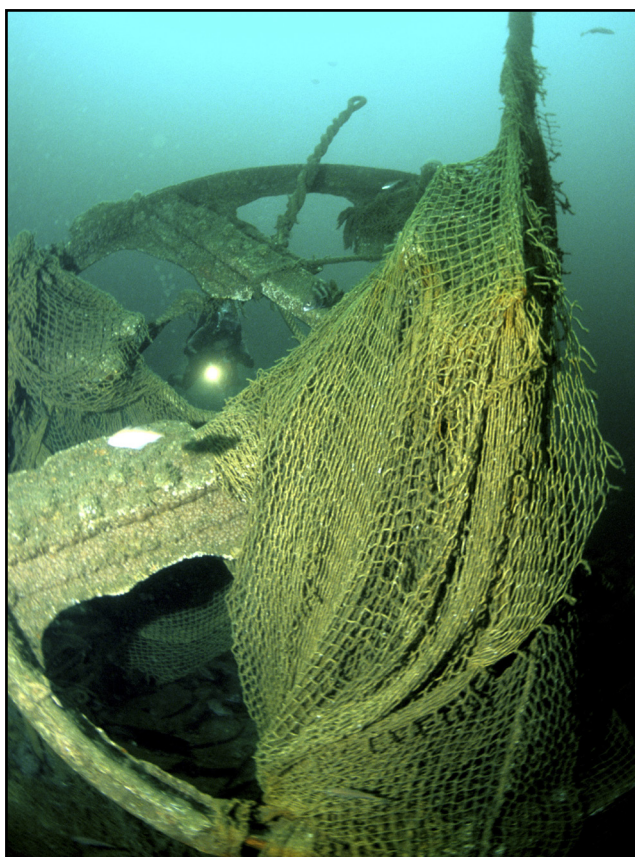


Figure 4. Trawl nets covering the Anglo Patagonian. Vendée. 11 July 1917. Torpedoed by UC-72. © Pascal Henaff/DRASSM



Figure 5. The Privateer. Equihen Plage. 23 December 1918. Ran aground. © Alain Richard/DRASSM

wrecks of ships that had run aground many years ago on the foreshore and had been partially buried in the sand were suddenly destroyed, in a total breach of the law; the destruction was often carried out by public authorities.

The Promotion and Enhancement of Underwater Heritage

For all these reasons, and many others that cannot be dealt with here, it is absolutely imperative that the scientific community inventory, study, protect and promote this heritage from the First World War.

In France, numerous diving associations are passionate about archaeology. They are well organized and contribute actively to the preservation of this threatened heritage. Every year since the year 2000, DRASSM has been granting them permits, and often finances their surveys in order to precisely locate contemporary wrecks, especially those of the two World Wars.

DRASSM would like to take the opportunity of the centenary of the First World War to highlight the importance of this heritage, and raise awareness among the public of the need to protect it. In the coming three years DRASSM intends to carry out major works on two symbolic shipwrecks. These are the *Danton*, a French battleship torpedoed in 1917 by the U-boat *U-64*, which was located in 2008 at a depth of 1,025 m, and the U-boat *U-95*, which was sunk in the Strait of Dover in 1918. DRASSM intends to produce a film, with the help of UNESCO, and to prepare an exhibition to raise awareness among the European public of the importance of underwater heritage from World War I.

Another Urgent Priority: the Underwater Cultural Heritage of WWII

Through surveys on these century-old vessels, through research into the circumstances of their loss, through the careful study of a moment brutally frozen in time, this underwater world can be reconnected with the present. DRASSM hopes also to take advantage of these works to alert the public authorities, and the public in general, to the existence of another unjustifiably-neglected page of our history that lies silent below the waves.

The current discussion regarding the heritage of WWI is useful. But, should the scientific community not also be demanding that underwater heritage from the Second World War be protected, it being just as fragile as that of the First World War? Should researchers wait another 25 years, until the year 2039, before concerning themselves with these neglected artefacts? There is, in fact, no time to lose. The countries of the world should be encouraged to take special measures to ensure the protection of World War II shipwrecks. When it comes to protecting the history of humanity, the age of the wreck cannot be the sole criterion for granting protection. History is a whole, and it is this whole that humankind is duty-bound to protect.



The Public Importance of World War I Shipwrecks: Why a State Should Care and the Challenges of Protection

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The Public Importance of World War I Shipwrecks: Why a State should Care

The centennial of the First World War highlights the fact that shipwrecks, as well as other underwater cultural heritage from that conflict, have now begun to come under the blanket of protection afforded by the UNESCO 2001 Convention on the Protection of Underwater Cultural Heritage (hereinafter UNESCO 2001 Convention). Under the Convention, underwater cultural heritage (UCH) is defined to mean, ‘all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years.’ Some of these sites from World War I have already been recognized as being significant under United States (US) law. For example, a number of these wrecks have been determined eligible for listing on its National Register of Historic Places under its National Historic Preservation Act. The public interest and importance of such heritage is reflected in a number of other US laws, and in international law protecting heritage resources.

Beyond the heritage resource laws indicating that states care about preserving our respective history and culture, a number of wrecks have other values that should concern or interest a state. For example, wrecks with the status as a war grave or memorial, or historical prototypes of ships and their technology that survive in a submerged museum-like status all provide incentives for preservation. In some cases, a collection of sites or elements can become extensions of national parks or monuments underwater, such as the famous near-shore naval battlefield of Gallipoli in Turkey; this also supports preservation.

The 1982 Law of the Sea Convention (LOSC) is recognized by the US as reflecting customary international law. Under Article 303(1) states have a legal duty to protect objects of an archaeological or historical nature found at sea. States, in some cases, have fulfilled this duty to protect such heritage by assessing and determining an appropriate approach to the long-term management of underwater cultural heritage. In the United States, again as an example, long-term management is sometimes accomplished through an assessment of whether the heritage is 'significant', and thus eligible for listing in the National Register of Historic Places. Alternatively, and more in line with an ecosystem management approach to resources, assessments of shipwrecks can also focus on determining whether a vessel is a potentially polluting vessel or a hazard to navigation at one end of a spectrum, or a heritage asset to be protected, researched, and interpreted on the other end of the spectrum.

Under Article 303(1), there is also a duty for states to cooperate with one another in protecting UCH. So another factor to consider is the location of the UCH. Is one nation's UCH within another state's waters? There are a number of WWI foreign vessels that were lost in transit to attack, or wrecked by other means, such as vessels in a convoy lost to weather or accident, or warships lost in battle. In some cases, these vessels may not have much relative importance to the state in whose waters they rest, but they have considerable significance to their state of origin.

Due to its late (1917) entry into the war, the US has relatively little UCH from the First World War. The first shipwreck of the war of note to many in the US was the sinking of RMS *Lusitania*, lost to a U-boat attack off Ireland on 7 May 1915, at a cost of 1,195 lives, 128 of whom were US citizens. The subsequent restriction by Germany of submarine warfare to warships, to preserve civilian passengers and crew, staved off pressure for the US to enter the war for a couple of years. The sinking of vessels with some connection to the US continued, and affected US views of the war, including the British steamer *Falaba*, sunk by *U-28* on 28 March 1915, with 128 lost, including one US citizen, and the SS *Arabic*, sunk by *U-24* on 19 August 1915, with a loss of 44 lives, including 3 US citizens. However, it was not until the resumption of unrestricted submarine warfare, and the subsequent loss of a number of private commercial vessels to U-boat attack, that renewed US indignation grew sufficiently to abandon efforts for peace and go to war. The wrecks were clearly 'of interest', as the graves of US citizens increased, along with disruption of trade and commerce. The use of unrestricted warfare against merchant vessels and civilians was ultimately a primary factor in the American decision to declare war on Germany and its allies on 6 April 1917. When war came for the US, it did so with U-boat campaigns to address its interests and its allies. The US destroyers *Chauncey* and *Jacob Jones* were on convoy duty in the eastern Atlantic when they were lost on

20 November and 6 December 1917 respectively. The first U-boat to come into US waters, *U-151*, did so in May 1918, cutting submarine cables, laying mines, sinking three schooners with gunfire and seven ships with torpedoes or bombs placed in them after they were intercepted and stopped. The mines left by the U-boat damaged and sank other ships; in all, the cruise of *U-151* resulted in 23 naval casualties. Subsequent attacks by *U-117*, *U-140*, and *U-151* resulted in the loss of 30 ships involved in US commerce. *U-156* also shelled the US coastal town of Orleans, off Nauset Beach, Massachusetts on 21 July 1918. This was the first time foreign enemy shells had landed on American shores since the War of 1812. The US also lost five naval or Coast Guard vessels, the greatest loss being the armored cruiser *San Diego*, which sank as a result of mine off New York. The Coast Guard cutter *Tampa* was torpedoed and lost with all hands on 26 September 1918, and the Diamond Shoals Lightship, *LV-71*, was shelled and sunk by *U-140* on 6 August 1918 at its station off North Carolina's Cape Hatteras in US waters. As is often the case with sovereign vessels, the US retains ownership of the wrecks, and the three that sank with loss of life are considered war graves. The *San Diego* has other 'values', as it lies in relatively shallow water and is accessible to divers. It is listed in the National Register of Historic Places, and is a well-known and popular dive site. USS *San Diego* is also an example of UCH that has been subjected to unlicensed recovery and salvage. UCH of WWI may also be found just 30 miles from Washington D.C. in Mallows Bay (Figure 1).



Figure 1. Abandoned vessel in Mallows Bay. Built during WWI to transport supplies. © James Delgado/NOAA

One other warship lost during the war and listed in the National Register of Historic Places is SMS *Cormoran*, a German Navy commerce raider attached to the Graf von Spee's East Asiatic Squadron. Fleeing Tsingtao, and pursued by Japanese warships, the *Cormoran* eluded capture or destruction. On 14 December, it arrived at the US harbor of Apra, Guam to take on coal. For a number of reasons, the US Governor of Guam let the *Cormoran's* captain take only a small amount of coal, and ordered the raider to either leave in 24 hours, or go into detention. The *Cormoran* remained in Guam along with its captain and crew. With the entry of the US into the war on 7 April 1917, the *Cormoran's* captain ordered his ship scuttled; nine of the crew died in the scuttling and are buried ashore in Guam. The *Cormoran's* wreck, partly salvaged, remains in place, on its side, in 34 m (110 ft.) of water. The wreck has been archaeologically mapped, but not extensively studied, and was listed in the National Register of Historic Places in 1975. Adjacent to the *Cormoran*, is a torpedoed Japanese transport, the *Tokai Maru*, sunk on 27 August 1943; it too is listed on the National Register (1988). The *Tokai Maru's* keel rests adjacent to the *Cormoran's* stern. The two wrecks are highly popular dive attractions, with many guidebooks and articles noting that this is one of the few places underwater where a diver can literally reach across a narrow gap and place their hands on ships from two World Wars.

With the exception of the *Cormoran*, and other wrecks in a park in Guam, wrecks from WWI in US waters are not currently part of any US marine protected area; the same also holds true for a number of WWII wrecks. The War in the Pacific National Historic Park in Guam includes Outer Apra Harbor, where 29 shipwrecks and 3 aircraft from WWII rest on the seabed. Management of the sites is the responsibility of Guam's Historic Preservation Office. In addition, there is a memorandum of agreement between the Guam HPO and the US Navy in which training and other exercises that may affect sensitive cultural resources are controlled and in some cases restricted, including over the *Tokai Maru* and *Cormoran* sites. The site is an example of how challenging it can be to protect UCH, and the international cooperation that may be necessary for that purpose.

Cooperation among nations that were once at war with one another also provides an opportunity to protect UCH not just for preservation, but to learn the lessons from the war, to celebrate the peace among those nations now, and help foster peace among all nations in the future. One such challenge in the US is our project to document shipwrecks involved in the Battle of the Atlantic and other ideas that have been inspired by the UNESCO scientific conference and WWI commemorative 2014 meeting in Bruges. Although no U-boats were lost off the US coast in combat during WWI, 178 U-boats were lost elsewhere during the war, with some 5,000 men. The U-boat fate in WWII, however, was

a different matter. In all, 734 boats, with some 40,000 men, were lost in that war. Of these, several were lost in waters subject to US jurisdiction. The US Government considers them all war graves, heritage sites, and the property of the German Government, and has cooperated with, and intends to continue to cooperate with, Germany to protect these sites to the best of its ability.

While some WWII wrecks are in parks or marine protected areas, there is no comprehensive park or sanctuary that specifically deals with the underwater cultural heritage of either conflict. The US National Oceanic and Atmospheric Administration (NOAA), working with the University of Rhode Island's Dr. Rod Mather, has funded research to locate, map and assess the wrecks of captured German warships off US waters in the Atlantic Ocean. This collection of ships, known colloquially as the 'Billy Mitchell Fleet,' (named for the Army officer who spearheaded the tests) has interest to the US and NOAA for historical reasons, as the ships represent an interesting and significant period in the post-war years when they were used as targets in controversial but demonstrative tests of naval aircraft's ability to sink warships. The wrecks are also of scientific interest for biological reasons as habitats, and for corrosion studies. There has been informal discussion among various parties as to whether these wrecks might comprise a unique park or sanctuary, but no formal proposal has been made, and under a recent US regulation, the creation of a national marine sanctuary where none exists is a lengthy process that begins with a nomination by communities or other partners. That has yet to take place with the Billy Mitchell Fleet.

The Battle of the Atlantic as a special marine area is a concept suggested by some members of the public, which is being considered by NOAA and others. Off the coast of the US State of North Carolina, one alternative being weighed is a possible expansion of the USS Monitor National Marine Sanctuary to include a collection of ships sunk during WWI and WWII.



Figure 2. One of the many WWI-Built ships abandoned in Mallows Bay. © James Delgado/NOAA

In the US State of Maryland, citizen groups are discussing nominating a collection of wooden steamships, numbering in the hundreds, that lie in Mallows Bay in a graveyard of these hastily built for use in WWI and ultimately abandoned (Figure 2). This last collection merits interest at the local, regional

and perhaps national level not only for the history, but also because the wrecks, in a shallow freshwater bay, are now merging with the natural environment to form a unique ecosystem and a laboratory in which a once industrial area and graveyard for ships becomes a refuge or a sanctuary available for study and public recreation.

In both of these cases, what is key is that multiple values for these resources and a variety of potential uses exist beyond the commemoration of a specific vessel, battle, or of the war itself. In terms of the latter example, the collection of wooden steamships represents, perhaps in an ideal sense, a real-life application of swords beaten into plowshares, as vessels built for war are now a habitat for estuarine life and a setting for recreation and contemplative reflection on the costs of war and the potential healing powers of nature at time of peace. In that, there is the reality that for many of these wrecks, the natural processes working/operating on them has rendered them into something more than a shipwreck. They are natural habitats, artificial reefs in one sense, with values inclusive of their natural resources, which in some cases, render them scientifically of interest to disciplines other than archaeology or history. The biological colonization of these wrecks also offers, at times, compelling reasons to visit them for recreational purposes, photographing the marine life or simply observing it in passive enjoyment.

Importance of our Cultural Heritage as Reflected in US Law

In the US, the preservation of historic sites started with local government and private initiatives preserving sites associated with the establishment of the US and the founding leaders. For example, the 1816 purchase of the building associated with the Declaration of Independence and the US Constitution, and the purchase of George Washington's headquarters in New York, and home in Mount Vernon, Virginia in the 1850s. While Congress authorized the purchase of some land associated with Civil War battles in 1890, it was not until the enactment of the Antiquities Act in 1906, that a US national historic preservation program was established, primarily for terrestrial sites. In 1975, NOAA designated the first national marine sanctuary to protect the wreck of the USS *Monitor*, 17 miles offshore on the US continental shelf. At that time, the wreck was under the high seas, well outside what was then the US 3 nautical mile territorial sea and 12 nautical mile contiguous zone, so enforcement was limited to US flag vessels and nationals. Since the extension of the US contiguous zone to 24 nautical miles, the laws protecting USS *Monitor* may now be enforced against foreign flag vessels and nationals, consistent with international law. In the 1980s, the US Congress enacted two laws to specifically protect UCH, the Abandoned Shipwreck Act and RMS *Titanic* Maritime Memorial Act. In regard to the *Titanic*, the US Congress noted that

international cooperation was needed to protect the wreck of the *Titanic*, as it is well outside of the maritime zones subject to US jurisdiction. The 2001 President's Statement on Sunken Warships provided notice of the US policy to protect US and foreign government vessels from unauthorized disturbance, wherever they may be located, in a manner consistent with international law. In 2004, the Sunken Military Craft Act was enacted, codifying this US policy and underlying case law, and protecting US and foreign sunken military craft, including craft from WWI and WWII.

At the international level, the Convention for the Protection of Cultural Property in the Event of Armed Conflict (1954 Hague Convention) was adopted at The Hague in the Netherlands in 1954 in the wake of massive destruction of cultural heritage during WWII. The 1954 Hague Convention is the first international treaty focusing exclusively on the protection of cultural heritage in the event of armed conflict. It covers immovable and movable cultural heritage, including monuments, architecture, art or history, archaeological sites, works of art, manuscripts, books and other objects of artistic, historical, or archaeological interest, as well as scientific collections of all kinds regardless of their origin or ownership. Next was the 1970 Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property (UNESCO 1970 Convention) to curb the increasing illicit international trafficking of cultural property, and the 1972 World Heritage Convention (WHC) to recognize the protection of our natural and cultural heritage of outstanding universal value. While these conventions focused on terrestrial sites, it may be worth exploring how they may apply or provide guidance on how to better protect UCH from WWI and WWII.

The 1982 LOSC was the first treaty to specifically address UCH, albeit in very broad terms. The UNCLOS sets forth a comprehensive legal framework for the use and protection of the sea, the seabed and subsoil, and the marine environment, including both natural and cultural heritage resources. In addition to providing a balance of jurisdiction between coastal states and flag states over uses of the sea in these various maritime zones, Articles 149 and 303 provide a framework for the protection of UCH found at sea. Article 149 provides that,

All objects of an archaeological and historical nature found in the Area shall be preserved or disposed of for the benefit of mankind as a whole, particular regard being paid to the preferential rights of the State or country of origin, or the State of cultural origin, or the State of historical and archaeological origin.

While it is not always clear which nations have preferential rights, it is clear that they would include the flag states of the sunken ship and perhaps the nations from where the passengers, crew or cargo came or are returning to. Article 303(1) sets forth a duty for all States to protect objects of an archaeological and

historical nature found at sea, and a duty to cooperate to ensure that protection. While Article 149 applies just in the Area (i.e., seabed and ocean floor and subsoil beyond the limits of national jurisdiction, under the high seas), Article 303 is under Part XVI (General Provisions) and applies in all of the maritime zones. As most, though not all, of LOSC is now recognized as reflecting customary international law, it may be argued that the duty to cooperate to protect UCH is an established part of international law. While LOSC does not recognize a coastal state's authority and jurisdiction to unilaterally enforce its UCH laws against a foreign-flagged vessel on the continental shelf beyond the 24 nautical mile contiguous zone, nations may enter into agreements, such as the UNESCO 2001 Convention, to address their duty to cooperate in the protection of UCH. In addition, there appears to be a consensus among professional archaeologists and US agencies that any salvage or recovery of UCH should be conducted in compliance with international scientific standards as reflected in the Annex Rules of the UNESCO 2001 Convention.

Adopted in 2001 by UNESCO's General Conference, and entering into force on January 2, 2009, the UNESCO 2001 Convention represents an international response to the concerns of looting and destruction of UCH. The UNESCO 2001 Convention is based on four main principles: 1) the obligation to protect UCH; 2) in situ preservation policies and scientific rules for research and recovery; 3) a prohibition on commercial exploitation of this heritage; and 4) cooperation among states to protect this heritage, particularly in regards to training, education, and outreach. The primary purpose of the UNESCO 2001 Convention is to ensure and strengthen the protection of UCH. The geographic scope of the UNESCO 2001 Convention includes UCH located in all maritime zones, including on the continental shelf and seabed Area beyond national jurisdiction. Under article 10, a party agrees to protect UCH by controlling 'activities directed at underwater cultural heritage' in the exclusive economic zone (EEZ) and on the continental shelf through a system of authorizations or permits that require compliance with the current international standards and requirements for research and recovery in the Annex Rules. There is also an obligation for parties to use the 'best practicable means at its disposal to prevent or mitigate any adverse effects that might arise from activities under its jurisdiction incidentally affecting underwater cultural heritage.' As of December 2014, there are 48 parties to the UNESCO 2001 Convention, including France, which was the first 'major maritime power' to ratify the UNESCO 2001 Convention and become a party. The United States has stated that the Convention, "particularly the Annexed Rules, preamble, and general principles, reflects substantial progress by the global community in developing means to protect submerged cultural heritage. However, the United States continues to have serious concerns with certain provisions in the Convention. These concerns have prevented our country from becoming a State Party. For

example, the United States cannot join a convention that is not consistent with the jurisdictional regime set forth in the United Nations Convention on the Law of the Sea.” Regardless of whether it is a party, the United States has a number of laws and policies that are consistent with the obligations imposed on parties to the UNESCO 2001 Convention, including the National Historic Preservation Act, the National Marine Sanctuaries Act, the Sunken Military Craft Act and the President’s Statement on Sunken Warships.

The Legal and Other Challenges in Protecting UCH from World War I

Protection of wrecks from WWI, as with all UCH, starts with the challenge of balancing the interests of coastal states and flag states consistent with international law as reflected in UNCLOS. Under Article 303(2), coastal states may presume that the removal of UCH such as WWI wrecks from the seabed within the limit of the 24 nautical mile contiguous zone would be subject to its contiguous zone jurisdiction. Preserving WWI wrecks in the 200 nautical mile EEZ and on the continental shelf seaward of the 24 nautical mile line presents even greater challenges. Nations have coastal state jurisdiction over activities directed at environmental protection and natural resources of the continental shelf and EEZ that may be triggered by activities directed at a WWI wreck as UCH often becomes an intricate part of the environment, e.g., becoming a foundation for growth of marine life and acting as an artificial reef providing habitat for marine life. Preserving WWI wrecks in the Area under high seas is beyond national jurisdiction.

Sovereign immunity is a long-standing principle of respect and cooperation among nations under customary international law and is reflected in treaty law, including LOSC and UNESCO 2001 Convention. In general, sunken foreign warships are not subject to arrest under the maritime law of salvage, seizure or other enforcement actions by the coastal state without the consent of the foreign flag state. This principle of sovereign immunity should be distinguished from the rights of owners to deny salvage under the maritime law. Cooperation between Spain and the US, and respect of the rights of owners and sovereign immunity of sunken warships by a US court sitting in admiralty jurisdiction, resulted in the dismissal of a salvor’s claims to treasure associated with wreck of the Spanish warship *Mercedes*, and the return of some 17 tons of silver and gold to Spain, the owner of the wreck.. Provisions of the UNESCO 2001 Convention are consistent with LOSC Article 303. In carrying this authority, the coastal state has a duty to protect heritage from WWI and to cooperate with the foreign flag state in carrying out that duty to protect WWI wrecks. These duties to protect and cooperate apply to warships, and still involve the need to respect of ownership and sovereign immunity of the flag State. This includes a

duty to get consent of the foreign flag state for activities directed at their WWI wrecks, including those that are within territorial sea and internal waters. The US case concerning the *Mercedes* is an example of how states relied on shared views on ownership and sovereign immunity of sunken state craft to address a challenge under the law of salvage. There are, of course, challenges other than the legal ones. The respectful treatment of WWI wrecks as gravesites is perhaps the most difficult challenge all nations face.

Other challenges in regard to the UCH of WWII are safety issues in regard to munitions and risks to diver safety; this problem is not unique to the US situation, nor are the problems associated with partially cleared or uncleared naval mine fields and munitions dumps, where trawling or other activities may bring munitions to the surface. There is also the issue of potential environmental pollution from munitions, hazardous cargo, fuel and other materials on wrecks. The issue of fuel or other oil on WWI wrecks is less of a problem, as a number of vessels at that time were coal-fired, but fuel oil carrying vessels are present in that population of wrecks, and dominate the known and suspected population of WWII wrecks. Considerable resources and attention have been focused on this issue in the US, by a variety of Federal partners, working with states and local governments. This is because there are concerns about potential environmental impacts from the eventual release of cargo and fuel from the 20,000 shipwrecks in US waters. Most wrecks, unless they pose an immediate pollution threat or impede navigation, are left alone and are largely forgotten until they begin to leak, often becoming the source of 'mystery spills' that harm coastal economies and environments.

On 20 May 2013, NOAA presented the US Coast Guard with a national report finding that 36 sunken vessels scattered across the US seafloor could pose an oil pollution threat to the nation's coastal and marine resources. Of those, 17 were recommended for further assessment and the potential removal of both fuel oil and oil cargo. The report, part of NOAA's Remediation of Underwater Legacy Environmental Threats (RULET) project, identifies the location and nature of potential sources of oil pollution from sunken vessels. Knowing where these vessels are helps oil response planning efforts, and may help in the investigation of reported mystery spills - sightings of oil where a source is not immediately known or suspected. The sunken vessels are a legacy of more than a century of US commerce and warfare. The scope of the problem is much more manageable than initially thought by the NOAA project team. With this assessment reliable bounds can be put on the potential oil pollution threats, and start to plan accordingly. The distribution of vessels is skewed heavily to WWII casualties in the Battle of the Atlantic. Some of these vessels may be eligible for listing under the National Register of Historic Places; in addition, many of them are either civilian or military gravesites. In these cases,

NOAA has worked with others to assess the eligibility, and in some cases, has listed wrecks to recognize their heritage value. However, understanding the historical significance does not overrule steps needed to address imminent environmental threats. In those cases where remediation has been undertaken, it should be noted that those remediation efforts have been sensitive to cultural resources and war grave/memorial values of the vessels. Of particular note is the ongoing monitoring and detailed assessment undertaken by the National Park Service with the wreck of USS *Arizona* at Pearl Harbor. Arguably one of the most sensitive war grave sites in American waters, and a heavily visited memorial, the *Arizona* continues to leak its fuel after more than 70 years on the bottom. Studies have assessed the origin of the leak, the rate of flow (which is minimal) and the ongoing corrosion and structural changes to the wreck to determine if a catastrophic hull failure and major release might happen. These studies have shown such a possibility is decades if not a century away, and even then, if the *Arizona* collapsed, it might well not trigger a major spill. One interesting aspect of the *Arizona* oil leak is that it has become a symbolic aspect of the wreck's significance, as a number of visitors liken it to a still-bleeding wound, or tears, and argue that it conveys a timeless message about war and its consequences.

Conclusion

The centennial of WWI brings to the forefront the fact that UCH from that conflict is starting to be protected by the UNESCO 2001 Convention. The importance of WWI wrecks, like other UCH, may also be found in other international and domestic laws protecting our cultural heritage. Some of these WWI sites are already being protected by the US and other nations. They provide examples of why states care – it's because of the historic, archaeological, and cultural values including the respectful treatment of sites as a war grave, a memorial park, monument or sanctuary. While there are a number of challenges, the US NOAA is taking a leadership role in protecting wrecks from WWI and WWII and cooperating with other nations in such protection in a manner that is consistent with international law and respects the ownership and sovereign immunity of foreign wrecks from WWI and WWII. We hope that cooperation among allies and former enemies in preserving our submarine/underwater cultural heritage from the World Wars will not only further research and education, but a lasting peace.

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World War I Underwater Cultural Heritage and the Protection provided by the UNESCO 2001 Convention

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Figure 1. One of the thousands of shipwrecks left by WWI. © Frank Leloire

One century ago, the World War I (hereinafter WWI) presented a shocking reminder of the scale of bloodshed and destruction that humans are capable of inflicting on one another. As the world enters into the centenary years of the war – 2014 to 2018 – a multitude of commemorative events have been planned; some will celebrate military victory, while others will seek to highlight the human suffering of the war in an effort to promote peace. As these events take place at the famous locations of the war on land, however, an incredible legacy of the war remains largely forgotten underneath the waves of the ocean.

The sunken remains of the battleships, submarines and merchant vessels of WWI present a stark reminder of the brutality of war, and remains as some of the last untouched landscapes left by the war (Figure 1). These monuments also give testimony to the rise of submarine warfare, a form of war that had an especially devastating effect on civilian populations. The underwater cultural heritage of the WWI, although tragic in its message, can also serve as a force for peace and reconciliation, as it reminds us of the true destructive nature of

war.

The passing of 100 years since the outbreak of WWI offers an opportunity to look back on our tragic history, but it also brings the promise of a hopeful future for the underwater cultural heritage of the war; this heritage has, at best, been largely ignored, and at worst, been destroyed for economic gain.

In much of the world, there currently exists little to no legal protection for the shipwrecks of the World War I. As the centenary of the sinking of these vessels passes, however, they will begin to fall under the protection of the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage. This international convention provides guidelines and legal protection for all remains of human activity that have been submerged for over 100 years. It is the leading international legal instrument for the protection of such heritage. Over the next four years, as the wrecks of WWI begin to fall under the mandate of the convention, work must continue to study, protect and utilize the underwater cultural heritage of the World War I for the benefit of the public.

Underwater cultural heritage presents many opportunities for the global community, yet it is also threatened on multiple fronts. Efforts must continue to both fight these threats and promote this heritage, and the 2001 UNESCO Convention will play an integral part in such efforts.

The Scientific Conference that UNESCO organized on WWI underwater cultural heritage took place in Bruges, Belgium, from 26 to 28 June 2014. The contributions made during that conference, presented here, represent an important milestone in the efforts towards protecting and utilizing WWI underwater cultural heritage. These papers underline the importance of WWI shipwrecks, and serve to raise their visibility in the public eye.

Although the focus of these proceedings is WWI underwater cultural heritage, it must be mentioned that the threats currently menacing thousands of WWI shipwrecks are the same that threaten the wrecks of WWII. While the legal protection for WWI underwater cultural heritage now provided by the 2001 Convention closes a gap, it cannot be forgotten that other sites, no less important, remain in dire need of protection.

The 2001 UNESCO Convention

The 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage (hereinafter the 2001 Convention) represents the response of the international community to the threat of the pillaging and looting of historic shipwrecks and other underwater cultural heritage sites around the world. This is a threat that is equally as dangerous to sites from the World War I as it is to

the more ancient heritage that frequently captures the public imagination. The 2001 Convention was adopted on 2 November 2001 in Paris, and came into force on 2 January 2009. As of June 2015, 51 states have ratified the convention, and a number of other states are currently in the process of ratification. The convention fills a gap in international cultural heritage legislation, by providing rules for the management of cultural heritage in international waters. It also provides guidelines for the management of cultural heritage in territorial seas, and includes a set of rules for activities directed at underwater cultural heritage (the Annex), which provides much needed guidance and best practices for the field.

Before the adoption of the 2001 Convention, the United Nations Convention on the Law of the Sea (UNCLOS) was the only international legal instrument dealing with the management of underwater cultural heritage. Articles 149 and 303 of UNCLOS both mention underwater cultural heritage, but they are vaguely worded, and offer no real protection. Article 149 notes that, 'All objects of an archaeological and historical nature found in the Area [waters beyond national jurisdiction] shall be preserved or disposed of for the benefit of mankind as a whole.' Furthermore, Article 303 provides that 'States have the duty to protect objects of an archaeological and historical nature found at sea,' and makes provisions for the control of the trafficking of cultural heritage recovered from underwater. Article 303 also notes though, that 'nothing in this article affects . . . the law of salvage,' thereby allowing the continuation of many harmful activities directed at underwater cultural heritage.

The 2001 Convention is intended to make up for the shortcomings of UNCLOS by providing more comprehensive legislation. The Convention obliges States Parties to pass national legislation, and to take steps to protect underwater cultural heritage within their national jurisdiction. It also makes provisions for the management of cultural heritage lying in international waters, and provides a mechanism for international cooperation in such cases. The Convention stresses the importance of in situ preservation as a first (but not only) option, prohibits the commercial exploitation of underwater cultural heritage, and sets out detailed guidelines for all activities that may be directed at underwater cultural heritage. Perhaps the most important provision of the Convention in regards to the underwater heritage of the World War I, however, is its definition of underwater cultural heritage. Article 1 of the convention defines it in the following way:

Underwater Cultural Heritage means all traces of human existence having a cultural, historical or archaeological character which have been partially or totally underwater, periodically or continuously, for at least 100 years such as: . . . vessels, aircraft, other vehicles or any part thereof, their cargo or other contents, together with their archaeological and natural context...

This definition is especially important in the case of WWI underwater cultural heritage, because it provides a level of legal protection for heritage from that period that is often lacking in national legislation. Many countries have definitions that specifically exclude heritage from such a recent period, whereas others define heritage in such a way that it can be interpreted to exclude heritage from WWI. As a result of this, WWI wrecks are pillaged, sometimes legally, for precious metals, raw materials or souvenirs. The underwater cultural heritage of WWI is not less valuable than heritage from earlier periods, and is an iconic testimony of historic events. It also presents a number of opportunities for research, recreation and sustainable development. The 2001 Convention recognizes these facts, and ensures, beginning in 2014, that the underwater cultural heritage of the World War I will receive equal protection against destruction and unethical exploitation.

The Opportunities, Challenges and Threats of World War I Underwater Cultural Heritage

Resting deep in locations that are inaccessible to most – and from a period that many would still consider quite recent – WWI underwater cultural heritage has often been neglected, and has mostly been left to be exploited by those with the means to access it. WWI underwater cultural heritage has much to offer, however, and could be of great benefit if properly researched and managed.

WWI underwater cultural landscapes are some of the last truly untouched landscapes left in the aftermath of the war. While we must rely on pictures to remember the devastation left on battlefields on land, the gaping holes and mangled steel of shipwrecks present a living reminder of the horrors of war. Shipwrecks, and the stories of their sinking, are therefore one of the strongest testimonies for the need to work constantly towards peace and reconciliation. WWI underwater cultural heritage has an important role to play in peace education programmes, because of the chilling reminder it presents of human suffering involved in conflict. Work to protect WWI underwater cultural heritage can also serve as a force for reconciliation. Many vessels sank far from their homes, often in enemy waters. The work to research and protect these shipwrecks can promote reconciliation by bringing together disparate countries to engage in joint efforts.

The shipwrecks of WWI also represent a treasure trove of academic research. Shipwrecks serve as sources of historical information that cannot be found in any written accounts. While historic sources on the war were compiled and altered to fit the needs of government, shipwrecks represent an unadulterated testimony to the events of a battle, and can serve to shed light on unknown or misrepresented aspects of the war.

Moreover, WWI underwater cultural heritage, like all underwater cultural heritage, can serve as a means of sustainable economic development. WWI underwater cultural heritage has, to date, largely been exploited in very unsustainable ways, such as treasure hunting and salvage. Tourism development, however, would provide a much more sustainable way to utilize this heritage; investments in diving tourism, glass bottom boat tours, and other related activities can generate positive economic returns for the community. In this way, WWI underwater cultural heritage could be developed for the public benefit, without destroying its other values.

Unfortunately, the shipwrecks of the World War I must also serve a much more sombre function. Although, as highlighted above, WWI underwater cultural heritage can be used for many useful purposes today, it cannot be forgotten that this heritage was created through acts of violence and destruction. Many lives were lost, and many shipwrecks now serve as the final resting place for hundreds of sailors, both civilian and military. The legal definition of a war grave varies internationally, particularly in relation to shipwrecks. One of the biggest challenges we face as we begin to work towards the proper utilization of this heritage will be to maintain the proper respect towards these sites as graves, and to develop a way of recognizing this significance that can be accepted by all stakeholders involved.

WWI underwater cultural heritage also faces a number of threats, both intentional and unintentional. These threats have already damaged or destroyed some heritage, and they will continue to do more damage if left unchecked.

The damage done by fishing trawlers, although largely unintentional, is significant. Many shipwrecks are now covered in lost nets, which makes diving and research operations much more dangerous. Trawling nets can also scatter artefacts or break off weak portions of the structure as they are dragged over a wreck. Trawlers must be educated on the danger they pose to WWI wrecks, and measures should be taken so that they can avoid operating in sensitive areas.

Commercial salvage, on the other hand, specifically targets WWI era wrecks, often with legal backing. Legal salvage operations began shortly after the war, but they have continued up to the present day. The valuable cargoes of metals and other raw materials continue to prove tempting targets. The metal of the ships' hulls has also recently increased in value, as it does not contain the traces of radiation that are now present in most metals due to the effects of nuclear weapons detonations. This highly profitable industry will continue to take its toll on the shipwrecks of WWI until governments stop providing permits and legal backing for such operations.



Figure 2. Diver investigating a WWI Shipwreck © Frank Leloir

Finally, there is the threat of illegal treasure and souvenir hunting. While salvage operations have largely taken place with legal backing, the damage done by the illicit recovery of artefacts has also been significant. Even in areas that are monitored or policed, it is generally impossible to completely prevent divers from removing artefacts. Some may have good intentions, and may only be enthusiastic to collect a souvenir. Others undoubtedly have profit in mind, and recover artefacts to sell them. Regardless of the intentions of the divers, however, the result is the same: valuable historical information is lost, and wrecks are often damaged in the process. Only through awareness raising and education on the importance of WWI underwater cultural heritage can the diving community learn to truly respect these wrecks. The same is true for the general public, which has been largely indifferent to the plight of WWI shipwrecks. Without concerted efforts to raise awareness, any attempts to improve the protection and utilization of WWI underwater cultural heritage are likely to fail.

The 2001 Convention and the Protection of World War I Underwater Cultural Heritage

Considering not only the opportunities presented by WWI underwater cultural heritage, but also the challenges associated with it and the threats that continue to damage it, one must ask: What can be done to ensure that this heritage is protected, and that it is used for the greatest possible benefit? The short answer is that there are many different activities that must be undertaken to combat these threats, face these challenges and capitalize on the opportunities.

These activities must be undertaken around the world, and will often require close collaboration between governments and other bodies. Fortunately, the 2001 UNESCO Convention – and UNESCO as an intergovernmental organization – provides a valuable tool in this campaign. The Convention represents the best available legal instrument for the protection of underwater cultural heritage. States Parties to the Convention also have access to resources such as the Scientific and Technical Advisory Body and UNESCO's institutional capacity to facilitate collaboration between states. Finally, the 2001 Convention is heavily involved in awareness raising and capacity building activities, which is crucial to this mission.

Perhaps the most obvious step towards the protection of underwater cultural heritage is to provide comprehensive legal protection against the unethical exploitation of this heritage. As mentioned previously, many current national laws do not adequately protect WWI underwater cultural heritage. The 2001 Convention is therefore an important tool, as the full range of protections provided in the convention apply to all shipwrecks that are at least 100 years old. The Convention requires its States Parties to protect WWI underwater cultural heritage within their territorial waters, and also requires that all nationals and flag vessels of those states behave in accordance with the convention – no matter which waters they happen to be in at the time. This is particularly important for the many WWI wrecks lying in international waters, which would otherwise not receive adequate protection. For example, since its ratification France has greatly enhanced its protection of its underwater cultural heritage outside of its territorial waters and is now able to also pursue pillaging and exploitation cases beyond this zone.

The 2001 Convention also provides important assistance to States Parties as they attempt to fulfill their mandate to protect underwater cultural heritage. The Scientific and Technical Advisory Body (STAB) of the 2001 Convention – a group of 12 experts in underwater archaeology – is available to provide counsel and technical assistance to all States Parties to the Convention. This is especially useful when the state in question does not otherwise have access to such expertise. A particularly important example is the recent case of the supposed wreck of the *Santa Maria* in Haiti. Here, the STAB has been working with the Haitian Government to investigate shipwrecks to the highest standards, and to develop a national plan for managing underwater cultural heritage. Additionally, UNESCO, as an intergovernmental organization, can serve an important role in coordinating actions between states. This is most relevant in the case of WWI underwater cultural heritage, as so many ships sank in foreign waters. Research and management operations in the future will therefore require close collaboration between states, which can be facilitated by UNESCO and the 2001 Convention.

Finally, as mentioned previously, even when legal protection is in place, it is difficult to police shipwrecks. Legal restrictions alone can not prevent divers from recovering and collecting artefacts for themselves rather than for sale. In order to fight against such souvenir hunting, and to fully appreciate the opportunities provided by WWI underwater cultural heritage, awareness must be raised on the value of this heritage. Here, the 2001 Convention also plays an important role. Already this year, through the Scientific Conference, Commemorative Event, Peace Education Programme, Dive for Peace Day and other activities, UNESCO has been promoting the importance of WWI underwater cultural heritage. It is only through education on the importance of this heritage, and the value of in situ preservation, that the diving community can learn to respect shipwrecks and refrain from looting. Over the four years of the WWI centenary, UNESCO plans similar events, and will continue to pursue its objective to raise awareness on WWI underwater cultural heritage.

Conclusions

The underwater cultural heritage of the World War I bears a unique testimony to one of the most destructive periods in human history. WWI shipwrecks serve as living witnesses to the conflict, as well as the final resting place of many who lost their lives. They also represent treasures troves of academic research, and powerful tools for education. Furthermore, the sustainable development of these wrecks could bring significant economic benefits. This heritage is under threat, however, and factors such as trawling, legal exploitation and illegal treasure-hunting continue to damage these valuable resources. This current centenary, with so much attention focused on WWI, is a critical time for efforts to protect and promote WWI underwater cultural heritage.

Without proper awareness raising activities, underwater cultural heritage risks being forgotten in favour of the war heritage on land. More states must ratify and implement the 2001 Convention. All states must carefully evaluate the damage treasure hunting and industrial activities are doing to their heritage, and take steps to make sure that not all is lost. The issue of war graves must also be dealt with in a more comprehensive manner. The current lack of international standards for the definition of war graves, and the protections provided to them, makes it difficult to manage wrecks that contain the bodies of fallen sailors. This is especially difficult in regard to wrecks in international waters and sovereign vessels lying in foreign territorial waters. In short, there is still much to be done to protect and promote WWI underwater cultural heritage. Already this year, however, many states and organizations have shown willingness and a strong commitment to undertake this task. Together, and in the framework of the 2001 UNESCO Convention, we can pass on this legacy and this heritage to future generations to promote peace, reconciliation and mutual understanding.

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Towards the Recognition of Maritime War Graves in International Law

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The centenary of World War I is of great historical, cultural and social significance. The conflict between 1914 and 1918 was utterly devastating, killing millions of combatants and civilians, laying waste to large parts of Europe, collapsing economies and rearranging the political landscape of Europe. An important, though often neglected, element of this devastating conflict was its naval battles. The British Royal Navy had ruled the world's oceans and kept the British Empire intact and interconnected. A German challenge to this naval power was one of a number of tensions that ultimately led to the outbreak of war.

The most significant WWI naval battle took place on 31 May and 1 June 1916 off the coast of Jutland, Denmark. With the loss of 25 ships and 8,645 sailors, it remains the largest and most destructive naval battle in history. While this clash of the greatest battleships in history was not decisive, a similar engagement never occurred again during the war. There were, nevertheless, numerous smaller naval clashes, particularly during the Allies' successful blockade of Europe, which was a substantial factor in the outcome of the war. These skirmishes left many sunken state vessels in European waters. The naval war, however, was a true world war, and naval clashes were not confined to Europe, but extended to the far reaches of the belligerent Empires. In its wake, the war at sea left sunken state vessels off, for example, Australia (the *Emden*), French Polynesia (the *Seeadler*), Tanzania (SMS *Königsberg*), Turkey (*AE2*), Chile (HMS *Monmouth* and HMS *Good Hope*) and the Falkland Islands (the *Scharnhorst* and the *Gneisnau*). Merchant ships and merchant sailors also suffered horribly. Losses of Allied and neutral merchant vessels amounted to 12,543,393 gross tonnage, while the number of merchant sailors killed exceeded 30,000. Indeed, the destruction of Allied and neutral shipping, and particularly the sinking of RMS *Lusitania* in 1915, triggered the United States' declaration of war on Germany in 1917.

This naval conflict left thousands of vessels sunk, with great loss of life, scattered throughout the world's oceans. Unlike the carnage of the Western Front and other theatres of the war, the last resting places of those lost are not found in

vast cemeteries or formal battle site memorials, but mainly on the seabed with the vessels upon which they served. In many cases, the vessels sunk took most, if not all, of their crew with them. During the battle of Jutland, for example, survival rates for many of the vessels sunk were very low: 6 of the 1,037 crew of HMS *Invincible*; 20 of the 1,266 crew of HMS *Queen Mary*; 2 of the 1,019 crew of HMS *Indefatigable*; 5 of the crew of 281 of SMS *Frauenlob*; and none of the crew of 840 of SMS *Pommern* or of the 903 crew of HMS *Defence* survived.

A Heritage under Threat

The underwater cultural heritage of WWI is of great cultural and historical significance. Many of the wreck sites, and other underwater remains, are well preserved, and can reveal much about early twentieth century naval technology and warfare, and about the lives of those who served at sea. They can also provide fresh insights into the course of battles, and even the war itself. More importantly, as very often the last resting places of those who died, they deserve respect and commemoration as gravesites. In some cases, human remains are still present on the wreck site including, for example, those lost in the battle of Jutland such as SMS *Frauenlob*, on which divers have reported seeing bones and skulls.

This heritage is threatened by both natural forces and human interference. The mostly metallic wrecks are affected by corrosion, changing sea temperatures and weather conditions. Harbour dredging, land reclamation schemes, pipeline construction, mineral exploration and exploitation, and fishing activities also threaten this valuable, but finite, cultural resource. The remains of the Australian submarine *AE2*, lost off Gallipoli, for example, have been inadvertently damaged by fishermen's nets and anchors. This unintentional interference with these wrecks requires redress through research, identification, location and protection.

It is, however, the intentional interference with these wrecks and gravesites that is of the greatest concern. With great leaps in underwater diving technology, many of these wrecks are increasingly accessible to professional salvors. This interference, however, is not new, and has reflected a variety of state attitudes to these sites. Many of the wrecks off Jutland, for example, were indiscriminately blown up and salvaged for scrap metal in the 1960s, such as SMS *Lützow*, HMS *Indefatigable* and SMS *Pommern*, often without flag state consent. Metal from WWI wrecks is highly prized, as it is unaffected by radioactive traces that now affect all metals produced after World War II. Flag states did not, however, appear to have objected to these activities, and the fact that they contained the remains of those who perished appears to have been of no concern. Some of the belligerent flag states have more recently raised concerns, and intervened to prevent salvage, such as the UK's approach to RMS *Laconia* and

SS *Cairnhill*. The UK has, however, also sanctioned interference, such as the government's salvage contract with the controversial US shipwreck recovery company, Odyssey Marine Exploration, for the recovery of a large consignment of silver from SS *Mantola*. A complication arises when the sites lie outside the jurisdiction of the flag state, and it is particularly problematic when they lie in the territorial waters of others states. The interference of HMS *Aboukir*, HMS *Cressy* and HMS *Hogue* exemplifies this difficulty. Numerous other vessels have also suffered from interference, including the German submarine *U-116*, the British submarine *A7*, HMS *Hampshire* and HMS *Vanguard*, to name but a few.

The combination of relatively inexpensive, advanced sport diving technology and the growth in 'battlefield tourism' has also exposed underwater cultural heritage to a number of threats. The growth in numbers of divers visiting war-time sites exposes them to increasing levels of accidental damage, as well as disturbance that might accelerate natural degradation. While sport divers are becoming increasingly educated in relation to the heritage value of underwater sites and the need to respect wrecks where lives were lost, the pillage of sites for souvenirs remains commonplace.

War Graves

Burying our dead is so common a cultural trait, that it is essentially an act that defines us as human. The burial of those who died in battle defending their families, their friends, their sovereign or their country has heightened ceremonial and emotive contexts. For the British Empire, the sacrifice of so many in the battlefields of foreign lands required a dramatically new approach to burying the fallen. This was particularly so for those Empire troops drawn from distant lands: the Australians, New Zealanders, South Africans, Indians and Canadians, whose families were unlikely to ever be able to visit their graves or the battlefield on which they died. In 1917, the Imperial (now Commonwealth) War Graves Commission was established by Royal Charter. The founding principle of the Commission was that all soldiers who died in battle should be buried abroad in individual, but identical, graves. Its war cemeteries and monuments in Belgium and France commemorated the dead and missing by naming them all, one by one. The scale of the destruction was such that the remains of many soldiers could simply not be found, and memorials were erected to those who will be forever missing. The VC Corner cemetery at Fromelles, for example, has no gravestones, but contains the remains of 410 unidentified Australian soldiers, and commemorates 1,299 Australians who died in the battle and have no known grave. Similarly, the Thiepval Memorial bears the names of more than 72,000 officers and men who died in the Somme whose remains were never found. So too does the Menin gate, with the names

of 54,896 missing Commonwealth soldiers, and the Tyne Cot Memorial to the Missing, with 34,984 missing Commonwealth soldiers commemorated. Like those missing on the battlefield, the remains of sailors who went down with their ships would never have an individual grave. At the time of the establishment of the Imperial War Graves Commission, technology simply did not allow for the recovery of those lost at sea, and they were treated as forever missing. For the British Royal Navy, 3 memorials, all identical, were erected to those lost at sea: the Chatham Naval Memorial, commemorating 8,517 sailors; the Plymouth Naval Memorial commemorating 7,251 sailors of the First World War and the Portsmouth Naval Memorial commemorating around 10,000 sailors of the First World War. Germany too erected a monument (the Laboe memorial) to its lost seamen in Kiel, and a monument to lost U-boat crews in Møltenort.

Missing sailors, however, are treated very differently to missing soldiers, at least from a Commonwealth perspective. The Imperial (Commonwealth) War Graves Commission was founded on two important principles. First, that control and responsibility for the remains of lost servicemen and woman rested with the state. Secondly, that appropriate respect and control could only be achieved through international cooperation. Indeed, the ability of the Imperial War Graves Commission to undertake activities in Belgium and France was underpinned by international cooperation through treaty agreement. Moreover, the foundational principles of the war grave commission also bear on the issue. Part of the rationale for burying the fallen on the battlefield was the difficulty in repatriating the fallen to their countries of origin, especially when many came from such distant countries as Australia, India, South Africa, Canada and New Zealand. It was also thought that those who fell together in battle would want to remain together in death. It is likely that the crew of a vessel would also recognize the desire to be buried alongside their crewmates. While not a WWI casualty, USS *Arizona* serves as a good example. A number of the crew who survived its sinking in 1941 have, on their deaths, had their remains interred in the wreck in the belief that their final resting place ought to be alongside those they served with. Similarly, as recovery and repatriation of the remains of soldiers was considered logistically difficult, so too were those of sailors, especially in deep waters far from any state, or in distant waters far from Britain. Whilst technology does now allow access to many of these vessels and the remains of their crew, recovery and repatriation is still difficult. As such, recognition of these sites as graves continues to be appropriate.

The memorials to the missing on the battlefield are usually placed at the battlefield site itself, and therefore usually within the jurisdiction of one state, which has the ability to control any excavation or disturbance on the site. Should any uninterred remains be found, that state has the ability to control subsequent investigation and internment. For sailors, their actual remains might be found

in international waters, or those of any number of states, including states that did not exist as independent states at the time of the war. The effect of this is that the graves are not only far removed from the memorial, but effective control of those sites is far removed from the original belligerent nation. Unregulated activities are thus allowed to disturb these sites, and may, and sometimes do, disturb the remains of lost servicemen.

The recognition of these sites as gravesites continues to be appropriate, and is consistent with the principles underpinning the burial of fallen soldiers. While these principles may apply equally to fallen sailors who went down with their ship, the Imperial (Commonwealth) War Graves Commission does not include these 'maritime war graves' within its mandate, and indeed, recognizes no such concept as a 'maritime war grave'.

The UNESCO Convention¹

Similarly, the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage also does not recognize the concept of a maritime war grave. Human remains are incidental to the archaeological aims of the convention, and essentially treated as archaeological artefacts, included as they are in the definition of underwater cultural heritage in article 1. Human remains are only dealt with in two other parts of the convention: article 2(9), which provides that states parties shall ensure that proper respect is given to all human remains located in maritime waters, and Rule 5 of the Annex, which dictates that 'activities directed at underwater cultural heritage shall avoid the unnecessary disturbance of human remains or venerated sites.'

The inclusion of human remains within the scope of the convention naturally provides a form of protection for these sites, subjecting them to the principles of in situ protection whenever possible, the prohibition of commercial exploitation and the promotion of responsible, non-intrusive access. This treatment, and respect for human remains within archaeological sites, is consistent with instruments such as the Vermillion Accord on Human Remains, and with good archaeological practice reflected, for example, in the 2001 English Heritage and Church of England Human Remains Working Group principles. That is that, 'human remains should always be treated with dignity and respect; burials should not be disturbed without good reason; human remains and the archaeological evidence for the rites which accompanied their burial are important sources of scientific information; there is a need to give particular weight to the feelings and views of living family members when known; and there is a need for decisions to be made in the public interest and in an accountable way.'

1 The views represented in this section are those of the author and do not necessarily reflect the views of UNESCO.

Nevertheless, the treatment of human remains within the convention does not amount to any recognition of these sites as graves as such. The human remains are part of the archaeological record, and are treated as such. While this may be appropriate for archaeological sites of some age, it is not necessarily appropriate for the remains of those who died within the last century. That said, the convention is the most powerful protective tool available to states that wish to protect maritime war graves for vessels that fall within the scope of the convention. While this protective mantle will shortly fall over the underwater cultural heritage of WWI, the need arises to consider those of other conflicts, particularly of World War II.

International Recognition of Maritime War Graves

The concept of maritime war graves simply does not exist in international law. A natural response to this omission is to advocate for a new international norm that does recognize such a concept, perhaps through the amendment of some existing international instrument, such as the UNESCO 2001 Convention or the United Nations Convention on the Law of the Sea, or through the adoption of a specific instrument that addresses the issue. Unfortunately, the reality is that states are unlikely to engage in either of these norm-creating processes. Time, expense, and prioritization of issues prevent such a development. Perhaps the best that can be hoped for is some form of 'soft law' instrument that might emerge during the commemorative events that will unfold over the next four years. This might, for example, merely recognize that whatever means of protection are applied to this heritage, it should start with a recognition of the sacrifice made, of the need to sanctify the last resting places of those lost and of the need to respect and protect these places from unjustified disturbance, embedded in a resolution of states to recognize, conceptually, the maritime war grave.

Whilst merely a soft norm, such a development will contribute to the possible emergence of such a concept as customary international law. This, however, will require state practice that endorses such a concept, and thus requires states to recognize such a concept in their domestic regimes. In the United Kingdom, at least, this has already begun, and other former belligerent states may do well to follow this example.

Individual State Legislation

Originally termed the Wargraves Bill, The Protection of Military Remains Act 1986 (United Kingdom), was adopted specifically to address the need to protect the wrecks of military vessels that had sunk with loss of crew from interference. In the wake of the losses suffered in the Falklands war, sensitivity was heightened

following allegations that divers had inappropriately handled human remains during the salvage of HMS *Edinburgh*, and after the unauthorized recovery of material from HMS *Hampshire*. The act allows the United Kingdom to protect wrecked warships of any nation lying within its territorial waters, and those of British vessels that lie outside its territorial waters, from interference by British nationals or from activities undertaken by British vessels. It provides for offences related to interference with these maritime graves, and requires licensing for any activities directed at them. The act is not perfect though. While it protects these wrecks, it does not actually recognize the concept of a maritime war grave, and indeed, the protective mechanism applies to the wrecks themselves, and could be applied even if there were no crew losses when the vessel sank. Moreover, its scope is unnecessarily limited. There is no reason, for example, why it could not apply to non-British vessels beyond its territorial sea. It could for example, include the protection of German vessels lost during the battle of Jutland from interference by British nationals, or from activities undertaken by British vessels. This might best operate with some form of reciprocity from Germany. Nevertheless, the Act is an example of national legislation that is directed at protecting what might be a maritime war grave from interference.

Burial Laws

There is, however, a more fundamental mechanism for states to begin recognizing the concept of a maritime war grave. All states have laws that regulate burial. In the United Kingdom, for example, the Burial Act 1857 regulates burials, including the exhumation of human remains, for all graves, including those within its territorial sea adjacent to England and Wales. This, however, only applies to deliberate, intentional burial, and not to the remains of those that are to be found on wreck sites. English heritage has recently embarked on an effort to bring the protection of such human remains in line with that offered to deliberately buried remains. Whilst this appears, in the main, to be through the development of existing policy, it might better be achieved directly through the amendment of the Burial Act 1857. Such an approach would have a number of advantages, including the ability to apply it to all human remains within the territorial sea, including those on sunken merchant vessels and to all vessels irrespective of nationality. Most importantly, by including within the ambit of a grave those who died at sea with the sinking of their vessel, the concept of a maritime war grave can be made more concrete. It will thus allow that state to embrace, at an international level, the concept and to contribute to its emergence as customary international law as state practice.

Conclusion

It is unfortunate that, on the eve of the centenary of this great conflict, the last resting places of those who died at sea on board the vessels they served are not given any form of recognition. The concept of the maritime war grave is often banded about, but has no legal content, and offers no protective mantle. The opportunity arises over the next four years, as the world reflects on and commemorates WWI, to begin to develop such a concept and apply it not only to these wrecks, but also to those of other conflicts, including World War II.

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The East Coast War Channels in the First World War

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The East Coast War Channels were the routes used by merchant shipping up and down the East Coast of the United Kingdom throughout the First World War (Figure 1). Coasting traffic was vital to both Allies and Neutrals from 1914 to 1918, so a great deal of effort was directed to its organisation and defence. With such a concentration of shipping, the War Channels became a major focus of German activity in the North Sea. In consequence, the War Channels are preserved physically as a variety of different types of cultural



Figure 1. Extract of Chart S. 058 from August 1917 showing the red line that indicated the War Channel, off Yorkshire. © Courtesy of UK Hydrographic Office

heritage onshore, and in the form of large numbers of shipwrecks offshore.

Building on recent work carried out for English Heritage,¹ this paper illustrates the character of the War Channels as an archaeological resource, and outlines the approach towards their investigation over the next few years. However, this work also prompts a wider reflection on the role of marine archaeologists in commemorating the First World War.

The First World War is recent history, about which there is a great deal of public interest in the UK and elsewhere in terms of family and community connections to the conflict. With such a surge of public interest, what can archaeologists possibly add? Can we simply join in the ceremonies, silences and personal researches as members of the public with our own family and community connections, or do we have broader responsibilities?

There are three reasons why archaeologists ought to be taking a proactive, guiding role in the public commemorations of the next four to five years; three reasons that are informing the approach taken to the East Coast War Channels:

- First, archaeologists can challenge how people think about the First World War, based on physical evidence of the conflict.
- Second, archaeologists can take steps to ensure the survival of this physical evidence not just for this centenary, but for centenaries far into the future.
- Third, archaeologists can engage people not only through what they know but through how they know. They can enable others to explore for themselves the heightened sense of the historical threads that still weave through our environment today.

In sum, archaeology associated with the centenary of the First World War should challenge peoples' understanding, should be concerned with the conservation of physical evidence and should enable public participation.

These wider reflections on the role of archaeologists can be illustrated by the SS *Storm* (Figure 2). The *Storm* was a small steamship built in Goole on the Humber in 1875 as the *Rosa*, registered in Sligo and lost on 9 September 1917 while carrying a cargo of coke from Newcastle to Dunkirk. Of the eight crew, three – a Fireman, Mate and Chief Engineer – were lost. The wreck lies in the outer Thames in 18 m of water about 12 nautical miles off Felixstowe. The wreck of the *Storm* challenges our understanding in that the ship was reportedly

1 Firth, A 2014, 'East Coast War Channels in the First and Second World War', Unpublished report for English Heritage. EH Project Number 6586, Fjordr Ref: 16131.

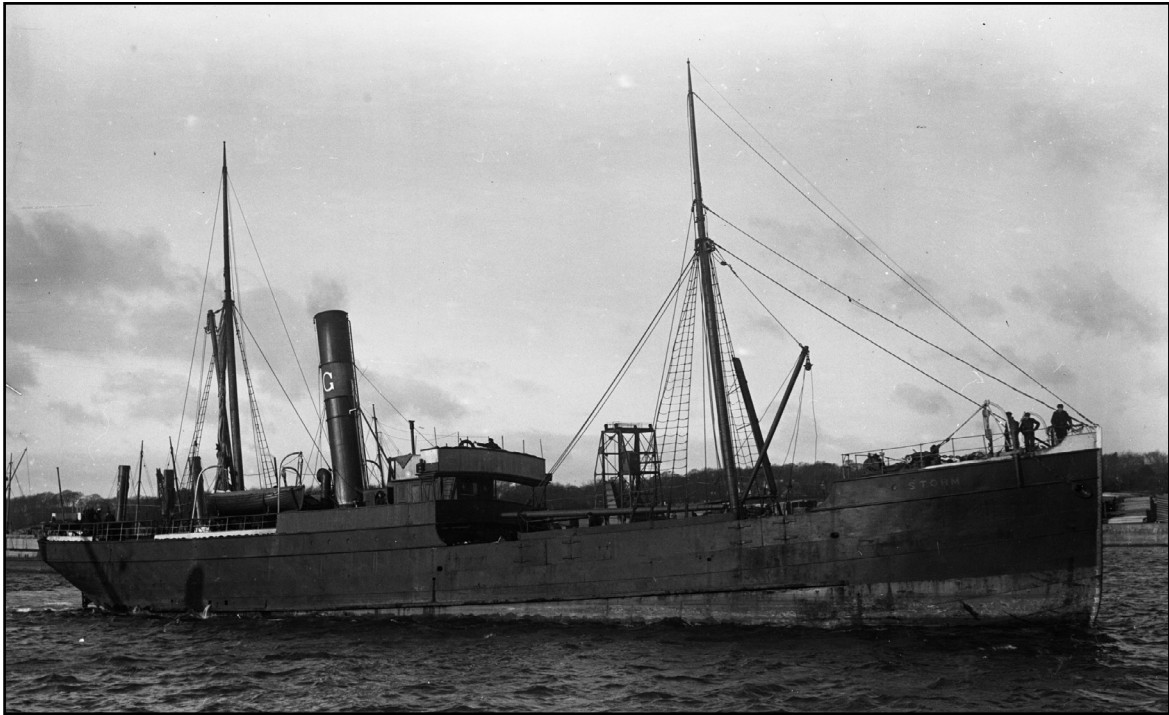


Figure 2. SS Storm, built in Goole in 1875 and sunk in the outer Thames Estuary in September 1917 by a torpedo from a German aircraft. © J and M Clarkson

torpedoed by a German seaplane. As such, it was one of a small number of losses that demonstrate the relatively little-known use of aerial torpedoes by Germany in the southern North Sea in the First World War. This development in warfare at sea is important not only in considering the specific conflict, but also in the broader history of torpedo bombers and their role in the Second World War. In terms of physical evidence, the *Storm* was implicated in plans for dredging the approaches to the Thames Estuary in connection with the new port at London Gateway, and was surveyed using multibeam as a consequence (Figure 3).² Reports suggest that the *Storm* was subject to demolition activities as recently as 2003. The wreck of the *Storm* can also be a focus for the public to engage with archaeological records through the stories of the 3 men who were lost, the community that built the ship, the 40-year biography of the vessel prior to its loss, the important wartime coal trade between North East England and France, Germany's development of anti-shipping aircraft, the history of the wreck since its loss and so on. As with so many of the vessels lost in the East Coast War Channels, the *Storm* has many tales yet to tell that all can be explored by the public and archaeologists alike.

Understanding

As illustrated above, the East Coast War Channels can challenge our understanding of the First World War in several respects:

² Firth, A, Callan, N, Scott, G, Gane, T & Arnott, S 2012, London Gateway: Maritime Archaeology in the Thames Estuary. Wessex Archaeology, Salisbury, UK.

The War Channels are largely forgotten. The war at sea is greatly overshadowed by the war on land. Where the war at sea is remembered, it is usually in terms of engagements by major warships rather than day-to-day attrition. Even the concern for merchant shipping is dominated by losses in the Atlantic and

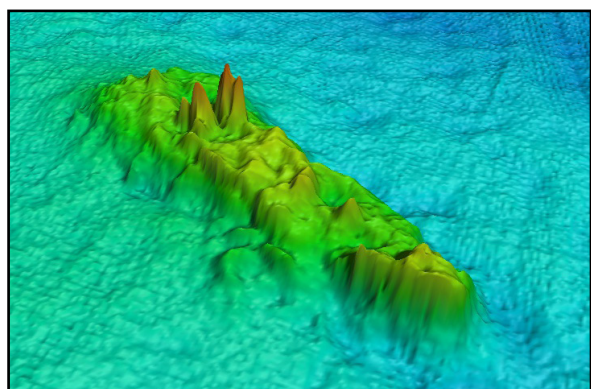


Figure 3. A multibeam image of the wreck of SS Storm, surveyed in 2006 as part of investigations preceding dredging for London Gateway Port. © Wessex Archaeology; Multibeam Data Courtesy of London Gateway

other oceans. The War Channels demonstrate that the war at sea did not only occur far from shore; they draw attention back to a significant theatre that was very close to home, in which many died and thousands more endured.

The War Channels also challenge the idea that maritime archaeology is made up of single sites, and that shipwrecks only become significant places by accident. The Channels require a landscape-scale approach.

First World War shipwrecks need to be addressed collectively as a group whose spatial and chronological patterning points directly to key changes in the conflict. Viewed as a whole, the East Coast War Channels represent a hard-fought battlefield. As such, the Western Front should be seen not only as a system of trenches from Switzerland to the Belgian coast, but rather as a front line extending, through minefields and physically-marked routes, all the way up the UK's North Sea coast. The watery no-man's-land often started within a mile of England's coastal towns and villages.

The War Channels also help to underline the scale and depth of the mobilisation of the UK economically, industrially and socially. The transformations wrought on society by the First World War amongst those that survived are perhaps more important than detailing those who died; it is absolutely the case that a wholesale reworking of production, commerce and normal modes of organisation took place in the East Coast War Channels, just as elsewhere. In addition to merchant ships being brought increasingly under state control, and eventually into the convoy system, large numbers of civilian vessels were incorporated as minor warships into British naval forces – including fishing vessels and their crews that were used to sweep for mines at great risk and frequent loss.

The conflict in the East Coast War Channels also presents challenges to our understanding of the First World War in technological terms. The East Coast battle was fought at the forefront of the new technologies of war at sea – mines, submarines, torpedoes and their countermeasures. The conflict saw extensive use of wireless in direction-finding, signal interception, the deployment of aircraft

and in the integration of intelligence into operations. In these respects, the East Coast War Channels presaged approaches that are more often associated in popular understanding with the Second World War rather than the First.

Two-thirds of ships sunk in the War Channels were British, but the conflict was distinctly multinational in its impacts. Ships from a variety of states used the War Channels, and they were equally susceptible to mines and unrestricted submarine warfare. Irrespective of a vessel's flag, the crews were also multinational. As an example, the SS *Audax*, torpedoed in September 1918, lies at 42 m about 4 nautical miles off the coast of North Yorkshire. The *Audax* was built in the Netherlands, owned for much of the war by a Norwegian company and was managed by a Newcastle company when it was lost on passage from Rouen in France. Of the three men killed, one was born in Sweden and two - Ghaus Muhammad and Muhammad Abdul - were of the Indian Merchant Service, and are commemorated in Mumbai, far from the North Sea where they served and died.

Conservation

Thinking as archaeologists about the future survival of the heritage of the East Coast War Channels, we can be grateful that many sites have survived - at least to some degree - for the first 100 years. The question remains, however, what can we do to assist their survival to the next centenary?

Unlike battlefields on land, the battlefield of the North Sea is still strewn with the standing remains of the conflict, often lying where the action actually occurred, and providing the last resting place of those who have no grave but the sea. A sense of these standing remains is provided by charts published after the war that refer to coastal waters as being 'one mass of wrecks.' Although subject to extensive salvage and clearance efforts to reduce the hazard to shipping, the remains of many wrecks still survive on the seabed. As such, the legacy of War Channels is manifest in literally hundreds of known wreck sites (Table 1). There are hundreds more ships known to have been lost but not yet found, and hundreds of known wrecks that are as yet unidentified, but are likely to date from 1914 to 1918.

Known, identified wrecks	551
Recorded losses not yet ascribed to a known wreck	819
Known but unidentified wrecks	1,216

Table 1. 1914-18 Wrecks and Losses within 12 nautical miles of the East Coast of England (National Record of the Historic Environment English Heritage)

Clearly, many of the as yet unidentified wrecks may correspond to losses that are recorded in documentary sources, whilst some of the identified wrecks will date to other periods, including the Second World War, when there was again a huge conflict on the East Coast. Nevertheless, the overall numbers suggest a battlefield represented by the surviving physical remains of a thousand vessels or more.

These many hundreds are not a diffuse or random scatter; they are clearly patterned both spatially and chronologically (Table 2). Just to take one example, the cause of loss for known wrecks can be queried year-by-year, showing the importance over the course of the war of losses to mines rather than torpedoes. Mines were the most frequent cause of loss from 1914 to 1916, growing year by year. Torpedoes were a major cause of loss in the East Coast War Channels from 1917 and 1918, reflecting the advent of unrestricted submarine warfare. Mines became less important in those years, perhaps reflecting a switch in emphasis by Germany, but perhaps also showing the increased effectiveness of

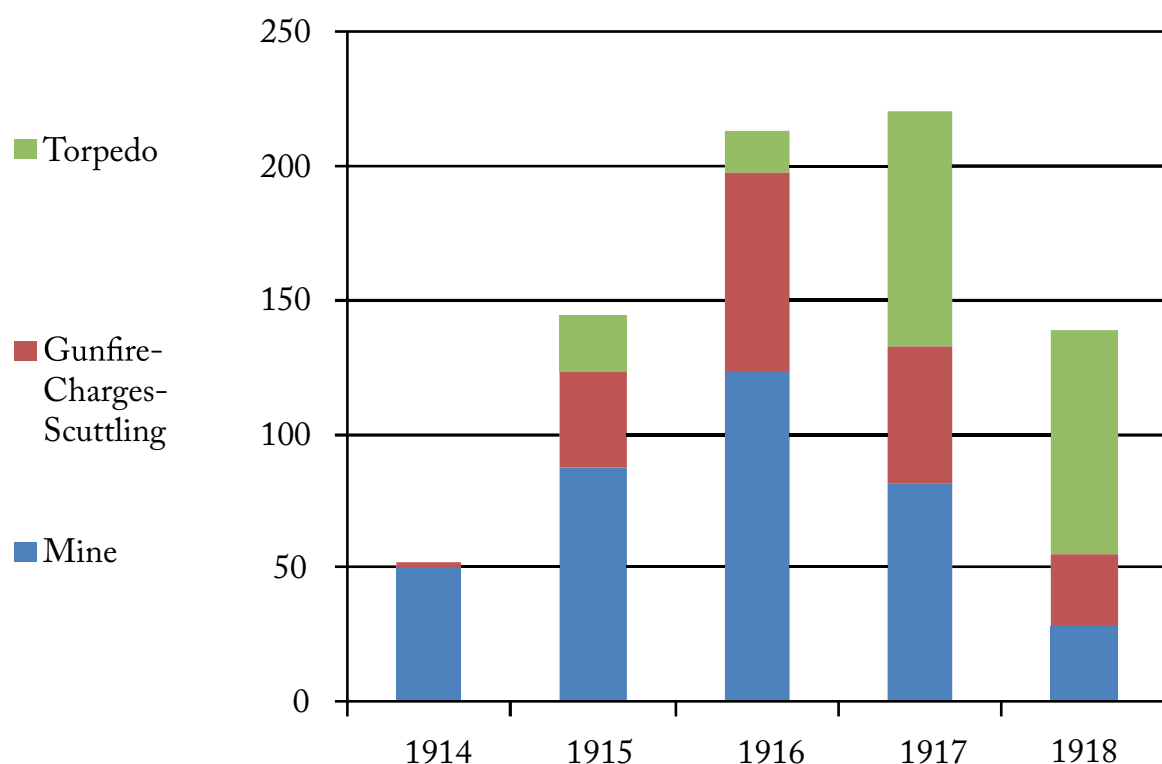


Table 2. Cause of loss of East Coast War Channels wrecks in 1914-18

countermeasures. Other causes of loss to military action – by surface gunfire and by attackers coming on board to lay charges or to scuttle vessels – are a smaller, though still important factor, from 1915 to 1918.

Although these shipwrecks exhibit spatial, chronological and thematic patterning, they have received virtually no archaeological attention. This mass of shipwrecks forms a rich and unexplored source of evidence of merchant shipping and the war at sea, and an evocative landscape that has no parallel.

How should we seek to conserve a monument of this scale?

As a monument, the East Coast War Channels consist principally of steel offshore and concrete onshore. Although these materials are relatively robust, they are intrinsically unstable and susceptible to degradation, more so in fact, than stone or buried wood. Natural processes augmented by human impacts have had major effects, even though the degree of survival is considerable compared to the remains of the First World War on land. In the UK, First World War remains currently receive little direct protection; there is no automatic legal protection for sites over 100 years old in the UK. Nonetheless, the majority of sites forming the East Coast War Channels are within the UK territorial sea, and we are lucky to have a series of selective mechanisms capable of protecting sites both singly and collectively.

These mechanisms depend, however, on recognising the significance of these sites. Attributing significance is hampered by the degree to which these sites have been severed from their historical context, each appearing as just another mass of crumpled metal. Nevertheless, the War Channels are extremely rich in data – documentary, photographic, oral history and even survey data. The conservation issue facing the war channels is not that we have no information – we have a vast amount of information – the problem is that this data has been dissipated, disconnected and hidden away.

Participation

The emphasis of the next stage of work on the War Channels, again with the support of English Heritage, is on enabling public participation in the archaeology of the First World War at sea. The word ‘participation’ indicates that this is not just about disseminating the results of archaeological work. Rather, the intention is to enable the public to see the past from the inside, as archaeologists do, and to make their own explorations. This is a benefit in itself, but it will also generate advances in research and in conservation of the sites themselves as they become reconnected with their context, so that their significance becomes apparent.

The East Coast War Channels are very accessible to large numbers of people. Not only sport divers, but thousands more who visit these sites as sea anglers or pass by on recreational boats. Many thousands more look onto the War Channels when they visit or walk along the coast; coastal tourism and recreation are important considerations on the East Coast; most of the battlefield is in easy sight of land, if only attention can be drawn to it.

As well as being physically accessible, a great deal of the East Coast War

Channels is already accessible from armchairs and mobile devices around the world. As noted earlier, there is no shortage of data, and much of the data is already online; the problem is the lack of connection of this data to the heritage sites themselves.

The intention, therefore, is to work with a variety of third-parties to help as many people as possible to re-make connections with the East Coast War Channels, whether their interest is in a place, a ship, a community or a family. Discovery is not just about finding physical things, it is also about finding out what physical things mean. As a result, the East Coast War Channels are capable of being explored online as well as in the field.

A key aspect of the project is to reach new audiences. Reference has already been made to people who use the sea recreationally who are not divers. Mention has also been made of the connections between a variety of communities both in the UK and around the world who might not have previously considered the East Coast War Channels to have any relevance to them. However, there are yet other audiences to consider.

Underwater cultural heritage and the archaeology of ships and warfare can be very technical in its content, and superficially unappealing to many people. It is worth emphasising, therefore, that archaeology underwater requires acts of imagination – to find ways of seeing what is normally unseen – as well as technical skills. As noted above, the sources of online data relating to shipwrecks of the East Coast War Channels are quite varied. Large numbers of contemporary photographs and even newsreel clips can now be found online. In addition to more formal ‘ship portraits’, these photographs include images of ship-related activity, such as the work of the Women’s Royal Naval Service, first formed in 1917 (Figure 4). Other sources of illustration range from the technical – such as contemporary ship models – to the more artistic. As with photographs, there are formal painted ship portraits of vessels lost from 1914 to 1918, but as on land there are also striking sketches, studies and paintings by war artists depicting the lives and activities of those who served in the East Coast War Channels.



Figure 4. Ratings of the Women’s Royal Naval Service (WRNS) wiring together glass floats for an anti-submarine net, possibly in Lowestoft, under the supervision of a WRNS officer in 1918. © IWM (Q 19640)



Figure 5. North Bay, Scarborough, where the SS *Madame Renee* was sunk in August 1918 with the loss of 17 men including Iwai Sutoe from Kobe, Japan. © AJ Firth/ Fjodr Ltd

The exercise of imagination that is needed in addressing a battlefield which is invisible at first sight has provided a basis for working with a poet on ways of exploring underwater cultural heritage through creative writing. Research into specific sites has been combined with approaches that can evoke and engage audiences who might otherwise pale at archaeologists' beloved dimensions and statistics. One example of the poems is presented below. It concerns the wreck of the SS *Madame Renee*, a small Norwegian-built steamship carrying a cargo of copper pyrites from London to the Tyne, which was sunk on 10 August 1918. The *Madame Renee* was torpedoed by the submarine *UB-30*, about a mile offshore from North Bay, Scarborough (Figure 5). As the *Madame Renee* was struck on the port side whilst heading north, the U-boat must have been waiting in the bay, very close to the coast. The approximate position of the wreck can be seen from the cliffs of Scarborough Castle, as there is a buoy marking the end of a nearby outfall. Of the 17 crew, 10 were lost and have no grave; they are commemorated on memorials at Tower Hill, Chatham and Plymouth. The poet, Winston Plowes, picked out just one of those lost, Donkeyman Iwai Sutoe, age 26, recorded as having been born in Kobe, Japan:

In His Mother's Arms

From Thames to Tyne that day in '18
he tended every stroke of her

up the eastern channel.

Till UB-30, languid in the bay
roused and spat its charge.
Torpedoed her side with a single strike
from that clear calm crescent.

Madame Renee broken backed
rocked him down like a mother.
6000 miles as the whale sings
from his home in Japan.

She drifted still, and now
all 500 tons of her lay sleeping
with Sutoe in her arms.

A buoy still floats above their heads
permanently tethered.
Marking the dreams of Kobe.
 Coddled by this sea.
 Crossing off the years.
 Osaka Bay still listening.

- *Winston Plowes 2014*

Conclusion: the Archaeology of Warfare and Reconciliation in the Twenty-First Century

The assets that make up the East Coast War Channels can be regarded as a monument to total war – warfare that mobilised and engaged entire populations in violence whose endpoint was the survival or obliteration of whole societies. If it is such a monument, then it is only one half at best, because the horrors along England’s East Coast reflected an equally deadly effort to prevent Germany’s seaborne trade through a naval blockade, which is considered to have caused three quarters of a million civilian deaths through starvation. Despite the magnitude of its consequences, the blockade of German shipping has left little archaeological trace where it took place – in the Northern Atlantic between Scotland, Iceland and Norway – because merchant ships were intercepted and inspected rather than sunk. There are, however, a few wrecks of cruisers and auxiliaries that struck mines or were themselves intercepted by submarines,

such as HMS *Hawke*, which was torpedoed with the loss of over 500 crew off Aberdeen on 15 October 1914. Although beyond the scope of the East Coast War Channels, such wrecks represent a further aspect of the First World War at sea that was of critical importance, but is little remembered.

Archaeologists are entitled to a long view. The East Coast War Channels date to a period of total war in Europe that did not end in November 1918. The War Channels were reinstated and became a zone of intense conflict over merchant shipping again in 1939-45. Elements of the War Channels went on to feature in the Cold War also. It might be appropriate, therefore, to think about the War Channels in terms of a conflict that started in August 1914 and ended not in November 1918, but in November 1989. The direct evidence of the scale of Europe's appetite for destruction in the First, Second and Cold Wars has largely been erased from the land, so the mass of wrecks just off our shores is a unique reminder. Long overlooked, we can make them visible again as a tangible expression of the causes, conduct and consequences of total war.

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Understanding and Managing Modern Material Remains in England's Inshore

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As part of the 2014 to 2018 centenary, English Heritage is involved in a major project to record the colossal 'footprint' left by the First World War on the landscape and in the coastal waters of England¹.

In particular, we are ensuring that, throughout the commemorative period, maritime archaeological remains from World War I are fully included within

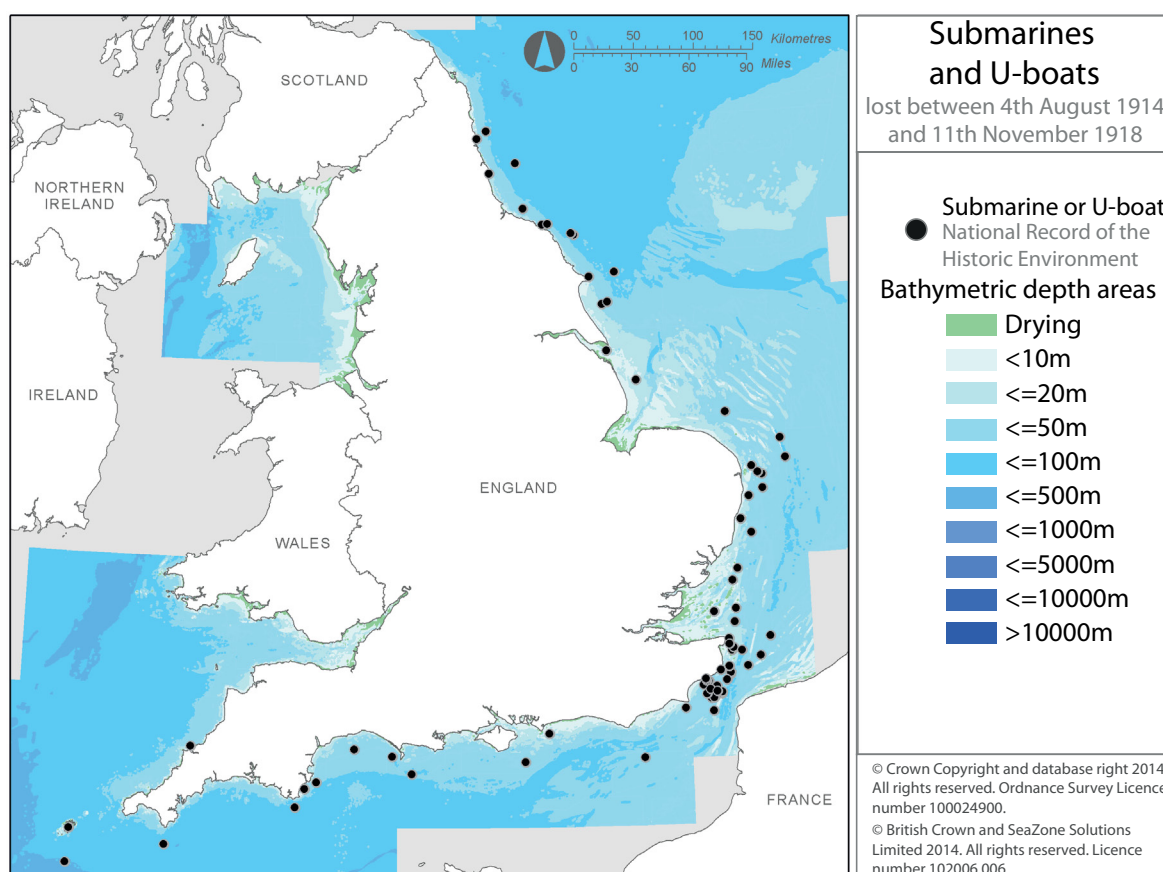


Figure 1. Submarines and U-boats lost during the First World War in England's inshore region © Crown Copyright

1 From March 2015, certain statutory and advisory functions of English Heritage will be transferred to a new body: Historic England.

the project, and that their historical, evidential, aesthetic and communal values are interpreted and articulated for the current generation to understand.

The war at sea from 1914 to 1918 is largely forgotten, save for the big fleet actions like Jutland or the landings in the Dardanelles. Our strategic work has specifically involved commissioning research to assess and understand seascapes associated with defence and coastal convoys. We have also worked to identify the location of known submarine losses within England's inshore region; preliminary research has identified that the remains of both British and German submarines lie in English waters.

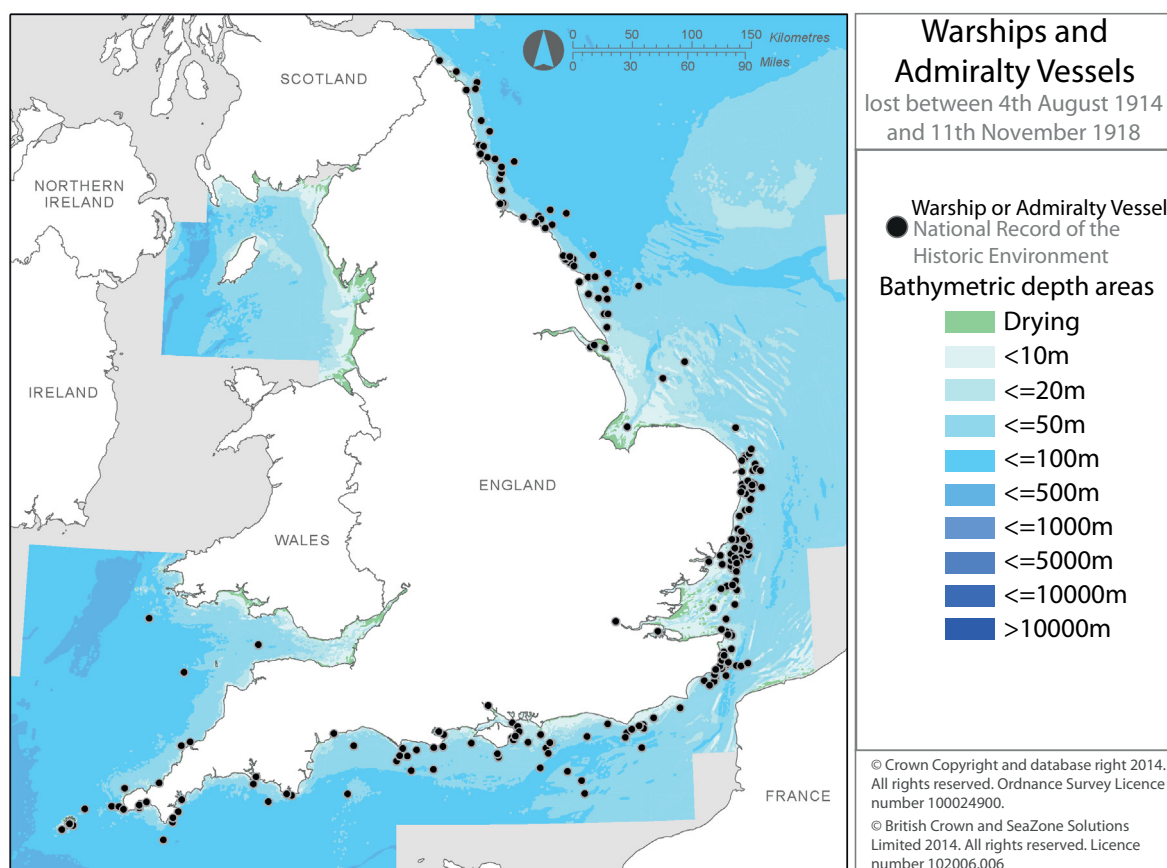


Figure 2. Warships and Admiralty vessels lost during the First World War in England's inshore region © Crown Copyright

The First 'Home Front'

For most people today, it is primarily the horrors of trench warfare along the Western Front of Belgium and France that characterise the First World War. However, it is largely forgotten that virtually the whole of England was focused on the war effort, in what can be called the first 'Home Front'.

On land, the remains of factories, camps, drill halls, hospitals, defences and training sites are being researched and identified; for the war in the air, airfields, balloon sheds, hangars and anti-aircraft sites are being recorded; at sea, sites

associated with navigation, naval aviation, naval units, reservists, merchant vessels and submarines are being documented and dived. The interfaces of the ports and harbours are also receiving attention.

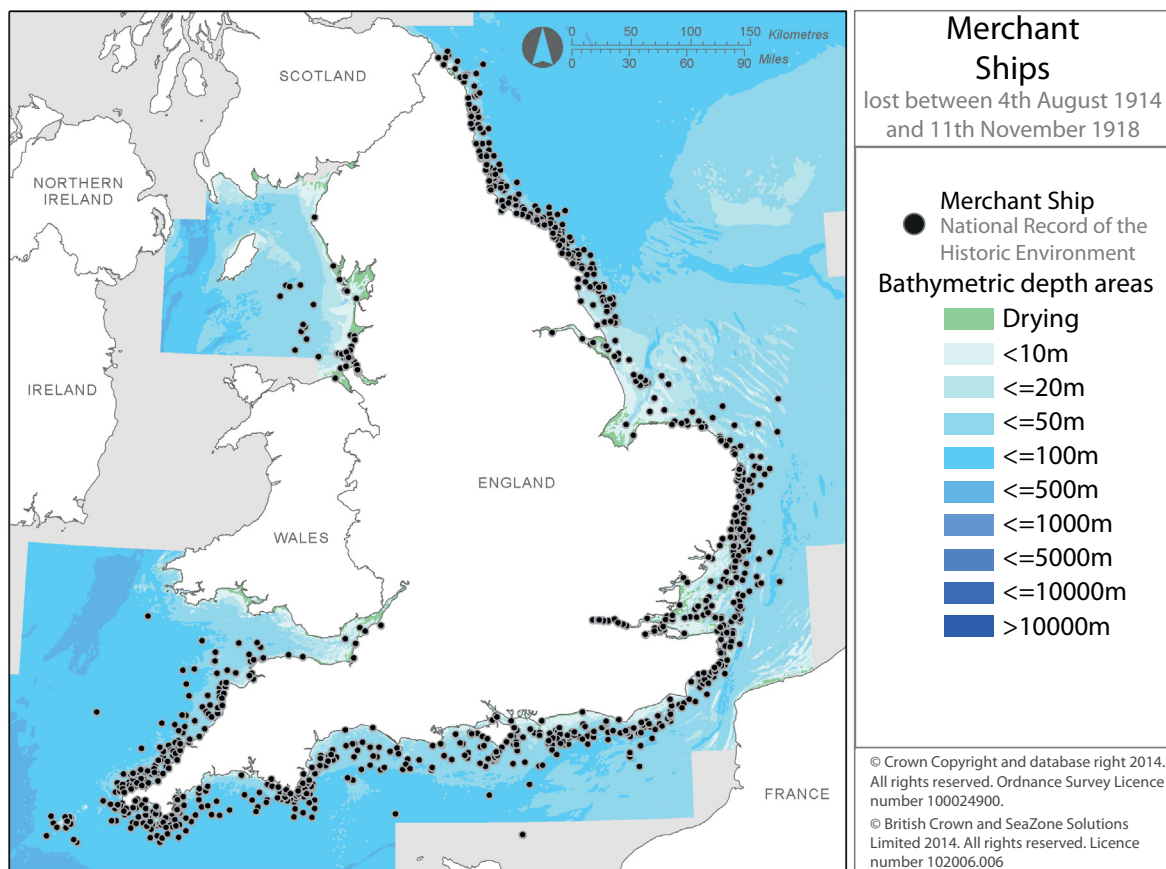


Figure 3. Merchant Ships lost during the First World War in England's inshore region © Crown Copyright

For the war at sea, the research components can be broadly divided into five overlapping areas: the naval air units, naval reserve forces, naval surface units, mercantile marine and submarine services. Figures 1, 2 and 3 show the national record of submarines, warships and Admiralty vessels and merchant ships lost in English waters during the First World War alone (the information supporting the data is available online via pastscape.org.uk).

English Heritage's research on submarine losses commenced in 2013 with a commissioned strategic desk-based assessment that identified the remains of 3 British and 44 German submarines lying in English waters. Of these, we are particularly interested in researching and surveying (to comprise both geophysical and diving fieldwork) the following 11 boats during the period 2014-18 on account of their special interest:

British: *D5* [mined November 1914; first independent British design with significant technological advances]

German: *U-8, UB-12, UB-17, UB-30, UB-55, UB-75, UB-109, UC-6,*

UC-46 and UC-70

The project will run through the centenary period, and will ensure that maritime archaeology has much to contribute to modern historical narratives, as a means to connect to the reality of the past. This research has already received wide-ranging interest from *The Telegraph* in the UK, *Archéothéma* in France and *Der Spiegel* in Germany, as well as additional online coverage around the World.

Although the submarines are not new discoveries, our innovative work is seeking to understand their current condition, the extent of their survival and the current chemical and physical threats to them. We are working closely with other government departments to identify overlaps in legislative protection, and we are asking researchers and divers to participate and contribute data (e.g. dive logs, photo stills and video). As we are interested in understanding the condition of each submarine, as well as confirming their identities with recorded seabed positions, we plan to use diver reports to enhance the national record of each site, and to make photographs and videos available for others to see. This increased understanding will, for the first time, help to inform management and protection outcomes, which we can later utilise to enable the submarines to be conserved for future generations. We have also commenced research to measure and manage the deterioration of metal-hulled shipwreck sites dating from this period.

The centenary will also commemorate a shared history of communities across Britain and its links to the Commonwealth. In May 2014, the UK's Department for Culture, Media and Sport (DCMS) published help and advice for local communities commemorating the First World War, reminding us that the war is a local story as well as part of our nation's history. Every city, town and village was touched by it: by the soldiers and sailors who fought, the people who stayed behind, and the businesses that helped with the war effort. The DCMS guidance, comprising a centenary toolkit for local communities, aims to enable people to get involved in many of the local, regional and national commemorative initiatives running between 2014 and 2018.

Conclusion

English Heritage's *Guidance on ships and boats: 1840 to 1950*, published in 2012, sets out the broad typological development of watercraft and submarines from this period. Within this framework, individual assets can be placed within a wider historical framework whereby an understanding of their 'significance' (defined as being the sum of a range of cultural and natural values) can be developed.

However, an understanding of ‘significant’ places, including historic wreck sites associated with the First World War, should not be limited to the identification of individual assets. Research on WWI at sea is identifying the range of systems, seascapes and battlefields present within the territorial waters of England, often within sight of the coast.

In June 2014, the Secretary of State for Culture, the Rt Hon Sajid Javid MP, set out his vision to support vibrant and sustainable arts and culture. In what has become known as the ‘Culture For All’ speech, the Secretary of State requested that cultural leaders work to ensure that ‘everyone ... has the opportunity to engage with our ... history and heritage.’



Figure 4. Printed in 1917, this Wills's Cigarettes card pays tribute to the ‘Princes and peoples of India [who] spontaneously came to the aid of the Empire on the declaration of war’ © Mark Dunkley

Commemorations associated with the First World War have enormous potential for such engagement; the British declaration of war on Germany and its allies also committed the colonies and Dominions (Figure 4). Over 2.5 million men served in the armies and navies of the Dominions, as well as many thousands of volunteers from the Crown Colonies. Each community has a narrative to contribute.

Material remains on the seabed provide tangible reminders of our shared past. By engaging both divers and non-divers across diverse communities, we have the ability to develop broad participation with history and underwater heritage for all. Nevertheless, such heritage is at risk from a range of chemical and physical threats and both research and action is required to determine how best to manage and protect this vulnerable heritage for current and future generations to articulate, value and understand.

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Section III: Ongoing World War I Initiatives and Programmes

The upcoming years of the centenary of the First World War represent a critical period for the study and protection of underwater cultural heritage left by that conflict. At the present time, when so much attention is focused on the events of the war, efforts must be made to raise awareness about the extent and importance of the resulting underwater cultural heritage, as well as the threats facing it.

Many commemorations have already been planned to mark the anniversaries of key events of the war. By commemorating naval operations, such as Jutland or the Gallipoli Campaign, we can raise greater awareness about WWI underwater cultural heritage. Many other projects have also been planned, or are currently being carried out, to research specific WWI



Figure 1. The Nirefs, a steamer sunk by a mine during WW1 © Nicolas Job

underwater cultural heritage sites, or to publicize the results of such studies. The current interest in the war presents an excellent opportunity to demonstrate how much can be learned through the study of WWI underwater cultural heritage.

It must also be remembered that, although WWI underwater cultural heritage is the result of deadly and destructive events, it can be used today to promote peace and reconciliation. Accordingly, a number of projects have been planned to use the stories and examples of WWI underwater cultural heritage to teach lessons about the horrors of war and the importance of reconciliation and understanding between different cultures.

The papers in this section describe a number of such initiatives, programmes and projects that are currently underway. These projects represent important steps in the campaign to promote this heritage, but they are only the beginning of a series of initiatives to be carried out during the centenary commemorations (2014-2018).



An Overview of Australia's World War I Underwater Cultural Heritage 1914- 1924 and Observations on Changing National Expectations to Commemoration

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This paper has three parts, a brief introduction to the history, range and location of Australia's World War I underwater cultural heritage; an outline of some official and unofficial commemorative activities being planned for the years 2014 to 2018; and a brief discourse on national expectations in regards to the commemoration of military and civilian maritime 'graves' and how this is informing policy.

Australia's World War I Underwater Cultural Heritage

1901-1913

On the first of January 1901, six former British colonies in Australia became a federal country with a federal government. Australia's post-federation navy comprised an underpowered collection of ageing vessels formerly owned by the separate colonial governments of Australia for coastal defence and naval training. At the time of Federation, the primary naval force in Australian waters was the British Royal Navy Australasian Squadron based in Sydney. Indeed, a Royal Navy squadron was maintained in Australian waters until 1913.

However, by 1908, the situation in Europe had deteriorated sufficiently politically for the Royal Navy to perceive the need to pull its Australasian Squadron home. At an Imperial Conference held in 1909, and based on subsequent meetings between the British Admiralty and the Australian Government, Australia purchased a 'Dominion Fleet Unit', which comprised a fast heavily armed, battle cruiser, light cruisers, destroyers and submarines. The fleet unit was designed to be capable of defeating any naval power in the oceanic region, but specifically to counter the threat posed by the German East Asia Squadron based in China that was capable of action in the South Pacific.

The first elements of the fleet unit reached Australian waters in November 1910,

however, it was not until 4 October 1913 that Australia had a Navy fleet that it could call its own. On 24 May 1914 the fleet was completed with the arrival of two 'state-of-the-art' E class submarines, HMAS *AE1* and HMAS *AE2*. The total fleet unit comprised the battle cruiser HMAS *Australia* (8 12-inch guns), light cruisers HMAS *Melbourne*, HMAS *Sydney* and HMAS *Encounter*, the destroyers HMAS *Warrego*, HMAS *Parramatta* and HMAS *Yarra* and the submarines HMAS *AE1* and HMAS *AE2*. About half the sailors in the fleet unit were Australian born, and many Royal Navy sailors located in Sydney transferred to the 'Royal Australian Navy' (RAN) which had been created on 10 July 1911 by His Majesty King George V.

1914 - Australian Naval and Military Expeditionary Force and Loss of HMAS AE1

In 1884, prior to WWI, Germany had colonised the north-eastern part of New Guinea and several nearby island groups. These colonies were utilised as a network of wireless radio bases that could support the German East Asian Squadron with intelligence and logistics support.

At the outbreak of WWI on 6 August 1914, less than a year after the arrival of the Australian fleet unit in October 1913, the British War Office prioritised the neutralization or seizure of the wireless radio bases in these German territories to protect allied and Australian merchant shipping in the region. This task was in line with the RAN's primary mission 'to protect Australia's ports, shipping and trade routes'. To this effect, the Australian Naval and Military Expeditionary Force were assembled to seize these German stations with support from units of the Australian Fleet including the HMAS *Australia* (I), HMAS *Sydney* (I) and submarines HMAS *AE1* and HMAS *AE2*. To convey the expeditionary force to New Guinea, the Peninsular and Oriental Steam Navigation Company liner *Berrima* was chartered by the Commonwealth Government as a transport.

Although ultimately a successful short campaign, *AE1*, which disappeared while patrolling the narrow St George's Strait between New Britain and New Ireland, New Guinea on 14 September 1914, was the first RAN vessel lost in wartime. The entire complement of 3 officers and 32 sailors were lost with the vessel. The German territory surrendered on 17 September 1914.

1914 - SMS Emden – HMAS Sydney I and the Albany Convoy

On 1 November 1914, the 1st Australian Army Division departed Australia from Albany, Western Australia on 38 transports escorted by HMAS *Sydney*, HMAS *Melbourne*, HMS *Minotaur* and the Japanese cruiser HIJMS *Ibuki*. Initially bound for British-controlled Egypt, the convoy had been delayed several times due to fears of interception by German warships in the area. These

fears were proved valid on the morning of 9 November 1914 as the convoy steamed east of the Cocos Islands.

On the morning of 9 November, the successful German raider SMS *Emden* had anchored in Port Refuge, Cocos Island and dispatched a landing party to destroy the island's cable and wireless stations. Prior to their loss, radio operators managed to send a message which alerted the Australian convoy to the threat of the *Emden*, and HMAS *Sydney* was dispatched from the convoy to engage the warship. With the *Sydney's* heavier calibre guns, the *Emden's* advantage in being able to fire from a greater distance was quickly overcome. In an engagement that lasted only 25 minutes, the *Sydney* emerged victorious. For the crew of the *Emden* the battle was hard fought. The *Emden* lost 131 killed and 65 wounded, whilst the *Sydney* suffered 3 killed and 8 wounded. The *Emden's* Captain Von Müller beached the heavily damaged vessel on the southern side of North Keeling Island (Figure 1).



Figure 1. SMS *Emden* beached at North Keeling Island © Public Domain, Courtesy of State Library of Victoria, Photo by Allan C Green

Prior to the battle with *Sydney*, the *Emden's* captain had called for the captured collier SS *Buresk*, to replenish the *Emden's* coal supplies. The *Buresk* was manned by a German prize crew. This vessel was observed by the *Sydney* to be standing by the *Emden* when it engaged. Once Von Müller realized an enemy warship was approaching he went to sea, leaving his shore party, so as to have a better chance when engaging the vessel. Upon the *Sydney's* defeat of the *Emden*, the *Sydney* pursued the *Buresk* northwards. When the *Sydney* caught up with the *Buresk*, the vessel was in the process of being scuttled by the German crew. The *Sydney* subsequently recovered the crew and fired four shots into the vessel to speed its sinking.

1915 - ANZAC Cove, Gallipoli and the Loss of HMAS AE2

On 25 April 1915 HMAS *AE2*, with a crew of 32 comprising officers and sailors from both the Royal Navy and Royal Australian Navy, pioneered the 35 mile long route through the heavily fortified Dardanelles Strait (*Çanakkale Boğazı*) and into the Sea of Marmara. *AE2*, if successful, was to 'run amok' and prevent enemy shipping transiting between the Bosphorus (*Istanbul Bogazi*) and the Dardanelles (*Çanakkale*) from re-supplying Turkish troops on the Gallipoli Peninsula. *AE2* managed to operate for a number of days, however, by the night of 29 April *AE2* was eventually caught by a Turkish gun-boat and damaged by shell fire. The Captain, Lieutenant-Commander Stoker, blew main ballast and sank the vessel to avoid its capture. All hands were picked up by the torpedo boat and no lives lost in the sinking. In June 1998 *AE2* was located lying in 72 m of water by Mr Selçuk Kolay, director of the Rahmi Koç Museum in Istanbul. A joint Turkish and Australian dive team positively identified the site.

Also, on 25 April 1915, an Australian and New Zealand Army Corps (ANZAC) assault force, began to go ashore shortly before dawn at 04.30 arriving a shallow, then nameless, cove on the Gallipoli Peninsula. By the end of the first day 16,000 men had been landed; of those over 2,000 Australians had been killed or wounded. Turkish defenders had successfully stopped ANZAC troops from gaining their strategic objectives leading to 8 months of trench warfare, which resulted in 26,111 Australian casualties and 8,141 Australian dead at a time when the population of Australia was less than 5 million.



Figure 2. Barges at Gallipoli. These evocative underwater images taken by photographer Mark Spencer have become almost iconic © Mark Spencer.

Since 1916, the landings at ANZAC Cove have been marked by annual commemorative ceremonies on the anniversary of Anzac Day. Since 1985, the cove where ANZAC troops landed has been officially known as *Anzac Koyu* (ANZAC Cove), and the battlefields of Gallipoli are on a List of Overseas Places of Historic Significance to Australia. Today the landing barges used by ANZAC troops remain *in situ* underwater off ANZAC Cove (Figure 2).

The Royal Australian Naval Bridging Train

The most decorated Royal Australian Navy unit of the war was a reserve unit called the Royal Australian Naval Bridging Train. The Bridging Train was formed in Melbourne on 28 February 1915 and placed under the command of Lieutenant Commander Leighton Seymour Bracegirdle. The Bridging Train's primary purpose was to construct and maintain piers and wharves.

Their first action under fire came on 7 August 1915, when the Bridging Train landed at Suvla Bay on the Gallipoli Peninsula and were ordered to build a pontoon pier to enable supplies to be brought ashore. During their five months



Figure 3. Tim Smith documenting the remains of wharves at ANZAC Cove © Mark Spencer

at Suvla Bay, the Bridging train maintained the wharves, which were repeatedly damaged by Turkish forces and through use. The Bridging Train also undertook other activities including logistics, repairs, loading and unloading vessels and supply tasks under near constant shell fire. Sailors of the Bridging Train were widely acknowledged by the troops who depended on them in Turkey to keep their supplies flowing. In ANZAC Cove there are footing remains associated with another pier constructed by the South Australian Stanley Holm Watson and sappers from the 2nd Australian Field Company. These pier remains are unique significant aspects of Australia's military heritage and WWI underwater cultural heritage (Figure 3).

At the last it was members of the Bridging Train and other British and Australian sappers that enabled the evacuation of the Gallipoli Peninsula at the end of 1915 without loss of life. The Australian Dictionary of Biography records that Stanley Holm Watson sent the final signal 'Evacuation complete 3.45 a.m. - casualties unknown' and that he then left by the last barge.

While the Bridging Train remained in operation until its disbandment in 1917, much of its activity through the intervening period did not leave any known traces of underwater cultural heritage. The Bridging Train was involved in an amphibious assault to seize the then Turkish coastal town of El Arish on the Sinai Peninsula on 22 December 1916 which resulted in the construction of two piers over which supplies could be landed to the advancing troops. No known research has been done to ascertain if there are material remains of these piers.

His Majesty's Australian Transports (HMAT) Ships

To transport Australian Imperial Force (AIF) troops and their necessary supplies and accoutrements to war, a large fleet of vessels were leased by the Commonwealth Government. These vessels were either leased for a length of time, chartered in their entirety for a single voyage or a portion of their space was chartered for a specific voyage to carry troops and associated cargo. The fleet was predominantly made up of British and captured German ships (including SS *Pfalz* mentioned below in Project Longshot) and included Royal Mail Steamers (vessels who carried the mail between Australia and Britain) and steamships. Multiple sources note that these vessels also carried a range of foodstuffs and products to Britain and France when not committed to troop transport.

Of the Royal Mail Steamers (RMS) that had carried AIF troops to war, three were sunk during the war, though none while operating under Commonwealth lease: RMS *Mongolia*, sunk on 21 July 1918 near Bombay, India; RMS *Mooltan*, sunk on 26 July 1917 in the Mediterranean; and RMS *Persia*, sunk on 30 December 1915 in the Mediterranean. While not a definitive list, and separate to the three RMS just mentioned, at least 18 other vessels leased by the Commonwealth and associated with troop movements during WWI are reported as sunk between 1914 and 1918. The list includes vessels that were sunk when no longer in lease to the Commonwealth. These sinkings occurred predominantly in the Mediterranean (11) and the English Channel (5). Other vessels were sunk off the coast of Ireland (2), in the North Atlantic (1), off the Cape of Good Hope (1) and near India (1).

Region of sinking	No. of vessels lost	Names of vessel
Mediterranean	11	HMAT A2 <i>Geelong</i> ; HMAT A4 <i>Pera</i> ; HMAT A5 <i>Omrah</i> ; HMAT A6 <i>Clan Maccorquodale</i> ; HMAT A12 <i>Saldanha</i> ; HMAT A21 <i>Marere</i> ; HMAT A47 <i>Mashobra</i> ; HMAT A50 <i>Itonus</i> ; HMAT A66 <i>Uganda</i> ; <i>RMS Mooltan</i> ; and <i>RMS Persia</i>



Figure 4. HMAS Australia in 1913. First Flagship of the Commonwealth Fleet scuttled off the coast of Sydney on 12 April 1924 © Courtesy of the Royal Australian Navy

English Channel	5	HMAT A19 <i>Afric</i> ; HMAT A55 <i>Kyarra</i> ; HMAT A69 <i>Warilda</i> ; and HMAT A70 <i>Ballarat</i> ; <i>SS Berrima</i> ; and SS Makarini
Coast of Ireland	2	HMAT A26 <i>Armadale</i> and HMAT A49 <i>Seang Choon</i>
Cape of Good Hope	1	HMAT A22 <i>Rangatirai</i>
North Atlantic	1	HMAT A43 <i>Barunga</i>
Indian Ocean	1	<i>RMS Mongolia</i>

Washington Treaty and Scuttling HMAS Australia in 1924

At 11.00 on 11 November 1918 fighting ended in Western Europe. For Australia, the last act in WWI was played out not on that day but on 12 April 1924. This was the year Australia scuttled our great battleship, the Indefatigable Class HMAS *Australia* (I), outside Sydney Harbour (Figure 4).

The *Australia* (I) was the centrepiece of our fleet unit designed to counter the German East Asia Squadron. John Perryman, a military historian at the RAN Naval Sea Power Centre, states ‘the presence of HMAS *Australia* particularly may have been the reason that the German Pacific Fleet gave our coastline a wide berth as they headed across the Pacific in late 1914’. No Australian city was attacked during WWI, and no ANZAC soldier lost their lives owing to enemy action when being convoyed to war by RAN vessels.

Both Prime Minister W.M. ‘Billy’ Hughes and Prime Minister Stanley Bruce individually expressed sentiments about the role the *Australia* (I) played in protecting Australia and its shipping, ensuring the country did not become isolated through the war. Operationally, the *Australia* (I) gained battle honours in Rabaul in 1914 and in the North Sea from 1915 to 1918, however, the vessel did not see a significant amount of action, and only once fired in action. Following the Armistice, and as a direct result of the Washington Naval Conference of November 1921 to February 1922, *Australia* (I) was earmarked for scuttling. The RAN Sea Power Centre noted that, ‘The battle cruiser had always consumed a large proportion of the Navy’s budget and manpower, and as funding was reduced (post WWI) the Navy decided that resources could be better applied elsewhere.’

Less than three years after the end of WWI, on 12 December 1921, *Australia* (I) was placed into reserve after extensive salvaging of fittings and fixtures. This was a prelude to the 1924 scuttling of the vessel with its main armament to comply with the terms of the Washington Naval Treaty of 1922, which provided for a reduction in naval strengths.

Other World War I Underwater Cultural Heritage in Australian Waters - Post-War Scuttling of Royal Australian Navy Vessels or Chartered Transport Vessels During World War I

While Australia only lost two RAN vessels during WWI, like HMAS *Australia* (I), many of the other RAN vessels that served during the war were later decommissioned, scuttled and form part of our rich underwater cultural heritage today. RAN vessels that operated in WWI and were subsequently

decommissioned, sold and/or scuttled include:

Royal Australian Navy Vessels

- HMAS *Brisbane* (1916-1936) - scrapped in the United Kingdom.
- HMAS *Encounter* (1902-1932) - scuttled off Bondi, NSW.
- HMAS *Huon* (1915-1931) - sunk as a gunnery target off Port Jackson, NSW.
- HMAS *Melbourne* (1913-1929) - broken up in Scotland.
- HMAS *Parramatta* (1910-1928) - While originally laying derelict on a mud bank north of Milson Island in the Hawkesbury River until 7 July 1973, portions of the bow and stern sections were salvaged and later transported to a site on the north bank of the Parramatta River, upstream from the Silverwater Bridge. The stern of the ship was later established as a naval memorial at Queens Wharf Reserve. The bow section is mounted at the north end of Garden Island, Sydney, within the grounds of the Naval Cultural and Heritage Centre.
- HMAS *Pioneer* (1899-1931) - scuttled off Sydney Harbour.
- HMAS *Protector* (1884-1943) - hulk lies just off Heron Island, Queensland.
- HMAS *Psyche* (1899-1940) - sunk in Salamander Bay, near Port Stephens, NSW.
- HMAS *Swan* (1916-1931) - foundered in the Hawkesbury River while being towed to a shipbreakers in 1931, the hulk remains there today.
- HMAS *Sydney* (I) (1913-1929) - broken up for scrap at Cockatoo Island, Sydney, NSW.
- HMAS *Torrens* (1916-1930) - hulk was used as a gunnery target and was eventually sunk off Sydney by HMAS *Canberra* in November 1930.
- HMAS *Warrego* (1912-1931) - as a hulk, sank at the Cockatoo Island wharf in 1931 and was subsequently blown up.
- HMAS *Yarra* (1910-1929) - laid up until 1929, sunk off Port Jackson, NSW.

Other vessels

- SS *Alacrity* (tug) - wrecked in Cockburn Sound, WA 1931.
- Supply ship *Aorangi* (1883-1925) - chartered by the RAN from the Union Steamship Company in August 1914. Paid off in July 1918 and scrapped in 1929. Last working in Malta.

Australia's Commemorative Programme 2014-2018

To commemorate the sacrifices made by Australians in WWI, a significant Commonwealth funded commemoration program was established to mark the Centenary of the First World War 2014-2018. This Program also recognises a 'Century of Service' by all service personnel from Federation to the current day. To look at options and supply independent advice to the Australian Government on the Anzac Centenary Program 2014-2018, the National Commission on the Commemoration of the Anzac Centenary was established in 2010 and received more than 600 submissions containing more than 1,500 suggestions from Australia and overseas. The Commission's report recommended the establishment of the Anzac Centenary Advisory Board, chaired by Air Chief Marshal Angus Houston, AC, AFC (Ret'd). In its report to the Government, the Board recommended funding for the Silent ANZAC Project.

Silent ANZAC Project

This joint Australian-Turkish program looks to archaeologically document the HMAS *AE2*, assess its condition and develop methods for better *in situ* and legislative protection. A critical aim of the project is to elevate the Australian public's awareness of *AE2* and its role in the Gallipoli campaign. Significant effort has gone into telling the story in both Turkish and English and working collaboratively to get a positive heritage outcome for the *AE2* into the future. Fieldwork has been conducted over a number of years, with the most recent activity occurring in June 2014. This culminated in a remotely operated vehicle entering inside the submarine for the first time to collect images, and the attachment of a cathodic protection system to impede the corrosion of the submarine.

Search for HMAS AE1

Another Commonwealth backed project, though not funded under the Anzac Centenary Program 2014-2018, is the centenary search for HMAS *AE1* in Papua New Guinea's waters by the RAN with support from *AE1* Incorporated. A planned search will commence in September 2014, with approximately 5 days sea time. Due to the complex seafloor topography, the search is proposing to use a towed side-scan sonar behind a remotely operated vehicle which could search the area following the terrain of the seabed.

In addition to the government backed search by *AE1* Incorporated, private salvage divers are reportedly searching for the vessel.

Should the *AE1* be discovered in Papua New Guinea's waters, Australia will need to work closely with Papua New Guinea to develop capacity building

in underwater cultural heritage management and to establish a capacity to deliver ongoing and effective protection for this Australian and English WWI shared heritage site.

Project Longshot

Another different type of commemorative project is Project Longshot. As tension rose in Europe in 1914 a German Cargo ship SS *Pfalz* tried to escape Melbourne, Victoria. While the declaration of war was not known when the vessel had left Melbourne, before the vessel had travelled the length of Port Phillip the news had arrived at the two forts located near the heads of the bay. The Captain of the *Pfalz* was asked to stop but failed to do so, and so from the fort called Point Nepean, the Australian Military Forces fired arguably the first allied shot of WWI.



Figure 5. HMAS AE1 and HMAS AE2 Memorial stained glass window at Garden Island, NSW. © Royal Australian Navy Sea Power Centre.

Project Longshot is being conducted by a very experienced group of successful shipwreck hunters called Southern Ocean Exploration (SOE). SOE propose to look for the remains of the shell fired that day, however, a feature of this community based project is their effort to crowdsource funds to purchase a Geometrics Marine magnetometer to undertake necessary remote sensing activities in their identified search areas.

As mentioned previously, the *Pfalz* later became Australian troop transport vessel HMAT *A42 Boorara* and was manned by Australian officers and crew.

Other Commemorative Events

While a range of other commemorative events are planned, and some fieldwork on SMS *Emden* is being timed to coincide with the centenary, the largest single event funded under the Anzac Centenary Program 2014-2018 was the Albany Convoy Commemorative Event (ACCE), 31 October to 2 November 2014. The ACCE commemorated the 100th anniversary of the departure of the first convoy of ships that carried the Australian Imperial Force (AIF) and the New Zealand Expeditionary Force (NZEF) to the First World War. These groups

were later to become collectively known as the 'Anzacs'.

Observations on Commemoration

During WWI, approximately 422,000 Australians served in the military, with 333,000 serving overseas. Over 60,000 Australians lost their lives, and 137,000 were wounded. As a percentage of forces committed, this equalled a casualty rate of almost 65 per cent, one of the highest casualty rates amongst the forces of the British Empire. The percentage of dead per capita is a factor many times above any other conflict Australia has been involved in.

During WWI, the sea was an important battleground that extended around the globe. As has been observed many times, for the vast majority of sailors there was no grave but the sea (Figure 5).

Commonwealth War Graves Commission

The Commonwealth War Graves Commission came into official being from 1915 to 1917, and was based on the work of Sir Fabian Ware. For the purposes of the Commission, a war grave is essentially defined as a plot with a tombstone. Sailors who died at sea have their names inscribed on memorials. After the First World War, Australia agreed to memorialise its naval losses in conjunction with the Royal Navy in three identical memorial obelisks erected at the manning ports in Great Britain of Chatham, Plymouth and Portsmouth.

Office of Australian War Graves

In Australia the Office of War Graves (OAWG) administers the *War Graves Act 1980*. The OAWG has three roles:

- to maintain war cemeteries and individual war graves in Australia and the region
- to commemorate eligible veterans who died post-war and whose deaths were caused by their war service
- to build and maintain national memorials overseas.

Australian War Memorial

One of Australia's best and most visited cultural institutions is the Australian War Memorial, which was opened on 11 November 1941. The War Memorial's website states that its purpose 'is to commemorate the sacrifice of those Australians who have died in war. Its mission is to assist Australians to remember, interpret and understand the Australian experience of war and its enduring impact on Australian society.'

Historic Shipwrecks Act Review

The shipwreck sites of WWI and WWII are not managed specifically as ‘gravesites’ in Australian waters but more generally as heritage. Underwater cultural heritage managers, by default, have become responsible for administering sites with varying social significances and commemorative values, including the issue of human remains. In 2009, the Australian Government commenced a review of the *Historic Shipwrecks Act 1976*. As the Historic Shipwrecks Act does not differentiate human remains from a part of a ship or its cargo, a question posed in the review asked the public’s opinion of this, and whether it would prefer to see some differentiation in treatment within the legislation. Community response to the question in the review revealed a consistent view from the public that human remains should be treated sensitively and differently from other objects in an archaeological assemblage. This response is in line with the UNESCO 2001 *Convention on the Protection of the Underwater Cultural Heritage* requirement to respect human remains.

Changing Public Perception?

What changed between the drafting of the Historic Shipwrecks Act legislation in the mid 1970s and its introduction in 1976 and the review of the Act in 2009 that produced such a different response? For many Australians in the later half of the twentieth century and into the twenty-first century, WWII has had a continuing immediacy. Since WWII Australia has been involved in numerous conflicts which has kept war, and commemoration of war dead, constantly in the public eye.

In Australia, the public’s attention has also been focused on WWII shipwrecks through the significant efforts of various community groups to locate vessels prior to the death of family members or the friends of deceased servicemen. These groups worked actively for many years to elevate their issue into the public consciousness and to raise funds to undertake the necessary searches. The best examples of this are the search for HMAS *Sydney* (II) and HSK *Kormoran* (located March 2008), and the Australian Hospital Ship *Centaur* (located in November 2013). Other community groups also have been or remain active, including the Montevideo Maru Society and Friends of HMAS *Perth* (I). A common thread to all these shipwrecks for Australians is typically the large loss of life associated with the vessel’s sinking.

In conjunction with these activities, other WWII sites have been located which elevated the significance of underwater cultural heritage in the public’s eye. The discovery of the Japanese Midget Submarine *M24* on 20 November 2006 just

outside Australia's most populous city, Sydney, gained major national media attention. This discovery demonstrated that different cultures have different social norms to human remains.

Changes in Social Behaviour/Community Expectation?

The push to find WWI and WWII shipwrecks is strongly associated with the baby boomer generation (born between 1946 and 1961), which has significantly controlled policy thinking in Australia since WWII. In general, individuals who are in the baby boomer generation are, today, relatively affluent and willing to travel globally. For this generation and those following, expressions of loss are not constrained to the location of official memorials, or limited to incidents involving immediate members of family or friends of the family.

Commemoration of loss associated with WWII shipwrecks is now increasingly held in close proximity to the place of death. This is very similar to what we observe at roadside memorials, and arguably at such sites as the World Trade Centre. Sociologists have called this 'dark tourism' and 'ethical spectatorship'. Is this practice a change in social behaviour or a continuity of traditions? In Greece, shrines are placed close to the location of where someone has died or where a life has been spared. Roadside shrines can now be seen in many countries and are so prevalent in Australia that state governments have developed policy guidelines to regulate associated issues. My view is that the practice is no more than an amplification of existing customs and practices in cultures enabled by an individual's greater wealth and mobility.

Since underwater sites are not covered by the Commonwealth War Graves Commission or regulated in Australia by the *War Graves Act 1980*, there exists a minor 'policy gap' in recognising an underwater site as a place where people died during war. WWI and WWII underwater sites and their associated maritime military remains have, in effect, become an underwater cultural heritage management issue that has not been addressed within an explicit policy framework but through an iterative process. Recently in Australia, a research group that was proposing to inspect and survey a maritime military site was asked by a veterans group to not touch the site at all. The project is subject to significant funding, and the research group was concerned of repercussions should its research plan be in conflict with this group's wishes.

If taken at face value, this stipulation by the veteran's group is simply attempting to pay appropriate respect, however, it is also an attempt to dictate control of what can and cannot be done on a military wreck site. This advocacy has more force when there exists no clear policy on what can and cannot be done in respect to sites where human remains may exist. This issue is further confused

when a site may well have very little possibility of human remains (based on depth, length of time, site formation, biological activity and environment), yet large numbers of people died on the site, and members of the public want to accord the site the same management parameters as a grave.

For cultural heritage managers, I feel that appropriate respect for human remains and evolving concepts of recognizing the significance of a site as a 'grave' requires a delicate balance with other values. I fully agree that we need to respect our military and civilian dead, but we must not 'sacrifice' science-based management and broader community participation in heritage to do so. While in Australia I expect that the respect of human remains associated with underwater cultural heritage will someday become more regulated, I believe that the six principles espoused in the 1989 Vermillion Accord on Human Remains adopted by the World Archaeology Conference remain a clear and valid set of principles on which to demonstrate respect for human remains:

1. Respect for the mortal remains of the dead shall be accorded to all, irrespective of origin, race, religion, nationality, custom and tradition.
2. Respect for the wishes of the dead concerning disposition shall be accorded whenever possible, reasonable and lawful, when they are known or can be reasonably inferred.
3. Respect for the wishes of the local community and of relatives or guardians of the dead shall be accorded whenever possible, reasonable and lawful.
4. Respect for the scientific value of skeletal, mummified and other human remains (including fossil hominids) shall be accorded when such value is demonstrated to exist.
5. Agreement on the disposition of fossil, skeletal, mummified and other remains shall be reached by negotiation on the basis of mutual respect for the legitimate concerns of communities for the proper disposition of their ancestors, as well as the legitimate concerns of science and education.
6. The express recognition that the concerns of various ethnic groups, as well as those of science are legitimate and to be respected, will permit acceptable agreements to be reached and honoured.

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100 Years Later - The Remains of the First World War on the French Coast: Inventory and Current Situation FFESSM

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In order to improve the knowledge-base concerning World War I shipwrecks among divers and the public, and to point out the threats to these sites, the French diving federation has set up a wide-ranging operation to collect information from sport divers, aimed at evaluating the current state of conservation of these wrecks 100 years after their sinking.

The FFESSM, (Fédération Française d'Étude et de Sports Sous-Marins: French Federation of Underwater Sports and Studies) is an association aiming to promote diving and organize divers in France. Created in 1948, it is the oldest diving society in the world, with 146,000 members and more than 23,000 instructors in 2,400 organizations. It also produces a magazine, 'Subaqua', publishing 2,000 copies every 2 months.

The Federation includes diverse sections, including legal, technical, medical commissions, photo/video, biology and finally underwater archaeology. This final section provides an internal structure for this discipline and promotes research, under the aegis of the Ministry of Culture through the DRASSM (Department of Underwater Archaeological Research).



Figure 1. Example of a Presentation on the Project
© Michel Huet

Shipwrecks constitute very popular diving destinations, but those who dive them often have no knowledge of their origin, or the story behind the wrecking event. They are not conscious of the privilege they have to be able to visit such sites, which are often the last witnesses of dramatic events.

FFESSM - Commission Nationale d'Archéologie Sous-marine
Inventaire des épaves de la Première guerre mondiale

NOM DU NAVIRE
SECTEUR, Ville la plus proche

RÉSUMÉ
Type de navire, état actuel du site ; intérêt : historique, technique, patrimonial, ...
CLASSIFICATION : 0, + à +++

SECTEUR GEOGRAPHIQUE
Littoral, côte, port le plus proche.

POSITION
WGS 84

HISTORIQUE

NATURE ET ORIGINE DU NAVIRE
Type de navire, nationalité
Ce que l'on sait du navire : date et lieu de construction, Dimensions.

CONTEXTE HISTORIQUE
Période de la guerre marine.

CIRCONSTANCES DU NAUFRAGE

CONSEQUENCES
Morts, blessés, leur devenir.

ÉVOLUTION DU SITE
Ferrailage professionnel, tentatives de renflouement.
Contexte et date de découverte.

FFESSM - Commission Nationale d'Archéologie Sous-marine
Inventaire des épaves de la Première guerre mondiale

DESCRIPTION DU SITE

DE LA PROUË À LA POUPE
Description du site, des différents éléments.
(étrave, ancres, chaînes, guindeau, treuils, chaudières, moteur, arbre et hélice, étambot, membrures, bordé, cargaison, éléments de timonerie, artefacts)

PROFONDEUR, ORIENTATION

ÉTAT DE CONSERVATION
CLASSE : I À IV (Intact → éléments éparses)
Dégradation constatée en plongée,
Stabilité, vulnérabilité.

SUBSTRAT - FAUNE ET FLORE
Sable, roche, ...
Généralités, points caractéristiques, raretés.

IDENTIFICATION
Éléments de confirmation ou de suspicion de la nature de l'épave.

CONCLUSION : ÉLÉMENTS REMARQUABLES
Intérêt du site, détaillé : historique, patrimonial local, technologique, biologique, photogénique, didactique récréatif.

Figure 2. Example of a Diver-Created Wreck File © Michel Huet

As such, the FFESSM decided to set up an operation, with the aid of clubs and the federal magazine, which collects information from sport divers to estimate the state of preservation of the wrecks, to establish a database of this information, and to present the most characteristic sites, sector by sector through panels or temporary and travelling exhibitions (Figure 1).

We hope to involve divers in this operation. To allow the creation of index files of scientific value, we have placed guides online, as well as instructions for the writing and drawing related to a report (Figure 2).

The collected data will constitute a database that will allow scientists to have a global vision of the sites of the wrecks of the First World War explored by the divers on the French coast, and of their current state. The most remarkable and vulnerable sites will be identified as such, and protective measures can then be prepared.

The divers involved will acquire tools for the scientific documentation of a contemporary wreck, and doubtless will become aware of their technological, historic, and patrimonial interest and the necessity to protect and study them.

UNESCO Education Initiative - Heritage for Dialogue and Reconciliation: Safeguarding Underwater Cultural Heritage from World War I

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From 2014 to 2018, the international community will commemorate the Centenary of World War I. This will be a time to remind all generations of the necessity for peace and to provide education on the war, specifically education derived from preservation efforts and research conducted on WWI heritage.

The ‘war at sea’ - including naval battles and U-boat actions - was an important and integral part of WWI. The protection of WWI’s underwater cultural heritage is necessary to enable humanity to understand and remember the horrors of war and its devastating human consequences, and to encourage everyone to endeavor to preserve lasting peace. Heritage is the reminder of the need for reconciliation, understanding, and for all nations to live peacefully together.

During the centenary, schools will be challenged to pay attention to the different aspects of WWI. This can take many forms: a school visit to a maritime museum, a temporary exhibition on a particular aspect of the First World War, a visit to a commemorative location, reading poetry on the First World War during language courses, an online virtual dive to a First World War shipwreck, etc., the list is not restricted. All these activities provide the opportunity to set students up for an interest in the topic by providing opportunities to learn about the many faces of war, peace



Figure 1. HMS Vindictive memorial in Ostend
© Dirk Timmermans/UNA Flanders

and reconciliation.

But then comes the moment that each teacher has so often experienced: it's one thing to participate in an enthusiastic or touching activity, quite another to shape these learning experiences in a workable, measurable and sustainable pedagogical project which is complementary to the final or cross-curricular outcomes.

UNESCO's Manual, 'Heritage for Dialogue and Reconciliation', will present teachers with the necessary tools to shape this process.

The purpose of the Teacher's Manual is to:

- provide content on the topic of underwater cultural heritage in relation to WWI and to incorporate this in the course outline of topics such as human rights and responsibilities, use and abuse of power, conflict resolutions, awareness of cultural heritage, etc.
- provide additional information on the pedagogical approaches of peace and remembrance education
- build confidence in teachers when teaching about underwater cultural heritage, peace, remembrance and reconciliation
- assist teachers in effectively integrating local initiatives on the centenary of WWI and underwater cultural heritage in the curriculum
- furnish teachers with learning activities, examples of best practices, didactical suggestions and examples, which stimulate both the commemoration of the First World War through the example of underwater cultural heritage, and innovative reflections on peace, reconciliation, human rights and tolerance today

The United Nations Educational, Scientific and Cultural Organization

The United Nations Educational, Scientific and Cultural Organization (UNESCO) was created in 1945 in the wake of the two World Wars, which generated awareness of the urgent need to construct lasting peace in an increasingly interconnected world. UNESCO's Constitution states that 'since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed.'

In creating the United Nations system and a specialized agency like UNESCO, the international community sought hence to 'advance, through the educational and scientific and cultural relations of the peoples of the world, the objectives of international peace and of the common welfare of mankind' (preamble of

UNESCO's Constitution).

The wide diffusion of culture and the education of humanity for justice and liberty and peace were considered indispensable to the dignity of men and women. It was singled out as a sacred duty of all nations. The international community created UNESCO for this purpose. Today, among the many ways in which UNESCO achieves this noble objective, the promotion and dissemination of knowledge and overseeing the protection of the world's common heritage stands out.

The UNESCO Convention on the Protection of the Underwater Cultural Heritage

The Convention on the Protection of the Underwater Cultural Heritage was adopted by the UNESCO General Conference in 2001 as response to the destruction of underwater archaeological sites by commercial treasure-hunters, and certain industrial activities. The convention also reflects the growing recognition of the need to ensure the same protection to underwater cultural heritage as that already accorded to heritage on land.

Underwater cultural heritage, as defined by the convention, refers to all traces of human existence having a cultural, historical or archaeological character that have been partially or totally underwater, periodically or continuously, for at least 100 years. This includes millions of shipwrecks, sunken cities, traces of humans on submerged landscapes, as well as underwater sacrificial offerings and religious sites in lakes and rivers.



Figure 2. Canakkale Seddulbahir Majestik © Harun Ozdas/UNESCO

In light of the 100-year rule, underwater remains from the First World War will begin to fall under the protection of the UNESCO Convention on the Protection of the Underwater Cultural Heritage in 2014.

Peace Education based on the Understanding of Heritage

The First World War was one of the most destructive conflicts in the world's recent history. The First World War touched the lives of nearly every man, woman and child in the countries that took part. The war reached out and affected, without distinction, almost everyone's life in some way or another. The impacts of the First World War are still prevalent today.

Millions of people across the world today still feel moved by the enduring works of art that were created as a response to the atrocities of War. They also face the political legacies. A new world order emerged. From the ashes of the First World War, new countries were created in Europe and the Middle East. The First World War was also, however, a turning point in society's perception of war, which encouraged more lasting peace for the future. In particular, WWI led to the creation of the first permanent international organization with the mission to maintain world peace, the League of Nations, predecessor of the United Nations system.

The consequences of many of these political changes have an impact today, nearly a century later.

For these reasons, it is essential to remember and learn from those who sacrificed their lives during those four years, 1914 – 1918. The First World War created a common sense of history that, decades later, still links people from many disparate nations.

The WWI Centenary provides a unique opportunity to remind all peoples of the importance of peace and to enhance our understanding of history through the research and preservation of heritage.

World Heritage is at the Heart of UNESCO's Peace Mandate

From majestic waterfalls and lost cities to mysterious landmarks and natural wonders, UNESCO World Heritage sites are often equated with dreams and beauty. And yet, the outstanding value of a world heritage site is first and foremost assessed according to the principles of sustainable development, authenticity, environment, scientific conservation, identity and the history of peoples. This role distinguishes itself markedly in the determination of sites of memory, and UNESCO must meet the immense challenge of uniting peoples on an unprecedented scale in order to pave a path towards peace. Our common heritage is poignantly revealed in some of the most tragic events of human history.

The protection of world heritage helps us to better understand the various

aspects of peace. Some monuments of world heritage have themselves played a part in processes of war and peace, such as the concentration camp Auschwitz-Birkenau, the peace dome in Hiroshima or the bridge in Mostar, Bosnia and Herzegovina. Other world heritage is reminiscent of both nature and humankind's beautiful creations. Many monuments of world heritage symbolize our eternal desire for freedom, justice, mutual understanding and respect, love and friendship. They represent our fundamental human rights and constitute the indispensable ingredients of peace and development for each individual, every society and for the world as a whole.

Our history and our heritage are part of who we are. History and heritage influence how we evolve, passing knowledge on to future generations, and provide a basis for tradition and value.

Therefore, WWI heritage tells a missing part of the true story, the story as experienced by average men and women. Heritage allows us to remember, reconcile, feel, and understand. It brings victim's emotions from battle or conflict to us in a tangible and touching way.

Underwater cultural heritage from WWI is a special witness to this story. Until now, however, it has been barely visible, barely researched, and barely understood. Written naval history on the First World War tells of fights, strategies, technologies, and power, but the wreck sites, which are filled with the remains of those who fell in battle, tell us a tragically different tale. Many of the wrecks are gravesites. Reports of sinking ships or of recovering the dead speak of immense suffering and grief. By telling us the human tragedy of war in every single tale,

the reports stand as a call for peace and reconciliation.



Figure 3. Posters on Underwater Cultural Heritage and Peace created by the Art department of the Municipal Secondary School Cadix © Jan Landau/ Muncipal Schools of the City of Antwerp

History and heritage give hope when shared among nations. They allow nations to step away from past victories and defeats. The experience of war, and its effect on people and heritage, can help foster peace and reconciliation.

The relics of war belong to all of humanity, and humanity shares the responsibilities of protecting these relics and contributing to a more aware and peaceful society. By sharing WWI heritage,

those nations that were involved in the war can embrace a shared part of their identity. Tolerating, respecting, and showing compassion for different cultures, including those of former enemies, fosters peace.

Learning about Underwater Cultural Heritage, Reconciliation and Peace

Shipwrecks, coastal installations, cemeteries, memorials, battlefields and shelters are among the many tangible traces of the First World War. Together with museums, traditions and written personal testimonies, they form the last bridge between past and present, as there are no longer any direct eyewitnesses. They serve as a reminder of dramatic moments from the past to the future generations. But heritage is more than purely material relics of the past. It is something that is part of our identity. It becomes part of our distinctiveness and our reaction to the present world. Thus the national or international community has come to see it as inherently significant. Value is assigned to the sites by many actors, including local communities, associations, youth, heritage workers, artists, journalists and politicians.

Education plays an important role in our perception and appreciation of heritage, but also in our reaction to it. Education reaches all future citizens. At school, young people learn more than simply how to read and calculate. They also learn about peace, respect and tolerance. They learn to work together, they learn who they are and how this relates to the world they live in. In addition to giving each individual child a future, education contributes to building the future of the country and of the international community. History, heritage and the past play an important role here to ensure a safe and peaceful future.

A specific characteristic of this kind of education (what we call remembrance education) is its starting point – the memory of the past. Ultimately, however, the goal is what is important. We do not study the past only to know or understand it. The study of the past primarily concerns what we can learn from it in order to improve the future.

We can teach remembrance education based on heritage from three aspects:

1. Knowledge and insight
2. Empathy and solidarity
3. Reflection and action

These three aspects can be seen as objectives and educational platforms.

‘Knowledge and insight’ is fundamental to a good start. When we explore

aspects of the First World War and underwater cultural heritage with students, we do this according to the correct, neutral historical and scientific information. Without knowledge and insight, ‘empathy and solidarity’ and ‘reflection and action’ remain meaningless, and there is a risk that we will surrender to a mythical or nationalist approach to the past.

Nevertheless, we cannot manage with knowledge and insight alone. If we ask only for the facts, the past will remain something that happened outside of the student’s life and in a distant bygone era. Empathy and solidarity enables us to question the past according to human potential or impossibilities. This question is anthropological in nature, and is relevant at all times.

Without opportunities to apply what we learn through ‘reflection and action’, ‘knowledge and insight’ and ‘empathy and solidarity’ are superficial. In other words, we need to focus the educational process on the world in which we live and on contemporary society, either at the national or global level. We must maintain a view for a better future. Looking to the past, which building blocks do we need for peace?

Teaching Manual ‘Heritage for Dialogue and Reconciliation’

UNESCO’s teaching manual ‘Heritage for Dialogue and Reconciliation’ will help schools to prepare their own projects in the context of the centenary. As part of the preparation process of the educational project, ten Flemish primary and secondary schools developed and implemented projects on several aspects of underwater cultural heritage to raise students’ awareness about the importance of the preservation of heritage and about the consequences of war. Some of their experiences are included in the teacher manual and will serve as an example of how certain schools have shaped their educational processes. Moreover, several Flemish partners collaborated on this local school initiative, which was coordinated by the United Nations Association Flanders Belgium



Figure 4. Students at work on Underwater Cultural Heritage during a Flemish school project © Istvan Leel - Ossy/UNA Flanders

(VVN). The partners include UNESCO Platform Vlaanderen, Peace Education services of the provinces West-Flanders and Antwerp, the Flanders Marine Institute (VLIZ) and Canon Cultuurcel – the special cultural agency of the Flemish Department of Education.

The teacher manual has been compiled by UNESCO and

United Nations Association Flanders Belgium. The manual aims to inspire schools and invite them to thoroughly reflect on the issues at hand. It offers didactical suggestions and examples, which stimulate both the commemoration of the First World War through the example of underwater cultural heritage, and innovative reflections on peace, reconciliation, human rights and tolerance today. These different sections are illustrated through various didactical tips, options and examples (best practices). In addition, close attention has been paid to didactical limitations.

Peace and heritage education, based on underwater cultural heritage, then becomes a transversal or pan-curricular framework, which runs throughout the different classes and interdisciplinary organisation. The many cross-curricular links help us to turn children into citizens who are able to participate in democratic debates and are aware of social challenges. Not only in order to build up historical knowledge, but also in order to be able to better interpret contemporary problems and conflict areas – close to home, or even in school, or elsewhere – and place them in a human, social and historical context.

UNESCO proposes that schools and teaching institutions communicate the importance of heritage for the understanding of history, in the present case WWI heritage, in using the example of underwater cultural heritage. This can also serve to teach on the values of peace and reconciliation.

On the occasion of the launch of the teacher manual, UNESCO will make

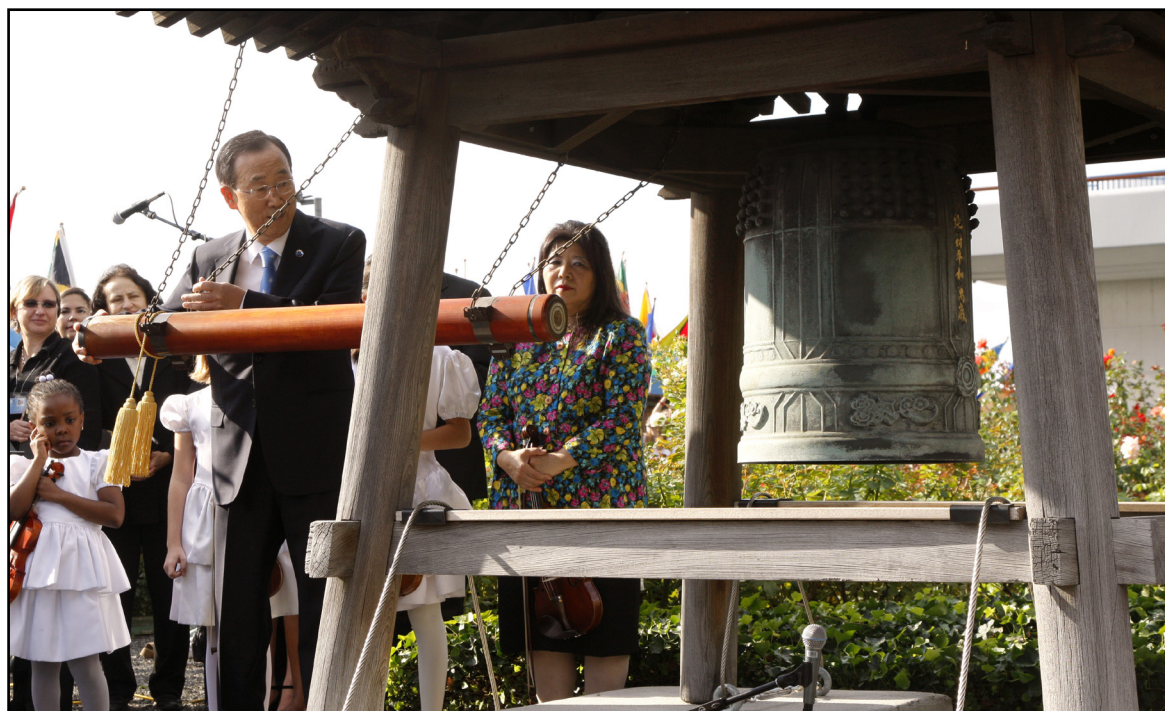


Figure 5. UN Secretary-General Ban Ki-moon rings the Peace Bell at the ceremony held at UN Headquarters marking the annual International Day of Peace © UN Photo

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Making the Link between the Wrecks and the History of the First World War

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The GRIEME (Groupe de Recherche et d'Identification d'Epaves de Manche Est) is a group of freelance divers based in Upper Normandy. Its aim is to locate, identify and highlight the interest of wrecks, mainly in the English Channel (Figure 1).

In France, there is little awareness of the underwater conflicts of the First World War; this makes it necessary to tell the public about this heritage, but how can the value of First World War shipwrecks be highlighted when the public memory is focused on the conflict on land? The answer is to highlight the link between the naval war and the history of the First World War.

One example is the Norwegian freighter *Alice*. The ship was fired upon on 21 February 1917 by a German U-boat while transporting a cargo of coal. As such, the story of the sinking seems to be of only anecdotal interest. Even more so since such sinkings were very common in this period.

In this example, in order to raise the profile of this shipwreck, an important connection is the issues surrounding coal supplies and the decision of the governments of the countries at war to adopt, for the very first time in history, the principle of time change to save energy (coal was converted into gas and this gas was used for street lighting).

This story can demonstrate the importance of the history of this particular




Figure 1. The Members of GRIEME © Pierre Yves-Lepage

wreck, and more generally, of the undersea war.

The GRIEME has decided to write its fourth book dedicated to the wrecks of the undersea war in the channel in order to publicize this. Each chapter will have a flash code referring the reader to a web link where they will be able to find photos and videos of the wrecks, as well as archive documents and extra bonuses.

To conclude, if in France there is little awareness of the undersea war, it is the opinion of the GRIEME that providing explanations of this aspect of World War I can also explain some of the main stages in the First World War. This is one way of raising the profile of these wrecks.



The Atlas of the 2 Seas and the First World War Forgotten Wrecks Projects: Innovative Methods of Underwater Cultural Heritage Research, Presentation and Dissemination

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Historically, ships have been the largest and most sophisticated pieces of technology produced by nation states. The seabed contains an assemblage of cultural assets that reflect social and technical development since the last ice age. A warship patrolling the high seas can act as a statement of power, while the evocative image of a schooner in full sail is a testimony to human skill and endeavour. Such sightings may be rare today, but below the surface of the water, thousands of shipwrecks remain in what has become the best-stocked museum in the world. Some of these wrecks lie almost intact in their serene, watery grave, while others are broken and damaged, reflecting the tragedy that resulted in their loss. This hidden archive tells the story of a shared past that shaped the modern world, but if we go further back in time when sea levels were lower, we find archaeological landscapes that played host to prehistoric people as they migrated around the globe.

Unfortunately, these resources are hard to visualize, and it is difficult for the non-diver to appreciate them. This is all the more regrettable as the public has a clear appetite for underwater cultural heritage in the form of both shipwrecks and submerged landscapes. This fact is demonstrated by the high number of television programmes commissioned to record stories relating to both human losses at sea and the submersion of ancient sites of human settlement. The interest is also reflected by the large community of volunteers and avocational archaeologists who, when given the opportunity, are keen to become actively involved. This mixture of a rich resource and an enthusiastic public has proven very successful, and it is becoming apparent that this combination has the potential to deliver a great deal more.

The Maritime Archaeology Trust (MAT) has, for the last 24 years, been uncovering the secrets of the underwater world, and exploring ways that the fascinating results of underwater research can be used for the public benefit. It

has endeavoured to share the information with a wide ranging public audience, and to link our common heritage to the lives of local people. This has been achieved by using marine archaeology as a tool to help people work together and to engage them with their common past. In addition, books and booklets have been produced, education packs have been developed to work with school children and a travelling exhibit onboard a maritime bus has been created to reach less accessible locations.

This paper will present some of the ways the MAT has pushed its agenda of research, fieldwork and dissemination. It will demonstrate how this model is being incorporated on a European scale with the 'Atlas of the 2 Seas' project, and offers potential to make underwater cultural heritage more universally inclusive.

Atlas of the 2 Seas

The success of the MAT outreach program was drawn on and developed further within the Atlas of the 2 Seas project (www.atlas2seas.eu). The overall aim has been to map underwater cultural heritage and disseminate information about underwater archaeological sites in the shared seas of France, England and Belgium. The partners: Association pour la Développement de la Recherche en Archéologie Maritime (ADRAMAR) France; Flemish Heritage, Belgium and the MAT, UK, have been achieving this by sharing national resources and expertise in order to promote the research. The project is also supported by the Département des recherches archéologiques subaquatiques et sous-marines (DRASSM) in France.

One main objective was to present the unified results through a common internet portal, in exhibitions, educational resources and via our maritime bus. Gathering the data through research and fieldwork was another key feature within the project. Maritime archaeologists split their time between research in the archives and surveying under water to gather the information that was needed. Research was particularly important, as the ships under study invariably had links with more than one nation. This meant information was gathered and disseminated collectively. Examples of research, fieldwork and dissemination are presented below.

The Forgotten Wrecks of the First World War Project

The Forgotten Wrecks of the First World War project is being run by the Maritime Archaeology Trust in commemoration of the First World War centenary (www.maritimearchaeologytrust.org/ww1forgottenwrecks). The four year project is being funded by the Heritage Lottery Fund (HLF).

At the heart of the project is a desire to raise the profile of a currently under-represented aspect of the First World War. While attention is often focused on the Western Front and major naval battles like Jutland, historic remains from the war lie, largely forgotten, in and around our seas, rivers and estuaries.

With over 700 wartime wrecks along England's south coast alone, the conflict has left a rich heritage legacy, and many associated stories of bravery and sacrifice. These underwater memorials represent the vestiges of a vital, yet little-known, struggle that took place on a daily basis, just off our shores. A good example is that of the SS *Eleanor* which foundered in 1918 and was reported on 13 March in Admiralty Report M.12901. It stated:

Ship was going full speed ahead about 8 knots when suddenly an explosion occurred and she began to settle down. The 2nd Mate, Barton Hunter, came on deck and went to the upper bridge to fire a rocket, when suddenly the ship sank and the upper bridge floated away with the 2nd Mate. The latter saw no other member of the crew although he heard shouting, and as far as he knows he is the only survivor. The vessel was sunk by a torpedo from an enemy submarine which spoke to the 2nd Mate a little time after the casualty.

Early in the project's development, it was recognised that the study and promotion of these archaeological sites presented a unique opportunity to better interpret them and improve physical and virtual access. At the same time, it would provide opportunities for people of all ages and backgrounds to learn new skills, develop existing ones and discover their heritage. The project will focus on some of the underwater and coastal sites between Kent and Cornwall, which include merchant and naval ships, passenger, troop and hospital ships, U-boats, ports, wharfs, buildings and foreshore hulks.

The Forgotten Wrecks project is particularly timely for a number of reasons. These sites, underwater and on the foreshore, have been degrading and deteriorating, due to natural and human processes, for approximately 100 years and, as a result, are extremely fragile. In many cases, the project represents a final opportunity to record what remains on the seabed and foreshore before it is lost forever.

During the lifetime of this project, wrecks from the First World War will become 100 years old, at which point they are afforded protection under the UNESCO 2001 Convention on the Protection of the Underwater Cultural Heritage. Although the UK has not yet ratified this convention, the increasing importance of the Forgotten Wrecks sites is highlighted by their change in status in terms of the 2001 Convention.

Alongside the centenary commemorations of the First World War, or perhaps

because of it, public appetite for new and innovative remembrance projects seems to be exceeding expectations on all fronts. Perhaps, in an increasingly volatile international political climate, reflecting on the past has never been more pertinent.

Furthermore, what lies on the seabed can often tell a surprising tale. The personal stories recounted by the crew, passengers and family members can give us an evocative insight into the human tragedies that unfolded. An example is the following letter, dated 3 March 1918, written by the widow of one of the crew members who died aboard the SS *Eleanor*:

Dear Sir, Having by the kindness of the Admiralty received your name and address, I must first of all congratulate you on your fortunate escape from death when the 'Eleanor' was torpedoed. I as wife of one of the crew, James Howard Prichard Horsley A.B. would be grateful for a few lines from one who was presumably the last living person to see my husband alive [letter courtesy of Mrs Jean Rudden, daughter of SS *Eleanor*'s sole survivor: Barton Hunter].

Meanwhile contradicting historic sources can cast a shadow on the identity of some wrecks which hold the remains of many casualties. Accounts of a ship's loss, for example, can often contradict one another. This isn't necessarily surprising in the drama of a sinking, but the true facts can often be clarified by inspecting the wreck.

Research

Some of the shipwrecks subject to detailed investigation within the Atlas of the

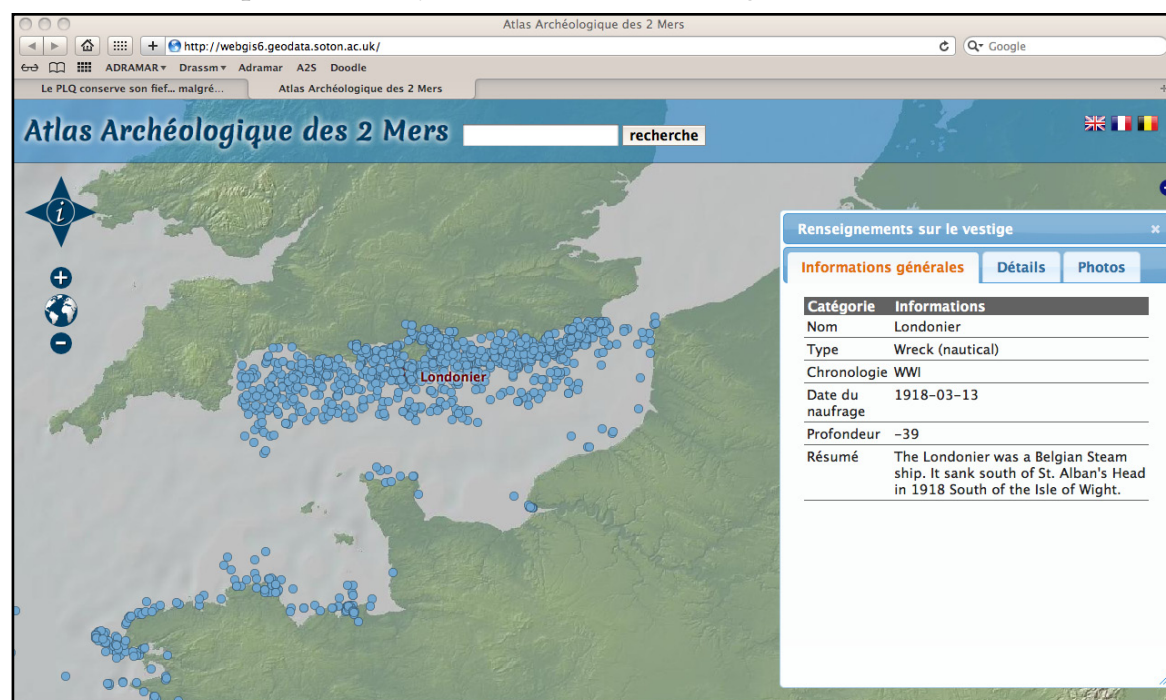


Figure 1. Atlas of the 2 Seas geoportal showing the position of ship losses at locations around the Channel and that of the SS Londonier (www.atlas2seas.eu) © A2S

2 Seas project were those with a link between the partner nations. This included SS *Londonier*, a Belgian steamer under charter to the French Government, which was torpedoed by *UC-71*, 13 March 1918, while on route from Calais to the Bristol Channel; SS *Azemmour*, owned by Cie Generale Transatlantique was also studied. The *Azemmour* departed London for Nantes on 18 March 1918, and was torpedoed on 20 March by *UB-59* to the south of St. Catherine's Point on the Isle of Wight. Further to the east, in the southern North Sea, the wreck of HMS *Wakeful* was investigated. It was a Royal Navy W-class destroyer built under the 1916-17 Programme in the 10th Destroyer order. The *Wakeful* was assigned to the Grand Fleet, and was present at the surrender of the German High Seas Fleet at Scapa Flow in 1918. Investigations into the loss of the *Wakeful* provided another example of an international event. It was a British Ship that was torpedoed and sunk in Belgian waters following a departure from Dunkirk during Operation Dynamo on 29 May 1940 (www.atlas2seas.eu). The wreck is now being considered for designation.

Wrecks that predated the First World War included the French 3rd rate warship *L'Invincible*, launched at Rochefort, France, in 1744. With 2 decks, 74 guns and a crew of 700, this was the elite fighting ship of the day. *L'Invincible* was captured by the English in 1747, refitted and renamed HMS *Invincible*. It was lost in the eastern Solent in 1758. We also looked at *Le Hazardoux*, a French 3rd rate ship of the line, built in 1698. In 1703, the ship was captured by the Royal Navy and taken as a prize to Portsmouth. The ship was refitted and commissioned as Warship *Hazardous* on 27 March 1704 as a 4th rate ship of the line. In November 1706, Warship *Hazardous* was lost in a storm to the north east of the Isle of Wight (www.maritimearchaeologytrust.org/a2s).

These archaeological sites are a small sample of the many that were researched. All the collected data have been stored in a MIDAS compliant database, providing consistency and ease of access. As part of the Atlas of the 2 Seas project, this database links directly to a Geoportal (Figure 1). The Geoportal is trilingual, and shared by the partners from the three countries. It is a gateway to databases within each organisation, and a signpost to wider catalogues such as the National Monuments Record in the UK.

Fieldwork

There are many hundreds of thousands of



Figure 2. Maritime archaeologist Christin Heamagi surveys the gun on SS Serrana lost on 23 January 1918. © MAT

shipwrecks hidden from sight around the globe, but the management and recording of shipwrecks is still a young discipline (Figure 2). Every shipwreck is different, and has different requirements. Some sites are stable, while others are under threat from the natural environment or human impacts (this applies both to shipwrecks and to submerged landscapes). Some sites are rich in historic material, and have the capacity to provide a great deal of information about little understood periods of the past, while others are more modern and well documented. However, we are still a long way from fully understanding the available resources; this limits our ability to make the best informed judgements

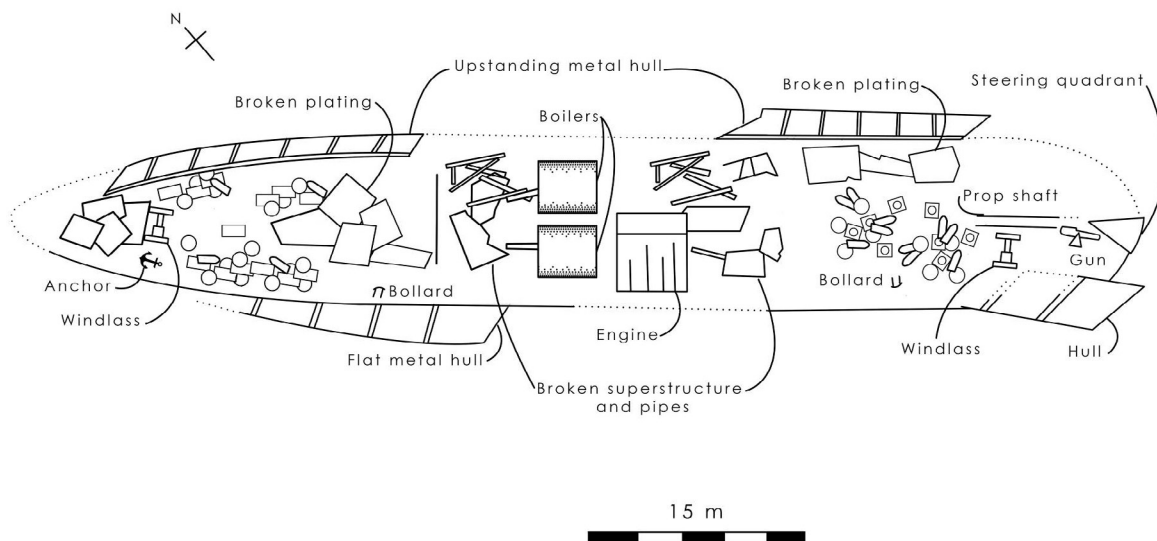


Figure 3. Plan of SS Eleanore wreck site produced as part of the HLF Forgotten Wrecks Project. © MAT

about significance, and to prioritise different levels of investigation. Therefore, there is a need to record more baseline data from more sites.

With the advent of widespread geophysical data sets, the ability to locate archaeological material on the seabed has grown substantially, and this is a tool that can be used for prospecting. Within the Atlas of the 2 Seas Project (amongst others), geophysical data has been examined, and has been collected to position and to record images of sites. The next stage was to determine which sites warranted further investigation, either to calibrate the geophysical record or to gather more diagnostic and scientific data. At this point, experienced archaeological dive teams were deployed to visually inspect remains, and to record the features that would help identify the site. Where possible, trained volunteer divers have helped the core team with the recording, and have conducted surveys themselves. The results needed to be sufficiently detailed for archaeological research, but also presentable in a way that could be easily understood and appreciated by the wider communities to whom this heritage belongs. To achieve this, fieldwork has concentrated on the collection of video footage, along with measured sketches and still photographs, as well as more

detailed archaeological plans. This process continues in the First World War, HLF Forgotten Wrecks Project and has helped us to reconstruct the site of SS *Eleanor* (see above and Figure 3).

The information gathered has helped in the identification of some sites, provided baseline data for the state and stability of others, and resulted in the acquisition of video and stills that has been exhibited to the wider public and integrated into educational resources for schools. This is very important for the perception of underwater cultural heritage and decisions about its future management as while this material remains below the waves, it is often seen to be inaccessible to the public.

Dissemination, Education and Outreach

Maritime archaeology is a subject that cuts across many disciplines and appeals to people in all walks of life. This has been recognised by the MAT, leading to the development of an outreach programme that is delivered through exhibitions and a travelling bus. The results from project research are used to create educational and outreach programmes that extend to all sectors of society. One particular focus has been the production of teaching resource packs, teaching notes and activity books for schools. Physics, chemistry, mathematics, history, geography, sea-level rise, resource management, social mobility and climate change are just some of the topics that can be accessed through the process and study of



Figure 4. The maritime bus is used as an education resource when working with schools. © MAT

maritime cultural heritage. The education resources are supported by visits to instruct classes, while workshops are given to help practitioners, specialists and educators. School visits are complemented by activity days which include the use of our purpose built maritime bus (Figure 4).

Activities are also organised for the public at events, festivals or open days, delivered through exhibitions and our travelling bus while local groups, societies and conferences receive more formal presentations. Outreach also extends under water, where dive trails have been created with accompanying books, booklets and displays. The wide range of subjects applied to answer questions about the past has been appreciated for many years by archaeologists, but it is only recently that educators and more established sections of our education system are beginning to realise the possibilities.

Publications relating to the underwater cultural heritage have been produced for both an academic and non-academic audience. The hard copy output is complemented by digital publications on the web through the MAT website, and with the use of new interactive tools, such as the Interactive Site-Viewer, which has been used to give access to the digitised HMS *Invincible* archive, or the web based GIS platform that allows visitors to explore shipwrecks using a

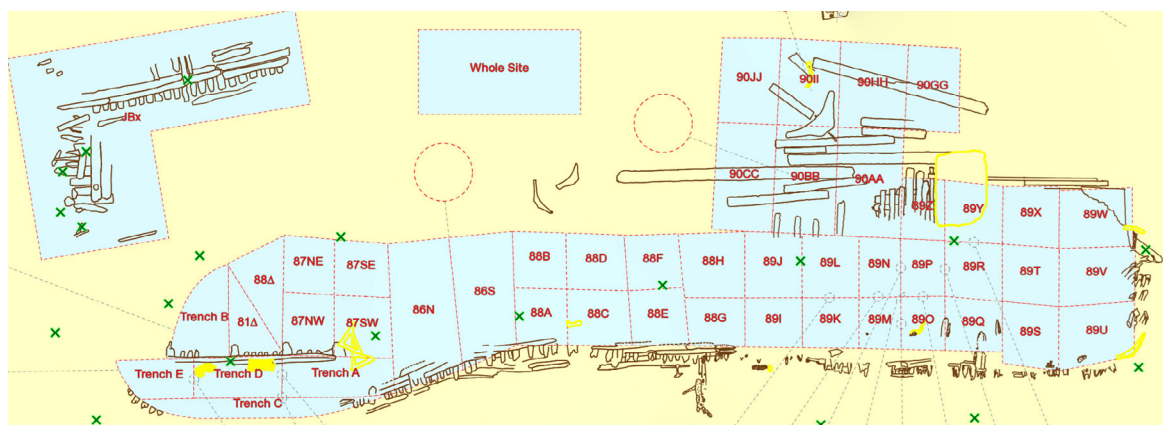


Figure 5. page from Site-Viewer showing the areas of excavation across HMS *Invincible*, a French ship that sank off the south coast of the UK in 1758 while under British ownership. The plan acts as a gateway to the digitised archaeological archive. © MAT

rendered, surveyed plan as a guide (Figure 5). Another useful tool is Wikitude, where information about the local underwater heritage can be accessed by anyone with an 'Android' phone when they are in the vicinity of information hot spots.

Within the Atlas of the 2 Seas project, work with schools in each partner country has been linked to research on a single wreck: SS *Londonier*. The project facilitates proactive communication between schools from the different countries, enabling them to conduct individual research around a common theme, and to be part of an international underwater archaeological investigation. The strategy employed in this project is being developed further for the Forgotten Wrecks project, as it can be applied to the cultural heritage of any nation.

Conclusions and the Way Forward

The progress made during the last 24 years of the MAT, and laterally during the Atlas of the 2 Seas and Forgotten Wrecks projects, is contributing significantly to the understanding of our underwater cultural heritage and the commemoration of the First World War. Fieldwork has led to the discovery of a range of new data that have been assessed through desk-based research. Geophysical survey is helping to locate shipwrecks, provide dramatic images and is revealing new areas of interest. Diving on these anomalies and recording them is providing high levels of detail, all of which are being integrated into a universally accessible database via a trilingual geoportal.

This ongoing work is demonstrating how international cooperation, and a streamlined methodology, can recover a wealth of information. It is showing us that the more we look, the more we find and the more we are able to access the secrets of this hidden world. To get the greatest benefit from such data, there would be a need to extend the recording programme demonstrated by both projects. This could be achieved effectively and economically with more participation from the diving community, under the guidance of trained maritime archaeologists. Such a programme would contribute towards a holistic understanding of cultural heritage, while improving the skill sets of a wide cross-section of people who, if given the chance, could help enhance knowledge of our underwater cultural heritage assets. The results would increase opportunities for academic study, help raise awareness of underwater cultural heritage and supply engaging material for education resources, while endorsing the value and significance of the UNESCO 2001 Convention.

The Danton and U-95: Two Symbolic Wrecks to Illustrate and Promote the Heritage of the First World War

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Translated by Graham macLachlan

Discovery of the *Danton*

In January 2008, the wreck of a battleship dating from the First World War was discovered south-west of Sardinia. It was found by the Fugro geosciences company during a survey for the Galsi gas pipeline project between Algeria and Italy.

The wreck is exceptionally well preserved, sitting upright on the sea bed at a depth of 1,020 m (Figure 1).

It looks as though the *Danton* is lying quietly on its side. It seems to have capsized and rotated several times while sinking. Some of the infrastructure dropped off on the way down. Traces of the ship's impact and subsequent slide along the seabed are visible.

The vessel's armament, the guns and turrets, are in a perfect state of conservation and make it easily recognizable (Figure 2).

Comparing the wreck with the original plans for the battleship, in particular the position of the 240 mm guns, confirms its identity.

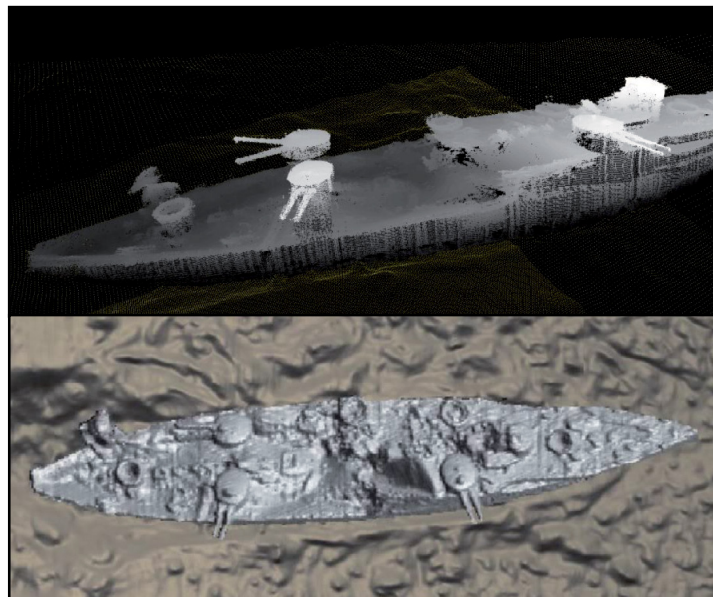


Figure 1. 3D models of the wreck reconstructed from sonar imagery © Galsi-Fugro/DRASSM

Previously, the only information about the ship came from archive photos and two scale models conserved in the National Maritime Museum in Paris.



Figure 2. Gun turret on the Danton
© Galsi-Fugro/DRASSM

Subsequent to the discovery, the French authorities asked for the site to be protected, and the gas pipeline was redirected for 100 yards.

History of the *Danton*

The *Danton* was the first of a series of six pre-dreadnought battleships. It was built in steel and armour-plated with reinforced steel. It was also the

first French military vessel to use turbine propulsion.

Assigned to the Mediterranean, the *Danton* sailed from Toulon on 19 March 1917, and set a course for the Greek island of Corfu. It was escorted by a torpedo boat, the *Massue*. Intelligence reports indicating the presence of enemy submarines in the Tyrrhenian Sea persuaded the commander of the *Danton*, Captain Delage, to alter course in an effort to avoid a possible ambush.

It was lunchtime, 13.05, when the torpedoes struck; two of them, one forward, the other amidships. The steel hull breached in 2 places, the vessel heeled to port and sank in barely 30 minutes. Naval historians record that, after organizing an evacuation, 55-year-old Captain Delage stood on the bridge with his officers and made no attempt to leave the *Danton* as it went down. One third of the sailors, including most of the officers, could not be transferred to the nearby *Massue*. In total, 296 men were lost with the *Danton*.

It was a U-boat of the German Imperial Navy, *U-64*, that fired the fatal shots. The submarine had sailed from the Montenegrin port of Kotor on 10 March for a tour in the Tyrrhenian Sea to the west of Sardinia. Its commander, Kapitänleutnant Robert Moraht, was 33 years old.

The two vessels, as much as their commanders, represent two very different ways of waging war, two generations in the history of the fighting navy and marine warfare. On the one hand, the commander of the *Danton* is the embodiment of an 'ageing' navy, while on the other, Moraht symbolizes the new face of fighting at sea with the development of the U-boat.

U-boats and Unrestricted Submarine Warfare

At the start of World War I, Germany was acutely aware of its inferiority to the fleet of the Royal Navy and limited access to sea. It was decided, therefore, to concentrate the nation's hopes and resources in a new weapon: the U-boat. Engaging in a merciless submarine offensive in the period 1914–15, German U-boats made no distinction of nationality, treating military and merchant ships with equal brutality. Germany used its submarines primarily to sink merchant ships in order to deprive the United Kingdom of supplies.

After a year's respite, Germany renewed the strategy of unrestricted submarine warfare in 1917. This strategy, however, brought about the United States' entry into the war on the side of the Allies in April 1917, a decisive moment for the outcome of the war.

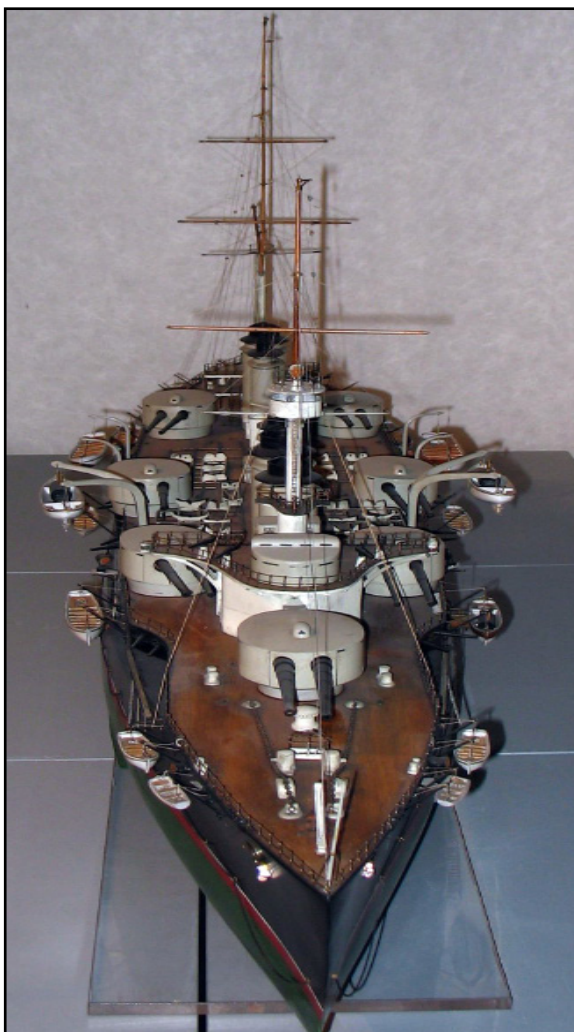


Figure 3. One of the scale models of the Danton held in the Paris Maritime Museum. © M. L'Hour/DRASSM

More than half of the hundreds of U-boats deployed by Germany during the First World War were lost, most of them being sunk in the final two years of the conflict. *U-64* foundered in June 1918 south-west of Sardinia during an Allied attack. *U-95* and *U-64* were ocean-going submarines belonging to the 'U' class. *U-95* was also sunk during the Allied counter-offensive, but unlike *U-64*, its remains were found in the channel by a team of scuba divers.

The Wreck of *U-95*

An initial search for this submarine was attempted in the 1960s without success. Finally in 1985, Alain Richard and his dive team located a wreck presumed to be *U-95* nine nautical miles off Hardelot on the Opal Coast. The wreck was sitting upright on its keel, albeit slightly inclined to starboard, on sandy ground at a depth of 40 m. It was in very good condition.

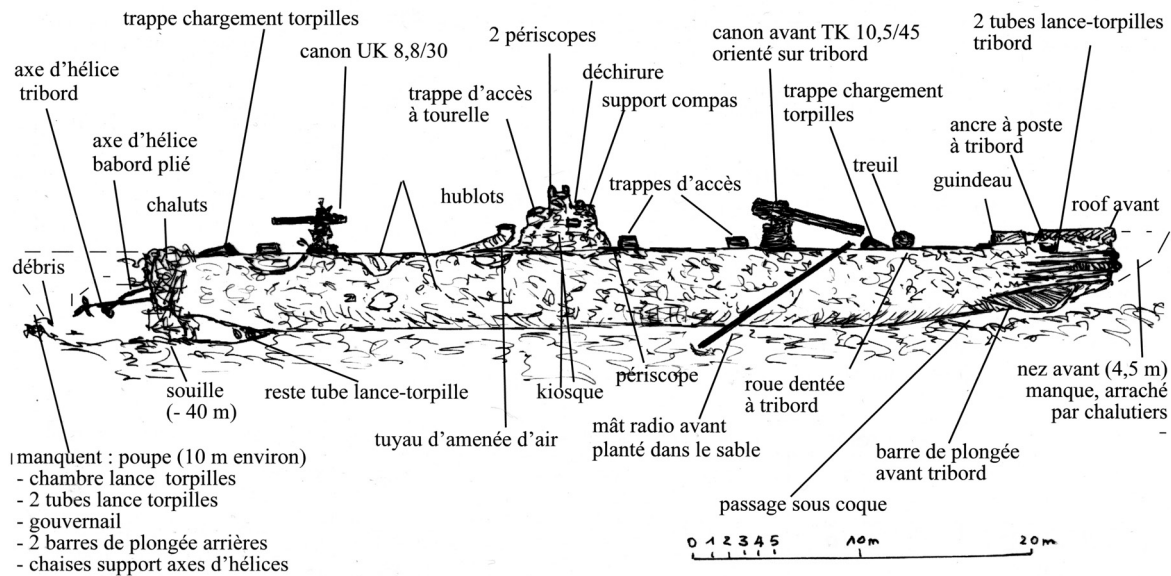


Figure 4. Side view of U-95 © A. Richard/DRASSM

Unfortunately, the wreck is situated in an area of intensive fishing; this represents a real threat to its integrity. For a start, the tip of the submarine's bow was ripped off about 15 years ago, and now lies nearby on the sandy bottom. Nets are present on various parts of the wreck, especially on the aft portion which has been truncated by approximately 10 m.

Despite the damage, the submarine's structure is in good condition, and its length of 60 m is still impressive. The tubular mid-section, the pressure hull, is intact, however, fishing equipment has breached the double hull near the conning tower. All the hatches are closed. The hydroplanes are still in place, in a horizontal position.

Archaeological and Historical Investigations

From 1990 to 1997, a team of divers passionate about archaeology pieced

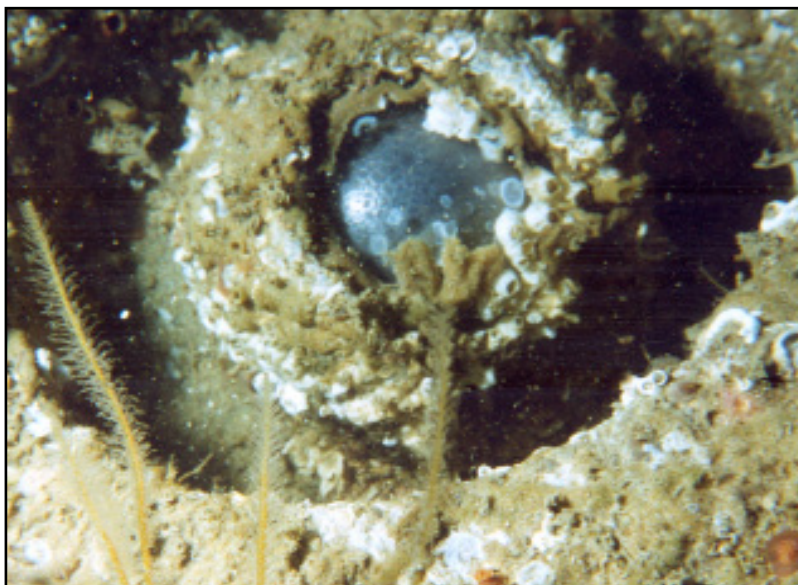


Figure 5. View of the retracted periscope © A. Richard/DRASSM

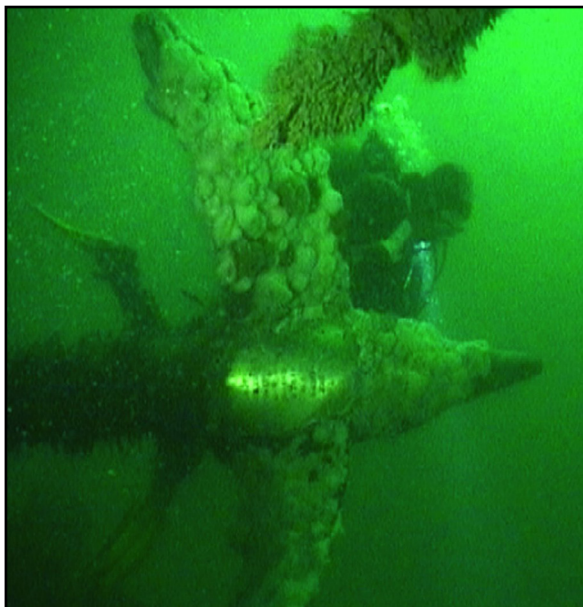


Figure 6.
Propeller of U-95 © A. Richard/
DRASSM



Figure 7.
Hub/boss inscription © A. Richard/
DRASSM

together a detailed sketch of the remains of the submarine (Figure 3).

Their careful observations suggest the submarine was underwater when the event leading to its sinking occurred because the sighting telescope is stowed, the periscope is retracted and the hatches are closed.

The specifications of the submarine were identified – in particular 4 torpedo tubes (2 on the port side, 2 on the starboard side, superimposed), a 105 mm gun forward, a conning tower with 2 periscopes and an 88 mm gun aft (obscured for a while under trawling nets) – and its dimensions were reconstructed from observations *in situ*. These allowed us to reject previous erroneous hypotheses and determine that the vessel was a large U-class ocean-going submarine.

By comparing the number of torpedo tubes and guns on the wreck with ocean-going U-boat duty records and archives, we were able to reduce the possible candidates down to two: *U-93* and *U-95*. The final clue to the submarine's identity was found on the propeller hubs, or bosses, the inscriptions of which made it clear we had found *U-95* (Figures 4 and 5). This investigation, which began in 1985, was thus completed in the summer of 2004.

History of U-95

Commanded by Athalwin Prinz, this ocean-going submarine was launched in Kiel on 20 January 1917. It was 72 m long and had a 2,400 hp diesel engine, which allowed it to reach speeds of 16.8 knots on the surface and 8.6 knots underwater. It was lost with all hands in early 1918 as it returned from its fifth campaign. In its career, it sank a total of 17 Allied ships, and its last 2 known

victims were sunk on 2 January 1918. For the time being, the precise reason for its sinking is unknown. According to the archives and the durations of its previous campaigns, it is probable that at some time between 19 and 20 January 1918, it struck a mine that destroyed the upper part of its stern. However, the damage done to the stern also suggests that one of its own torpedoes may have malfunctioned and caused its loss. Whatever the case, the bodies of her forty-three strong crew remain aboard.

Projects for Promoting the Wrecks

The battleship *Danton* and U-boat *U-95* are not only enemy military vessels, they are symbols. They exemplify two generations of vessels that confronted each other in battle during WWI. They also represent two very different strategies: the traditional one, on the surface, where face-to-face fighting was the rule; and a more modern one, underwater, which was fought from a distance and by surprise.

At the initiative of UNESCO and DRASSM, *Danton* will be the emblem of a programme starting in the winter of 2014 to promote the conservation of underwater heritage. The aim of the initiative is to raise awareness among the public of the underwater heritage of the two major conflicts of the twentieth century, and in particular the First World War.

The underwater archaeological campaign on the *Danton* is, therefore, one of DRASSM's major projects for late 2014. For a couple of weeks off the south coast of Sardinia, French archaeologists, with permission from the Italian authorities, will be deploying state-of-the-art deep-water technology (ROVs and AUVs able to dive to depths of 1,500 m, pressure-resistant HD cameras, etc.) to comprehensively explore and image this magnificently well-preserved wreck.

A number of projects and actions to promote the *Danton* and *U-95* will be made possible thanks to numerous collaborations and partnerships. The foremost of these will be complete 3D computer models of the battleship and the submarine made in collaboration with Dassault Systems' Passion for Innovation Institute. These computer models will not only allow us to study the wrecks in detail, but they will also facilitate their presentation to the general public. These works will be presented and promoted through two historical documentaries made by the company Gédéon Programmes.

In addition, the Académie de Marine will be putting on an exhibition about the battleship *Danton* based on the available archives; the Paris Maritime

As for *U-95*, the vessel lies at a depth that is accessible to human divers, and this will allow us to use more traditional methods of promotion, such as an underwater trail. This project would require the training of recreational divers by local diving clubs, the latter being made aware of the historical and archaeological issues of such a fragile site that is under threat from both corrosion and commercial fishing.

Acknowledgements

Gédeon Programmes, Alain and Ingrid Richard.

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Peace Education in a Danish Museum

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The U-boat *U-20* was launched at the Kaiserliche Werft in Danzig in 1912. In its days of active duty, it managed to sink 36 ships (144.300 BRT), and the commander, captain lieutenant Walter Schweiger, earned quite a reputation in his home country. The most well known act of *U-20* was the torpedoing of the British passenger steamer RMS *Lusitania* on 7 May 1915, as a result of which 1,198 passengers drowned.

On 4 November 1916, *U-20* wrecked on the West Coast of Denmark, misled by the currents and unable to navigate in a dense fog. The Germans sent destroyers to try to rescue the U-boat. The attempt failed, and the crew was brought out to the German destroyers. During the incident, the local rescue team asked the commander if he needed assistance, but he refused.

On the coast, the rumour about the wrecked German U-boat quickly spread; a journalist from a nearby town reported that there were no cars or bicycles left in town, because people wanted to see ‘the shark of the seas’, stranded on ‘their’ sand banks, for themselves. By midday, the German commander signalled to the approximately 500 people on the beach that they should leave. People slowly hid behind the dunes. Then the Germans attempted to destroy the U-boat with explosives, and small pieces of debris scattered on the beach; fortunately, no one was hit.

After the war, the wreck of the U-boat still stood on the beach (Figure 1), and it was now the task of the Danish authorities to ensure that the U-boat and its armament could no longer be used for warfare. In 1925, a second attempt was made to blow up the wreck, this time by the Danish authorities.



Figure 1. U-20 on the beach © Public Domain

Since 1954, we have records of divers excavating valuable metals from the wreck on the sea bed. A local diving club made a report on the condition of the wreck in 1993, showing that important artefacts were lying on the sea bed,

such as the two diesel engines. Today, the wreck lies approximately 400 yards from the coast line, and is considered to be threatened by both the natural environment (erosion) and human activity, especially plundering, due to its historical importance in relation to World War I. The wreck is not protected by Danish Law.

The tower of *U-20* has been placed in front of the Strandingsmuseum, and the propeller and the 88 mm deck canon are inside on exhibit (Figure 2).

Peace Education as a Student Project

In 2014, the museum initiated a cooperation with the students of maritime archaeology at the University of Southern Denmark.

In collaboration with young people, the museum wanted to communicate the horrors of war at sea during WWI by building an exhibition that would



Figure 2. Propeller and deck cannon from *U-20* on display in the museum © T Bay/Strandingsmuseum

make people reflect on war in general, and to promote the importance of the preservation and protection of our shared underwater cultural heritage.

The students developed an exhibition design which constitutes parts of our temporary exhibition at the museum (Figure 3). When developing the exhibition, the students touched on various topics in their

discussions, such as methods of maritime archaeology, ethics and the terrible stories of seamanship during the war. They discussed the potential of rendering the past more human, vivid, intimate, accessible and connected to the visitors by bringing personal narratives into the exhibition. In this context, questions of representation and the approach to understanding how an individual life story can represent, perform and construct the lives of past times were reflected upon.

The exhibition is divided into four sections:

The first section is about practicing maritime archaeology. The students' working title was 'THE SHOE', and their idea was to illustrate the need for archaeology by showing a shoe from WWI brought home by a diver as a trophy, compared to the work being done onboard a research vessel, exploring the sea

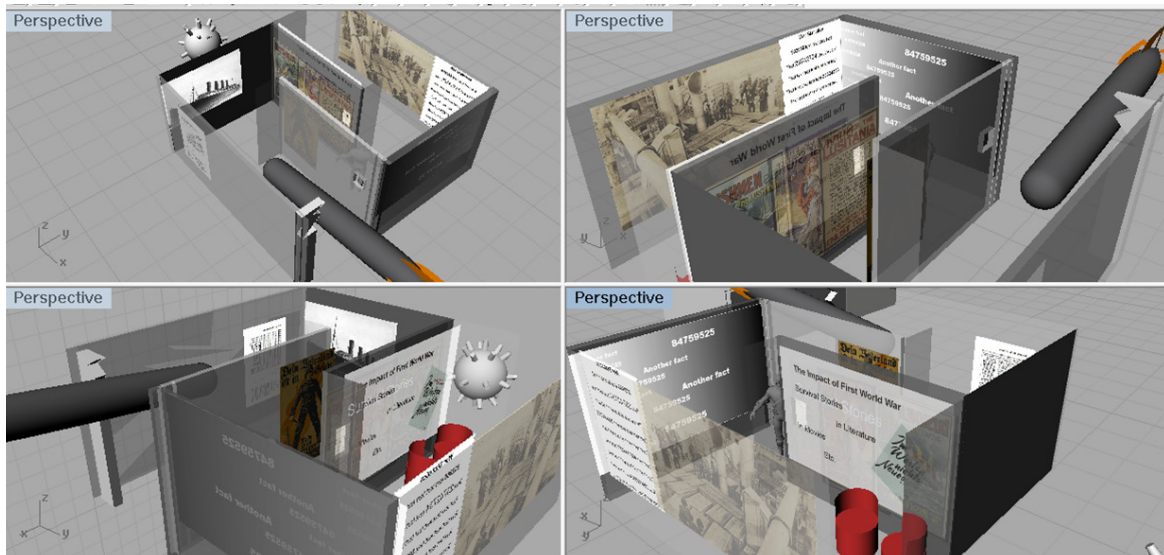


Figure 3. Three dimensional visualisation of the WWI exhibition developed in cooperation with students from the University of Southern Denmark © Strandingsmuseum

bed, processing data, analysing and documenting the wreck.

Their basic idea was that a shoe can be just a shoe when it is not excavated and analysed in a scientific manner. But in the hands of the researcher, a story about individual seamen, life at sea or vessels from the battles can unfold, together with research done in archives, all the while leaving the shoe to rest on the seabed with its owner. Through research, the shoe is connected to the world history of the First World War. In the exhibition, the shoe that the visitors can follow symbolises all the men who have experienced not only the First World War, but war in general through all times.

The second section is about the war at sea, the creation of the U-boat and the strategies and tactical consequences of the development of the U-boat and its armaments. A fascinating story of human capacity, but at the same time, it makes the visitor uneasy, because these new technologies made the First World War the bloodiest war that people at that time had ever experienced.

The third section is dedicated to the Kaiserliche Marine and German society, raising questions such as what motivated young men to join a U-boat crew. The life on board *U-20* is presented, telling stories of, for example, how the crew celebrated Christmas on the seabed somewhere in the North Sea, or how they saved a dog from drowning.

The idea behind the personal story was that detailed studies of the lives of the crew and commander Walther Schweiger could give insight into how life during WWI, especially at sea, was lived, felt and experienced. Thus, the 'life-stories' offer an important addition to the understanding of a general history of the war at sea by providing a way of accessing a more subjective understanding

and experience. In theory, this will make the story more intimate, accessible and connected to people today.

The fourth section consists of a peace labyrinth, putting the horrors of war on display. The visitor starts out standing behind the 88 mm deck gun from *U-20*, looking into the black labyrinth through the barrel of the gun. The only thing you can see through the barrel is the ship RMS *Lusitania*. The visitor enters the labyrinth, and can read the warning from the German Embassy telling people not to travel aboard the ship, because its sailing route went through declared warzones. In the labyrinth, visitors see pictures from the burials of victims from the *Lusitania* disaster from Queenstown, Ireland; they see propaganda from both sides, and they learn about the numbers of victims from that particular incident, and from the First World War as such.

The learning outcome for both the students and the museum curators were remarkable. It is hoped that this new approach to the exhibition, where young people communicate peace from their point of view, will bring more young people to the museum.

The Realities of a Museum

The visitors in our museum are mainly from Denmark (48 per cent) and Germany (49 per cent), with the odd visitor from other European countries. The majority of our visitors (75 per cent) visit when they are on vacation on the West Coast. The museum is therefore part of the holiday experience for most of the people who come visit. Our exhibitions cannot be too complicated to grasp, and the content needs to encourage further narratives among family members.

The curators at the museum therefore changed the student's exhibition design a bit, but not the content and the main idea. The exhibition can be seen all through 2014, at the Strandingsmuseum St. George.

First World War, Sea Battles by Danish High School Students

During 2014 – 2015, the museum is running another outreach project about peace and WWI. In collaboration with a group of High School Students (Age 17 to 18), the museum will create an exhibition for the general public on the subject (Figure 4). The exhibition will be placed at a central place in town, rather than at the museum.

This gives the museum an opportunity to gain even more experience with user-generated exhibitions, especially with young users. Again, we hope that young people can appeal to other young people (Figure 5); in Denmark the knowledge among young people of the First World War is relatively small, thus, we also

hope to facilitate learning.

The students will have the opportunity to create knowledge and communicate it; a preferred manner of learning for this generation, who are used to data being ready at hand all the time. They prefer to learn hands on, not minds on,



Figure 4. Student working on the exhibition © T Bay/Strandingsmuseum

Figure 5. Child looking through a periscope in the museum © T Bay/Strandingsmuseum

we are told by the lecturers at the high school. And they will learn about history from building an exhibition.

The students will learn about WWI in general, and the sea battles in particular. They will be able to relate their new knowledge to the present dilemmas of underwater cultural heritage from World war I and museum communication. They will learn while producing stories for their own generation.

The Realities of a Museum

While we collect experience from involving young people intensively in rebuilding museum exhibitions, the Strandingsmuseum St. George is preparing for a major rebuilding. Our main story is from an earlier war of the sea: the Napoleonic Wars. In the coming years, we will be able to rebuild the museum to display the artefacts from HMS *St. George* and HMS *Defence* in an appealing and educational manner.

The nature of our particular museum is that we tell world history on the West Coast of Denmark. World history landed, or wrecked, on our beaches by accident. Our objects are excavated from the sea bed, or brought to us by fishermen and divers. We take them from their accidental environment to preserve them, to study them and to tell their story to the public. They assist us in creating living histories out of the lives at sea; both at war and in times of peace.

However, we are aware of the dilemmas of underwater cultural heritage, maritime archaeology and a museum's interest in artefacts. Together with young people, we are working to create systematic research that can tell us more about the stories of wrecked ships without needing to excavate them. On a more abstract level though, we are also working with young people to understand what type of interest the coming generations will have in artefacts to understand and relate to history – not the least the lessons that are to be learned from history of war at sea.

Our Present Learning Programme

In our opinion, involving students of a related discipline in the design and creation of a real museum exhibition has several advantages and benefits for both the museum and the participating students. We believe that, by making the students storytellers, and thus responsible for communicating knowledge to other people, the museum would have a better chance of reaching young people in the age group of 15 to 25 years – an audience which is traditionally difficult to appeal to. We also think that new eyes will produce fresh and new ideas and unconventional approaches to the design of exhibitions.

On the other hand, we hope that the students will benefit from the project, not only by learning about the difficulties involved in designing an exhibition and getting points across to the public, but also by becoming aware of the importance of communicating the reasons for safeguarding our underwater cultural heritage. The discussion about the importance and usefulness of maritime archaeology in relation to remains from the First World War continues.

Mapping Underwater Cultural Heritage: Exploring and Presenting Underwater Cultural Heritage

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The Netherlands in World War I

The Netherlands, as a neutral nation, held a precarious position between the major fighting powers Germany and Great Britain. The Dutch army was mobilized for the duration of the war, and many refugees, mostly from Belgium, stayed in Holland. Supply routes to and from the front in France and Belgium were closely guarded by the British and German navies alike. The U-boat was, from the beginning, one of the most important German naval strategies. However, neutral states such as the Netherlands were also afflicted by the German U-boat attacks. Much of the Dutch food imports came from overseas, especially the USA. As a result of the German unrestricted submarine warfare, food shortages arose in the Netherlands. The Dutch merchant fleet was also severely damaged. One of the first Dutch victims of the unrestricted German U-boat attacks was SS *Medea* in March 1915. Many Dutch merchant ships were lost at sea due to German U-boat attacks.¹

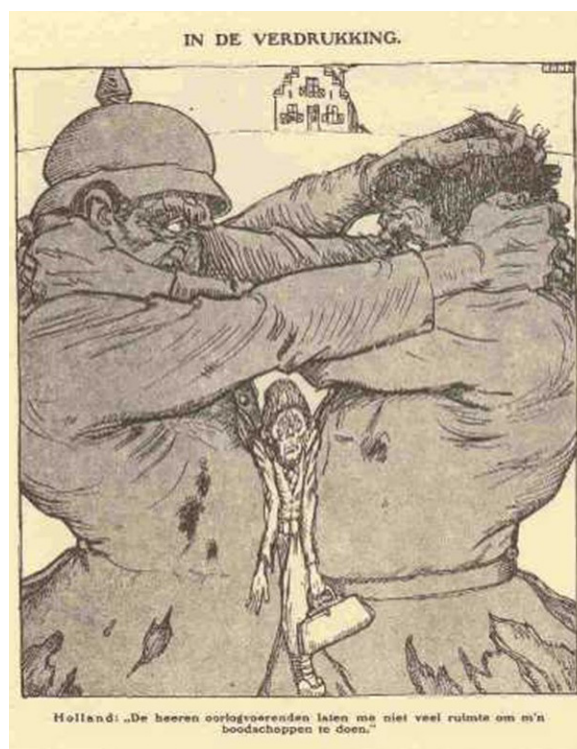


Figure 1. The Netherlands squeezed between fighting powers © Public Domain

One of the outcomes of the war was that the Netherlands made the choice to gain new land from the sea in order to increase its agricultural output. Sea was

¹ Asaert, G, Bosscher, P H M, Bruijn, J R, Hoboken, W J, Van Et Al 1976-1978, *Maritieme geschiedenis der Nederlanden*, De Boer Maritiem, Bussum, BE.

turned into land (impoldered) and the former Zuider Zee was transferred into lake IJsselmeer. This was used to increase farmland and avoid food shortage, as a direct result of the First World War. One of the side effects of this impolderment policy was that a considerable amount of shipwrecks, once lying on the bottom of the sea, are now situated in the newly created pastures and farmlands of the *IJsselmeer polders*. In the polder (province of Flevoland), more than 450 shipwrecks are known. A total of 80 of these wrecks still lie buried in the soil, and each year one or two new shipwreck sites are discovered.²

World War I Wrecks in Dutch Waters

There are several World War I underwater cultural heritage sites in the Netherlands. One of the most dramatic naval incidents of WWI took place in Dutch waters. It was just off the Dutch coast that, on 22 September 1914, three old Royal navy armoured cruisers, HMS *Aboukir*, HMS *Cressy* and HMS *Hogue* met their fate. They were attacked and torpedoed by the German submarine U-9. More than 1,400 commonwealth sailors died in the attack. As a result, the site of HMS *Aboukir*, HMS *Cressy* and HMS *Hogue* is a major WWI underwater cultural heritage site in Dutch waters. The site is not only a war grave, but also an important site to interpret and illustrate the naval history and archaeology of the early twentieth century and WWI. The 'incident' established the role of the U-boat in naval warfare as a major weapon. At the same time, the site is under threat of natural erosion, looting and illegal salvage. Recently, a WWI wreck in Dutch territorial waters, the *Tubantia*, was also illegally salvaged. If all the wrecks of WWI were to be lost, the history of the twentieth century would lack an important witness to the horrors of this war. WWI underwater cultural heritage is an important source for understanding and appreciating our recent past, but the source is vulnerable and under threat. Corrosion and human interference are major problems.

Sharing World War I Underwater Cultural Heritage Information

The First World War is relatively close to our own era. This land war is historically and archaeologically well documented. There is also an increasing amount of information about the maritime aspect of the war. A problem is that much of the information on underwater cultural heritage is fragmented and not always easily accessible. Today we are living in an information era, where data is shared constantly through all kinds of media. There are many digital and online platforms to share information. The ordinary citizen shares images, video, text through social media as Facebook. In the world of cultural heritage there are also many

2 <http://www.nieuwlanderfgoed.nl/studiecentrum/ifmaf#eng>

platforms to exchange information and experiences. And yet, it is not always easy to share valid information.

The intention to cooperate and share information between stakeholders, institutes and state parties is often pronounced. Transforming these intentions into behavior is a different matter. Sharing data is not easy. It is not even easy between institutes within the same country; internationally, it is even more complicated. If we want to collect and share information on the underwater cultural heritage of the First World War, then we have to cross borders, both literally and mentally.

Considerations

- Online maritime history and archaeology is not restricted to national borders.
- Wrecks and sites underwater are gateways to stories about our common connected history and are part of our shared identity.
- Countries that have ratified the UNESCO 2001 Convention have committed themselves.

States Parties shall cooperate and assist each other in the protection and management of underwater cultural heritage under this Convention, including, where practicable, collaborating in the investigation, excavation, documentation, conservation, study and presentation of such heritage. (2001 Convention Art. 19)

In the case of WWI wrecks, there is also the question of the sovereign immunity of naval shipwrecks and war graves. These wrecks and sites are not abandoned, but remain government property. They are immune from the law of salvage. However, the claim of sovereign immunity apparently does not guarantee a stop to plundering. Creating a better insight in underwater cultural heritage is the first major step in creating an environment for preserving underwater cultural heritage.

Goal

The goal is to obtain a clear overview of the maritime archaeological stock of the WWI period. This is in order to be able to manage and preserve this heritage for present and future generations. A first and important step is to collect as much data about the sites of WWI wrecks as possible, and preferably, to store it in a uniform international system. Underwater cultural heritage of the First World War has a strong spatial component. It is in this way that mapping is important: Mapping is the creation of graphical representations of information using spatial relationships within the graphic to represent some relationships within the data.

Creating Consensus, Problems with Sharing Data

To pledge consensus and cooperation is one thing, to actually create an international system to share data is another challenge. Participants must overcome all kinds of problems. The first issue data sharers will encounter is the problem of shared languages. Much information - although maybe properly stored in national databases - is written in national languages. Without reworking and translating into a lingua franca, these data are not easily accessible. Another problem is the legal issues. What information can be shared? What are the different legal implications? Then there is also the problem of the exact positions of wrecks. Some countries object to providing exact coordinates. It is obvious that there are many issues concerning data and data sharing that need discussion and reflection.

GIS Platform

Information on underwater cultural heritage is often stored as a collection of facts in a database. The abstract structure of coding data in a database makes it possible to exchange these pieces of information. However, it is important in the exchange of data that the transmitter and receiver use the same standards and definitions.³ It is also important that there be consensus on the formats (record, field description) used to present and describe the data. A relatively easy way to create an elaborate insight in WWI underwater cultural heritage is to store and make data available in a geographic information system (GIS). With a GIS, it becomes possible to map spatial data. In a GIS, layers are used to combine all sorts of data. The distribution of WWI underwater cultural heritage can be made visible, and with it, spatial relationships between different underwater cultural heritage objects and between the objects and their surroundings. Combining site locations with, for instance, environmental data in the same area will give a better insight into threats, and can help with the management of a site.⁴

Collecting the Data

The positive news is that there is an increasing stock of data concerning underwater cultural heritage. The research of maritime archaeologists increases

3 For data and the exchange infrastructure: an example an exchange standard is the EU directive on the infrastructure for spatial information (INSPIRE).

4 See: Mahaxay, M, Brouwers, W & Manders, M R 2012, 'Geographical Information Systems (GIS) in Underwater Archaeology', in eds. Manders, M R & Underwood, C J *Training Manual for the UNESCO Foundation Course on the Protection and Management of Underwater Cultural Heritage in Asia and the Pacific*.

the knowledge on sites and wrecks every day. Many maritime cultural heritage institutes are working hard to map their underwater cultural heritage. This helps to tell the fascinating story of underwater cultural heritage. But there are many other stakeholders active in the maritime world.

Many of these non-archaeological data help also to increase our knowledge on sites underwater. Navies, hydrographical institutes, off-shore industries and the fishing industry all collect data on the condition of the sea, the seabed, sea routes, ports and coastal landscapes. Multibeam survey is an important medium, and this also provides, as a side product, information on underwater cultural heritage in the areas under surveillance. In the Netherlands, a first steps to combine and exchange underwater cultural heritage data between institutes have been made between the Ministry of Infrastructure (Rijkswaterstaat) and the Cultural Heritage Agency.⁵

Examples of Mapping Cultural Heritage

There are many examples of international online mapviewers and connected databases for cultural heritage used to exchange information.

Europeana and UNESCO

In Europe, there are initiatives such as CARARE (Connecting archaeology and Architecture), where European countries cooperate and share data on archaeology and architecture made available on the EUROPEANA website platform.⁶ On a world scale, UNESCO has its World Heritage interactive map.⁷ These examples give information on cultural heritage, but almost no information on underwater cultural heritage in general, and in this case, WWI wreck sites. Where can that kind of information be found?

Australian National Shipwrecks Database

An impressive example of a database and mapviewer on underwater cultural heritage is the Australian National Shipwrecks Database (ANSDB), launched in December 2009 (Figure 2). The database includes all known shipwrecks in Australian waters. The viewer is in a format that holds all kinds of wreck related data (research, images, management, status, etc.).⁸ There is the ability to link wrecks to artifacts recovered from shipwreck sites. Site environment information for divers and site managers and a history field

5 <http://www.cultureelerfgoed.nl/dossiers/verbeteracties-archeologie/beheer-maritiem-erfgoed>

6 <http://www.carare.eu> & <http://www.europeana.eu>

7 <http://whc.unesco.org/en/interactive-map/>

8 <http://www.environment.gov.au/topics/heritage/historic-shipwrecks/australian-national-shipwreck-database>

with the ability to attach documents that include names of passengers and crew are also available. A management system is included to facilitate online permit applications and notifications.

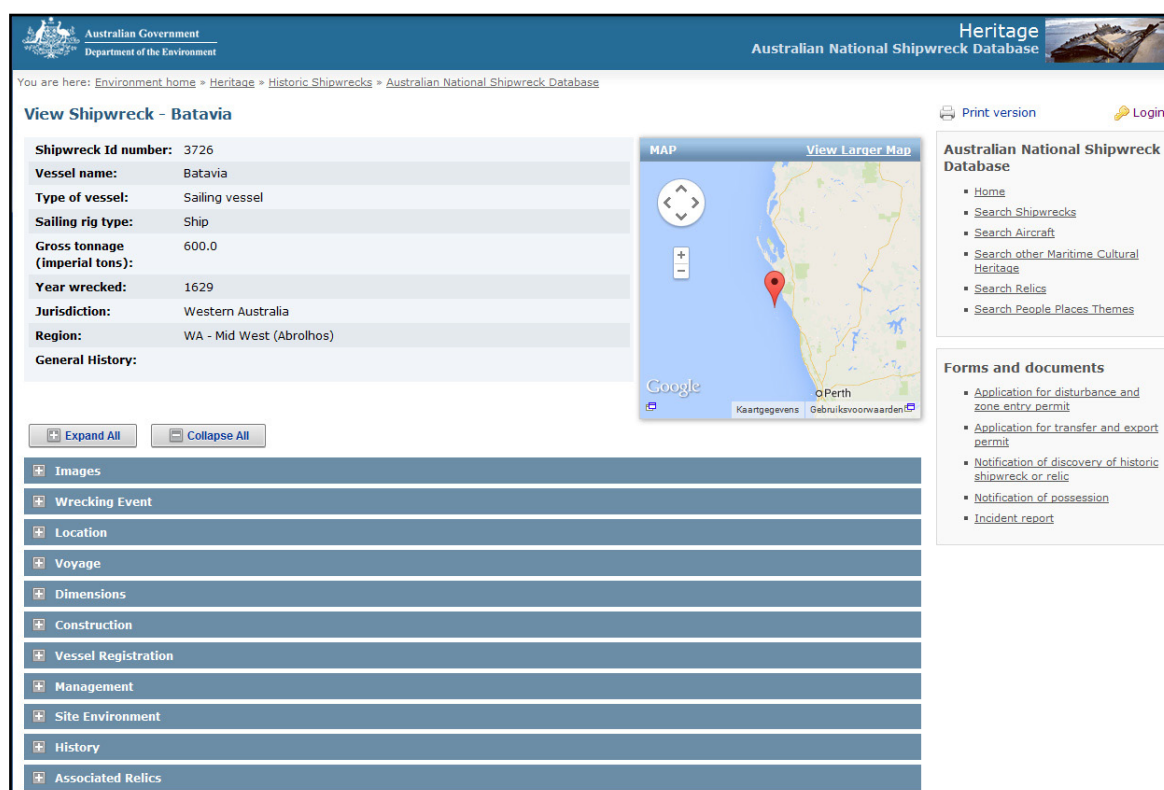


Figure 2. Wreck record in the ANSDB © Commonwealth of Australia

As an example to display WWI underwater cultural heritage it is interesting. The problem is that is restricted to Australia.

Specifications

Organization: National (Governmental)

Coverage: National

Language: English

Exact Positions: No

GIS: No

Relationships: Between wrecks and management information

Restricted: No

Subscription: No

Other: Format could be easily developed and expanded

Shipwreck Asia

At the same time, there are not many international initiatives dealing with the mapping of underwater cultural heritage. One of few international initiatives is

the Shipwreck Asia database. It is a regional shipwreck/ship remain database to promote an international study about maritime cultural heritage management in Asia.⁹ Shipwreck Asia aims to provide information about historic ship remains in the Asian region. The information is provided by local authorities, experts and agencies of each country in the field of maritime and underwater archaeology. The countries involved are Brunei, Cambodia, China, Indonesia, Japan, Korea, Malaysia, Philippines, Taiwan, Thailand and Vietnam. The partners involved are working according to the UNESCO 2001 Convention.

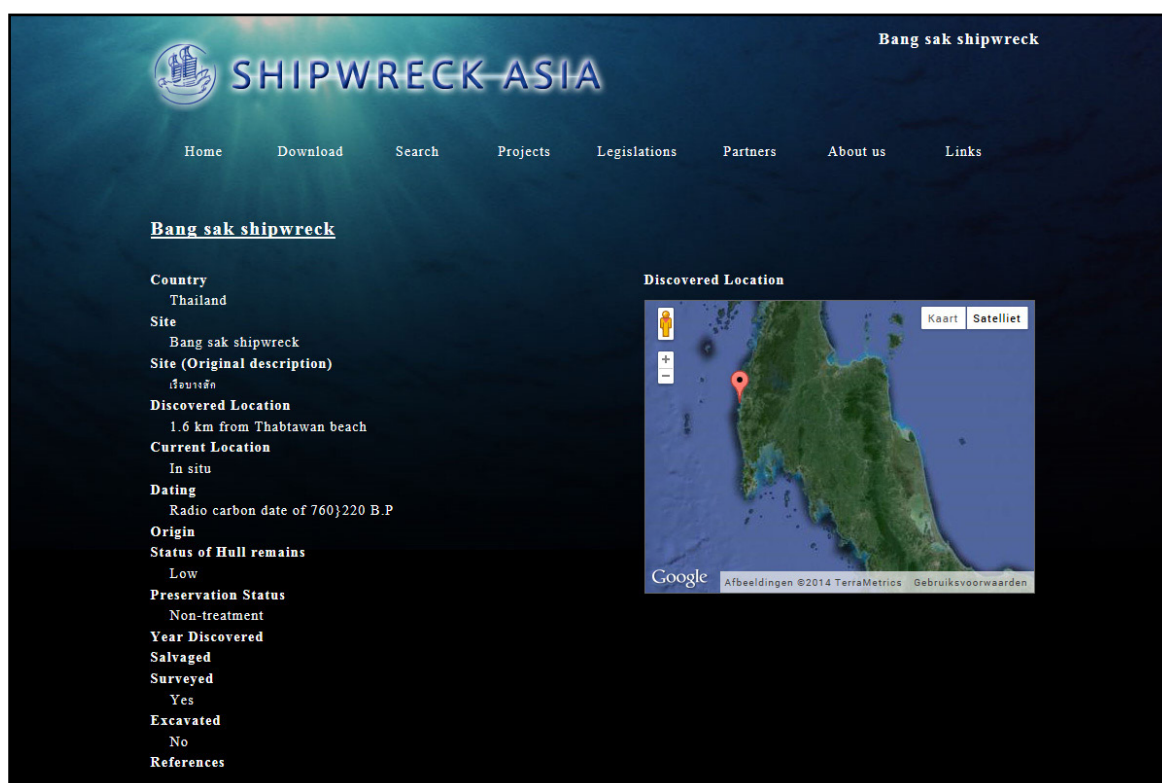


Figure 3. Wreck record from shipwreck Asia website © Shipwreck Asia

Specifications

Organization: International (Governmental)

Coverage: Regional

Language: English

Exact Positions: No

GIS: No

Relationships: Between wrecks and basic information

Restricted: Yes (to partners)

Subscription: No

Other: Format could be easily developed and expanded. Designed to conform to Article 19 of the 2001 Convention

⁹ <http://www.shipwreckasia.org/>

The record of a wreck includes: name of wreck, country, date, site location, status, salvaged, surveyed, excavated, damaged.

Wreck site

A different approach is used in the wrecksite.eu. The wreck site claims to be the world largest online wreck database (153,970 wrecks and 147,120 positions). It is a non-profit organization. Information with basic typological information on wrecks <name, type, purpose, date of loss> is given for free. For more data and exact positions one has to subscribe.¹⁰

Specifications

Organization: International (Avocational)

Coverage: Global

Language: English

Exact Positions: Yes (for subscribers)

GIS: No

Relationships: Between wrecks and basic information

Restricted: Yes (to subscribers)

Subscription: Yes

Other: Database combined with positions on a static map

MACHU GIS

An example of a proper GIS is the MACHU GIS. The main objective of the MACHU (Managing Cultural Heritage Underwater) project was to find better and more efficient ways to manage underwater cultural heritage, and to serve as a network for international cooperation and exchange.¹¹

A GIS was developed within the MACHU project. Data from the seven participating countries (Belgium, Germany, the Netherlands, Poland, Portugal, England and Sweden) were shared in the GIS. To create this GIS, the INSPIRE initiative was adapted.¹²

The GIS application combines layers with archaeological and historical data, research data from sites and areas with information on the burial environment (including geophysical, geochemical, sedimentological and oceanographic data) and possible threats to the sites in the short term (e.g. erosion, infrastructural works, mining and fishing) and the longer term (e.g. increased erosion due to

10 <http://www.wrecksite.eu>

11 MACHU Project 2009, MACHU Report Nr. 3, MACHU. Available from: <http://www.machuproject.eu/documenten/MACHU_report_3.pdf> [Accessed on 30 October 2014], p. 11.

12 <http://inspire.ec.europa.eu>

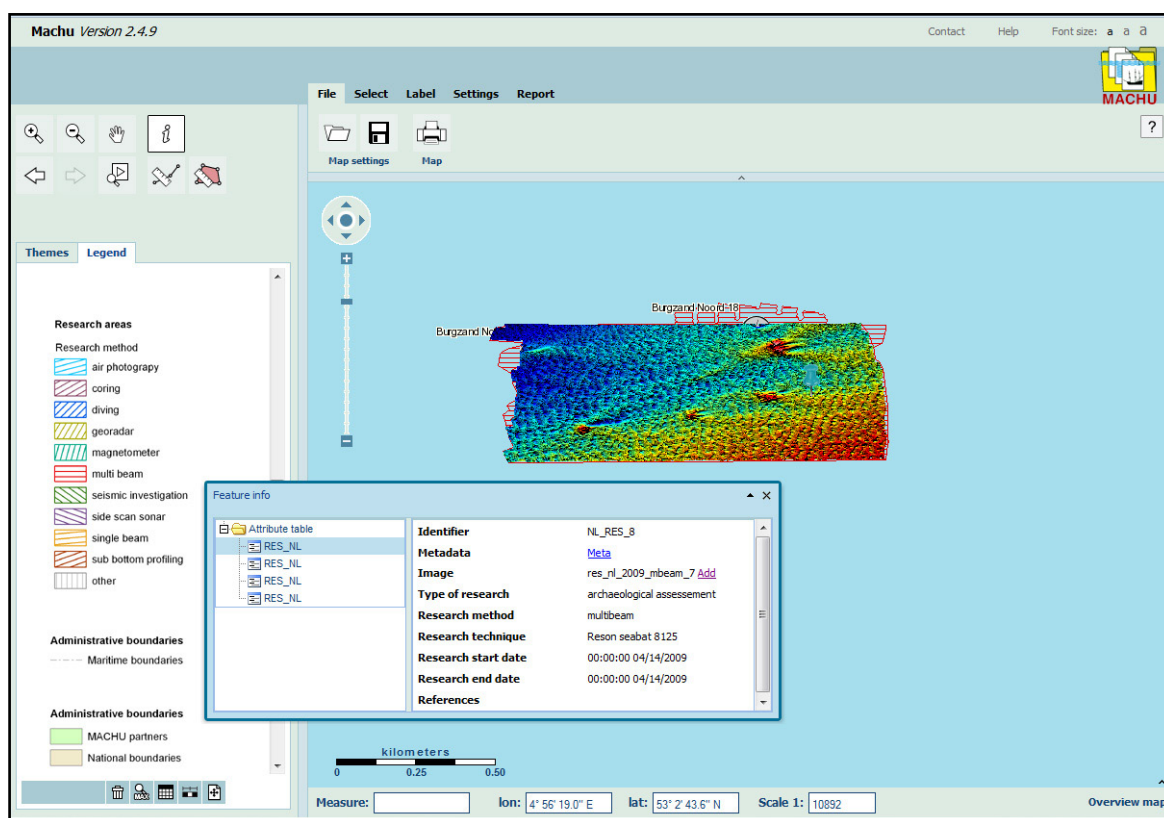


Figure 4. MACHU research layer © MACHU

climate change and chemical degradation).

Specifications

Organization: International (Governmental)

Coverage: Global

Language: English

Exact Positions: Yes

GIS: Yes

Relationships: Between wrecks and basic information

Restricted: Yes

Subscription: No

Other: Database combined with positions on an interactive map. Data stays with the source, validated by state parties. Could easily be developed and expanded. Based on INSPIRE standards.

Wrecks in Situ database

Creating public awareness is a major step in creating political support and funds for underwater cultural heritage.

Responsible non-intrusive access to observe or document in situ

underwater cultural heritage shall be encouraged to create public awareness, appreciation, and protection of the heritage... (2001 Convention Art. 2.10)

To tell the story of underwater cultural heritage to a more general public within the MACHU project, the mapviewer and database, Wrecks in Situ (WIS), was developed. WIS describes wrecks with archaeological and historical information. There is no sensitive information (no exact coordinates) displayed. Everybody can register and create an account to add wrecks and participate in the MACHU WIS site and add wrecks and stories, archaeological significant reports and much more. All kinds of media can be uploaded and incorporated

Wreck : ID U 106 1917 AD - 1917 AD

Type	Submarine
Description	History
Period	World War I
Location	North Sea, Netherlands
Status	Well preserved
References	Online
Date of loss	7-10-1917

Service History

The SM U-106 was a submarine that served in the Imperial German Navy in World War One. It was under the command of Kapitänleutnant (a rank similar to U.S. and British ranks of Lieutenant or Lieutenant Commander) Hans Hufnagel. U-106 was officially commissioned for the Imperial German Navy 28 July, 1917, and began her first, and only, wartime patrol on September 2, 1917.

HMS Contest, sunk by U-106, source: Wikipedia Commons

A little over two weeks later, on September 18 and during the First Battle of the Atlantic, U-106 was credited with the sinking of the HMS Contest, an Acasta-class destroyer, as well as with damaging a 5,867 ton steamer, City of Lincoln, in the Western Approaches. The Western Approaches, a term mostly used in naval warfare, refers to a geographical area of the Atlantic Ocean just west of the British Isles. It is an important area, as most of the important UK shipping ports are in this area.

After her military success in the First Battle of the Atlantic, U-106 was in the North Sea, off the coast of the Dutch island Terschelling, where she fell out of radio contact on October 7th. She shortly thereafter struck a British mine, and sank with the entire crew of 41 men.

Figure 5. Wreck ID, record from the Wrecks in Situ database © Wrecks in Situ

in a wreck record. Movies, images, audio files, external webframes. MACHU Wrecks in Situ is an openly accessible online database that contains accounts of and detailed information on underwater cultural heritage sites and wrecks.

Specifications

Organization: International (Governmental)

Coverage: Global

Language: English

Exact Positions: No

GIS: No

Relationships: Between wrecks and basic information

Restricted: No

Subscription: No

Other: Database combined with positions on an interactive map. Data validated by state parties. Could easily be developed and expanded.

The Maritime Programme of the Cultural Agency of the Netherlands adopted the MACHU GIS and WIS to describe Dutch and other underwater cultural heritage in our national waters and elsewhere in the world. Both systems were developed further and currently (September 2014), version 2.0 is almost ready. The possibility of data exchange, information sharing and the supra nationality of underwater cultural heritage, be it Dutch or other wrecks, were important factors of adopting the MACHU mapping system.¹³

Conclusion

The intention to cooperate and share data between stakeholders, institutes and state parties is often expressed. But transforming these intentions into a working mapping tool is a different matter. In this small survey, I have presented a few ideas and thoughts about mapping underwater cultural heritage.

Exchanging data is a first step in preserving WW I underwater cultural heritage. Creating an international platform to exchange data with standard definitions and consensus on the formats to present and describe the data should be a common goal.

Developing such a platform is not difficult in the technically sense. The problem lies more in the organisation of a consensus on formats and which data to exchange between the stakeholders involved. Keep it stupid and simple. It is clear that the more detailed an internationally shared mapping tool/GIS is planned to be, the more difficult it will become to develop.

We have seen that there are but a few shared international initiatives that map underwater cultural heritage. The regional database, Wreck Asia, is an example that could serve as template for further development into a worldwide tool. Also, the Australian ANSDB looks very promising as a template for UCH on an international level.

MACHU GIS, developed as a mapping tool for management of UCH in a European context, can be used as platform to describe WWI underwater cultural heritage, or used as template. The MACHU WIS platform could be a tool to create public awareness. Creating public awareness is a major step in creating political support and funds for underwater cultural heritage.

13 <http://www.machuproject.eu> & <http://www.maritiemprogramma.nl/magazine>

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