The Ocean-Our Natural & Cultural Heritage

We are all connected by the ocean. We depend on it for food, recreation and many livelihoods. Accordingly, there is a public interest around the world in recognizing marine sites for their significance and conserving them for present and future generations. The ocean heritage to be passed on to future generations includes both natural and cultural resources.

The 1972 World Heritage Convention (WHC) was the first international law recognizing special places for the significance or "outstanding universal value" of both natural and cultural heritage. While the focus over the first couple of decades was on terrestrial monuments and archaeological sites, over the past couple of decades the interest has extended seaward to include marine resources and sites such as the listing of the Dugong (marine mammal) by Japan or the inscription of Papahānaumokuākea (the first United States World Heritage Site on the Mixed Natural and Cultural list under the WHC).

As we look to the future the focus should include cooperating in protecting our natural and cultural heritage in the high seas such as RMS Titanic and the Sargasso Sea. This may include cooperation under the WHC, the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage, the Law of the Sea, maritime law of salvage and otherwise.

Annotated Bibliography:

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United Nations Educational Scientific and Cultural Organization (UNESCO) Conventions

The 1972 World Heritage Convention

UNESCO. (1972) World Heritage Convention (Natural and Cultural). The United Nations. Retrieved from: https://whc.unesco.org/en/convention/

The United States Departments of State and Interior took a leading role in this effort along with the European Headquarters of the United Nations, the International Union for the Conservation of Nature and Natural Resources (IUCN). Initial efforts for a program involved having a new institutional structure to be financed by voluntary contributions and supported by the large non-governmental organizations. However, the idea of merging the identification and protection of natural and cultural heritage into an international agreement or convention was negotiated and agreed to at the June 1972 Conference on the Human Environment in Stockholm.

Batisse, M. and Bolla, G. (2005) The Invention of World Heritage. History Club - Association of Former UNESCO Staff and Members. Retrieved from: https://whc.unesco.org/document/138563

The history of the origins of the concept of a cultural and natural world heritage that that led to the adoption of the World Heritage Convention by the General Conference of UNESCO, in November 1972, of a Convention. The 1954 Hague Convention on the Protection of Cultural Heritage during Armed Conflicts was the first international agreement under the auspices of UNESCO. At the outset, the existing International Council of Museums (ICOM) provided advice on museums. In the late 1950s concern about archaeological site became a great concern particularly destruction of cultural sites from the construction of the Aswan Dam in Egypt. The campaign to protect this cultural heritage became a major focus for UNESCO followed by other campaigns in Florence and Venice, Italy and Borobudur, Indonesia. The need for an advisory body resulted in the establishment of the International Council of Monuments and Sites (ICOMOS) in 1965. The need for a UNESCO convention for identifying and protecting cultural sites such as these became apparent. Around the same time there were efforts to protect natural sites such as under the Man and The Biosphere program. According to Russell Train, the concept of a "World Heritage Trust" that involved both natural and cultural heritage was first raised at an international meeting held at the White House in 1965. "The World Heritage Trust was to stimulate such co-operation in order to identify and develop the most beautiful natural and historical sites in the world for the benefit of the present and future generations." P. 17. The Convention concerning the Protection of World Cultural and Natural Heritage was then adopted by the General Conference of UNESCO on 16 November 1972.

Freestone, D., Laffoley, D., Douvere, F., Badman, T. (2016). World Heritage in the High Seas: An Idea Whose Time Has Come. World Heritage Convention. Retrieved from: http://whc.unesco.org/document/143493

A report launched by UNESCO's World Heritage Centre and International Union for Conservation of Nature (IUCN) explores the different ways the World Heritage Convention may one day apply to these wonders of the open ocean, which covers more than half the planet. The five sites discussed are: the Costa Rica Thermal Dome (Pacific

Ocean), a unique oceanic oasis, which provides critical habitat for a thriving marine life, including many endangered species; the White Shark Café (Pacific Ocean), the only known gathering point for white sharks in the north Pacific; the Sargasso Sea (Atlantic Ocean), home to an iconic ecosystem built around a concentration of floating algae; the Lost City Hydrothermal Field (Atlantic Ocean), an 800 meter-deep area dominated by carbonate monoliths up to 60 meters high; and the Atlantis Bank, a sunken fossil island in the subtropical waters of the Indian Ocean.

Ehler, C., and Douvere, F. (2011). UNESCO World Heritage Centre Navigating the Future of Marine World Heritage: A summary of the results from the first World Heritage Marine Site. UNESCO Managers Meeting Honolulu, Hawaii. Retrieved from: http://whc.unesco.org/uploads/activities/documents/activity-13-35.pdf

"Over the past 20 years, 43 marine sites have been inscribed on the World Heritage List, covering about 1.4 million km 2 of the ocean surface – an area about the size of the Gulf of Mexico. Each of these forty-three sites represents exceptional features in the ocean – features that are recognized by the international community for their outstanding natural beauty, extraordinary biodiversity, or unique ecological, biological and geological processes" This report summarizes the conclusions and recommended actions from the first meeting of World Heritage marine site managers held in Honolulu, Hawaii (United States), from1to 3 December 2010. The World Heritage Marine Programme organized the meeting, in cooperation with the United States National Oceanic and Atmospheric Administration. It was the first time that all World Heritage marine site managers had been invited to discuss the culture of Marine World Heritage. The meeting focused in particular on the exchange of success stories, providing the basis for a stronger community of site managers, and the capacity needed to deal with the increasing complexity of conserving World Heritage marine sites. Close to 80 per cent of all marine site managers or their representatives attended the three-day meeting. It also suggests that the wreck site of the Titanic would be a good candidate as a cultural site in the high seas.

2001 Protection of Underwater Cultural Heritage Convention

United Nations Educational Scientific and Cultural Organization. (2001). The 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage. Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/official-text/

Underwater cultural heritage, according to UNESCO includes "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." In simple terms, underwater cultural heritage includes archeological sites that are now underwater. This may include shipwrecks, sunken settlements or artifacts left by humans due to manmade damns, natural disasters like earthquakes, or areas flooded due to shifting coastlines. Around the world, in waters deep and shallow, relics of our collective human heritage lie in the ocean, and the 2001 UNESCO conference on underwater cultural heritage laid the legal groundwork for its protection. The following annotated bibliography provides a guide to learning more about underwater cultural heritage (UCH). The Convention entered into force on January 2nd, 2009. The text is officially

printed in English, French, Spanish, Russian, Arabic and Chinese, versions are also available in Portuguese and German.

Rivere, E., Dlamini, T., Kourkoumelis, D., Varmer, O., (2019) Evaluation of UNESCO's Standard Setting Work of the Culture Sector – Part VI – 2001 Convention on the Protection of Underwater Cultural Heritage. UNESCO Evaluation Office. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000368446

UNESCO produced an evaluation of its 2001 convention on underwater cultural heritage, focusing on standard-setting work of the cultural sector. The study finds that the 2001 convention is appreciated by experts and is relevant to the sustainable development agenda. However, it notes that the discourse on Underwater Cultural Heritage has been too narrow, and it hopes to broaden this in order to attract the attention of more stakeholders.

UNESCO (2018) The UNESCO Convention on the Protection of the Underwater Cultural Heritage. Retrieved from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/GB-2001CONVENTION-INFOKIT-2018_02.pdf

This brochure sets forth the purpose and need for this convention explaining what underwater cultural heritage is, and its importance and significance to the world. It discusses looting and illicit trafficking that threatens all heritage is, and the special threats to underwater cultural heritage from application of the law of finds and salvage. There are case studies, and the challenges of public access for the sustainable development of our underwater cultural heritage. It also summarizes the General Principles including consideration of the first policy option of in situ preservation and non-intrusive research and the scientific rules and standards for intrusive research, recovery, conservation and curation when that is determined by the Party nation to be in the public interest. It also discusses the importance for international cooperation which is also a duty under the Law of the Sea Convention. In sum, the brochure provides information and the case for nations to join the 2001 UNESCO convention.

UNESCO (2015) Resolutions of the UN General Assembly. Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/how-to-ratify/resolutions-of-the-un-general-assembly/

UNESCO produces a list of every mention of the 2001 Underwater Cultural Heritage convention has been mentioned in resolutions by the UN General Assembly. The convention tends to be mentioned when discussing matters of "Oceans and the law of the sea."

UNESCO. (2014, June 26-27). Proceedings of the Scientific Conference on the Occasion of the Centenary of World War I Bruges, Belgium. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000233355 Please note this is also available as a PDF.

Marking 100 years since the beginning of World War I, a conference was held in Bruges, Belgium to discuss specific examples of underwater cultural heritage. The report is divided into three sections, the first looks at specific examples of underwater cultural heritage dating to World War I such as the archaeology of World War I U-boats and a

number of shipwrecks ranging from the Atlantic to the Pacific Ocean. Section II looks at threats and challenges to underwater the public importance of shipwrecks, and managing modern material remains. The third and final section discusses ongoing World War I programs and educational initiatives.

UNESCO (2010) *The History of the 2001 Convention on the Protection of Underwater Cultural Heritage.* Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000189450

The preservation of underwater archaeology sites began as early as 1956. This timeline highlights the steps taken by UNESCO that led to the adoption of the 2001 UNESCO Convention.

UNESCO (2001) *Frequently Asked Questions.* Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/frequently-asked-questions/

UNESCO provides a list of most frequently asked questions and answers on the 2001 Convention. The page provides information on the background of the Convention, its content, the state cooperation system, how it works in the context of international law, and how it works in practice.

UNESCO (2001) *The Logo of the 2001 Convention.* Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/the-logo-of-the-convention/

The logo of the 2001 Convention aims to increase convention visibility and emphasize the values held by the convention. The image represented a heritage site covered by waves.

UNESCO (2001) *What is Underwater Cultural Heritage?* Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/learn-about-the-convention/

Underwater cultural heritage includes over three million shipwrecks, hundreds of sunken cities, submerged landscapes, prehistoric paintings, remains of ancient fishing sites, among many others. and provides detailed examples. These may be sources of scientific discovery, tourism, and public education. However, there are significant threats and challenges to protecting underwater cultural heritage.

UNESCO (2001) *Underwater Cultural Heritage and Sustainable Development.* Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/learn-about-the-convention/

There is great potential for underwater cultural heritage sites to aid in sustainable development efforts. Underwater cultural heritage sites have significant untapped potential ranging from diving tourism to culture development. However, challenges remain particularly when considering the destruction of sites and danger caused by treasure hunting.

UNESCO (2001) *The Legal Protection of Underwater Cultural Heritage.* Retrieved from: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/2001-convention/learn-about-the-convention/

Legal protection remains a necessity for underwater cultural heritage and current international laws are not sufficient. The 2001 Convention takes many steps towards achieving these goals including, defining underwater cultural heritage, explaining the ethics principles in the context of underwater cultural heritage, anti-pillaging mechanisms, and providing scientific guidance. UNESCO works to build capacity, produce informational publication, and raise awareness to help protect these vulnerable sites.

For a short selection of UNESCO's most relevant publications on underwater cultural heritage go to http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/publications-resources/publications/. For more publications, search the UNESDOC database Many of the UNESCO publications are available in multiple languages; links to specific language editions can be found underneath the publication titles.

Martin, J. (2019, November 4). Improving the Global Protection of Underwater Cultural Heritage by Transnational Governance. University of Exeter. Retrieved from: https://ore.exeter.ac.uk/repository/handle/10871/39579

This thesis examines the possible weakness that stem from sole reliance upon an international treaty, specifically the legal framework of public international law in enforcing the UNESCO 2001 Convention on the Protection of Underwater Cultural Heritage. The report concludes that in addition and in parallel to the UNESCO Convention further efforts must be made at the international, regional, and community-level to ensure underwater cultural heritage protection

Razavirad, M., Blake, J. E., Zamani, S.G., Mahmoudi, M. (2018) Legal Challenges of Protecting Underwater Cultural Heritage in the Exclusive Economic Zone and Continental Shelf, Public Law Studies Quarterly. Vol48(2). Pages 463-482.

The article discusses the legal foundation for the protection of UCH under the Law of the Sea Convention in the Area (Article 149), the Contiguous Zone (Article 303(2)) and the general duty that applies in all maritime zones. With regard to the EEZ and continental shelf there was a perceived gap that the UNESCO Convention was developed to fill. There was a need to establish a "delicate balance" between the rights and jurisdictions of coastal and other States, protection of underwater cultural heritage in these zones. The result was a complex and ambiguous, but also conservative mechanism, so that the general framework of the 1982 Law of the Sea Convention remains intact.

UNESCO Regional Office for Culture in Latin America and the Caribbean. (2015). Underwater Cultural Heritage in Latin America and the Caribbean. Culture and Development. Retrieved from http://www.lacult.unesco.org/lacult_en/docc/CyD_13_en.pdf

The UNESCO Regional Office for Culture in Latin America and the Caribbean oversees a number of projects that seek to strengthen national and local capacities to effectively manage underwater and coastal cultural resources, formulate at national strategy, and promote research. The full magazine provides perspectives from UNESCO in the region,

provides context for underwater cultural heritage specific to the region, and highlights a number of cases studies around the Caribbean including articles on the relevance of culture to sustainable development and cooperation in the region.

Flatman, J. (2013 July 18) Conserving Marine Cultural Heritage: Threats, Risks and Future Priorities. Conservation and Management of Archaeological Sites. Retrieved from: https://www.tandfonline.com/doi/abs/10.1179/135050309X12508566208245

This special volume of the journal debates the priorities of underwater cultural heritage preservation on an international scale. Its contributors, which include stakeholders in industry, the public sector, and academia, consider the threats of agriculture, the value of *in situ* preservation, national programs, and future management in light of the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage.

Aznar-Gomez, M. (2010) Treasure Hunters, Sunken State Vessels and the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage. International Journal of Marine and Coastal Law. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/ljmc25&div=18&id=&page=

This article gives an overview of two US judicial decisions regarding several Spanish shipwrecks and considers how they have rewritten the legal framework surrounding underwater cultural heritage protection. The article asserts that the United States' decisions may allow for ease of ratification of the 2001 UNESCO Convention in countries that have been more hesitant.

O'Keefe, P. J., Nafziger, J.A.R. (2009, November) The draft convention on the protection of Underwater Cultural Heritage. Ocean Development and International Law. Retrieved from: https://www.tandfonline.com/doi/abs/10.1080/00908329409546041?journalCode=uodl20

In 1988, the International Law Association established a Committee on Cultural Heritage Law. This is their draft of a convention of Underwater Cultural Heritage, which they completed in 1993. The convention hoped to provide protection beyond the territorial seas of coastal states for underwater cultural heritage sites and resolve jurisdiction issues.

Phillips, C.R. (2007). The Treasure of the San José: Death at Sea in the War of the Spanish Succession. Print.

This Spanish galleon San José was sunk by the British off the coast of what is now Columbia. The wreck site is believed to have a rich cargo of valued over a billion dollars. It has been the subject of legal issues involving treasure hunters, and the Governments of Spain and Columbia. The book discusses the documentary records of the San José's final voyage and suggests that the loss of silver and gold and the loss of the six hundred men who went down with the ship. The Treasure of the San José distills myth from history and sheds light on the heritage and human lives associated with a "treasure" ship. It won the 2007 Award for Excellence in World History.

Ricardo, E. J. (2007, February 22) US Protection of underwater cultural heritage beyond the territorial sea: problems and prospects. International Journal of Nautical Archaeology. Retrieved from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1095-9270.2000.tb01381.x

Current US treatment of underwater cultural heritage beyond the territorial sea is analyzed in light of Law of the Sea principles and the UNESCO Draft Convention on the Protection of the Underwater Cultural Heritage.

Dromgoole, S. (2006). The Protection of the Underwater Cultural Heritage: National Perspectives in Light of the UNESCO Convention 2001. Martinus Nijhoff Publishers. Retrieved from: https://books.google.com/books?hl=en&lr=&id=nuSwCQAAQBAJ&oi=fnd&pg=PR9&dq=underwater+cultural+heritage&ots=E4OqsQGDjJ&sig=u343cGn3kzqmDSHOkDu9S0lAHtU#v=onepage&q=underwater%20cultural%20heritage&f=false

This is a collection of essays on underwater cultural heritage that reveal significant problems in the sixteen legal systems which reconcile the obligations of the UNESCO Convention with domestic legislation. The role of salvage law is a big theme in many of these essays.

Forrest, C. (2003, April). Has the Application of Salvage Law to Underwater Cultural Heritage Become a Thing of the Past? Journal of Maritime Law & Commerce. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/jmlc34&div=23&id=&page=

Application of salvage law to shipwrecks of archaeological significance is controversial. This article describes the ways in which the 2001 UNESCO Convention on underwater cultural heritage challenged the law of salvage, potentially making it legally impossible.

Dromgoole, S. (2003, January 01) 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage. International Journal of Marine and Coastal Law. Retrieved from: https://brill.com/view/journals/estu/18/1/article-p59_2.xml

This book considers the background of the scope and objectives of the 2001 UNESCO convention on underwater cultural heritage. It examines maritime zones, sanctions for violations, and dispute settlement procedures adopted by the convention. It concludes by considering the potential impact of the convention

Garabello, R., Scovazzi, T. (2003) The Protection of the Underwater Cultural Heritage: Before and After the 2001 UNESCO Convention. Martinus Nijhoff Publishers. Retrieved from: https://books.google.com/books?hl=en&lr=&id=bwiGPr3XQrAC&oi=fnd&pg=PR9&dq=underwater+cultural+heritage&ots=iLXdlxUIKw&sig=vTHIxZ7W4Pk4hgDN4K9SBolGr0A#v=onepage&q=underwater%20cultural%20heritage&f=false

This book highlights the successes of the 2001 UNESCO Convention by contrasting the protection of underwater cultural heritage before the convention and after. It also gives an overview of the evolution of underwater cultural heritage legal theory.

Forrest, C. (2002, July) *A New International Regime for the Protection of Underwater Cultural Heritage.* British Institute of International and Comparative Law. Retrieved from: https://www.cambridge.org/core/journals/international-and-comparative-law-quarterly/article/new-international-regime-for-the-protection-of-underwater-cultural-heritage/3638AC9392D9FF933330CA3F4CF97DF3

This journal article describes the 2001 UNESCO convention as a "new weapon" to preserve cultural heritage that complements UNESCO's other three conventions. It gives an overview of the convention and ultimately praises it for its objectives.

Comite Maritime International. (2002) Consideration of the UNESCO Convention on the Protection of Underwater Cultural Heritage. CMI Yearbook.

This document details the concerns and considerations of the CMI working group regarding the UNESCO underwater cultural heritage convention. The CMI supports the overall goal of underwater cultural heritage protection but challenges several aspects of the convention, including the consideration of *in situ* preservation as the first option for protection, objections to the sale of underwater property, the broad definition of underwater cultural heritage and 100 year time rule (which would exclude the titanic), and any attempt to abrogate the law of salvage.

Bederman, D. J. (1999) The UNESCO Draft Convention on Underwater Cultural Heritage: A Critique and Counter-Proposal. Journal of Maritime Law and Commerce. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/jmlc30&div=34&id=&page=

This article highlights the most glaring flaws of the UNESCO Draft convention published by the International Law Association and introduces and alternative approach to underwater cultural heritage protection.

International Agreements

Barcelona Convention. (1995) European Commission. Retrieved from: https://ec.europa.eu/environment/marine/international-cooperation/regional-sea-conventions/barcelona-convention/index_en.htm

The Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) was adopted in 1995. Sixteen Mediterranean countries adopted the Mediterranean Action Plan (MAP), a regional seas program. It advocates for sustainable development along Mediterranean coastlines by controlling marine pollution, protecting cultural heritage, and strengthening solidarity. The full 1995 Convention can be found here (PDF).

Helsinki Convention. (1992) European Commission. Retrieved from: http://www.helcom.fi/about-us/convention

The Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention) aimed to halt pollution in the Baltic Sea (including that coming from hazardous wrecks). It also aimed to enhance and assess marine biodiversity.

OSPAR Convention. (1992, September 22) Convention for the Protection of the Marine Environment of the North-East Atlantic. Ministerial Meeting of the Oslo and Paris Commissions. Retrieved from: https://www.ospar.org/convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic was signed in 1992 and started to be enforced in 1998. It provided an overview of the current quality of the marine environment and hoped to improve it. It aimed to prevent ocean pollution from three sources: land-based, dumping/incineration, and offshore.

Barcelona Convention. (1976). Convention for the Protection of the Mediterranean Sea Against Pollution. United Nations Environment Program. Retrieved from: https://web.unep.org/unepmap/1-barcelona-convention-and-amendments

The Convention for the Protection of the Mediterranean Sea Against Pollution was adopted on February 16th 1976 in Barcelona, Spain by 16 Countries (Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, the European Community, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, Turkey). This served as an action plan to control marine pollution, ensure sustainable management, integrate the environment with socio-economic ideas, protect the marine environment, protect cultural heritage, and improve quality of life. This was replaced by the Action Plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean in 1995.

Underwater Cultural Heritage Policy

Jing, Y., Li, J. (2019 February 07) *Who Owns Underwater Cultural Heritage in the South China Sea.* Coastal Management. Retrieved from: https://www.tandfonline.com/doi/full/10.1080/08920753.2019.1540908

Disputes over oil, gas, and fisheries in the South China Sea have intensified the difficulties of underwater cultural heritage protection. This article investigates potential disputes amongst China, Vietnam, and the Philippines over the ownership of underwater cultural heritage in the South China sea. Differences in legislation and jurisdiction could result in conflict.

Martin, J.B., Gane, T. (2019) *Weakness in the Law Protecting the United Kingdom's Remarkable Underwater Cultural Heritage: The Need for Modernisation and Reform*. Journal of Maritime Archaeology. Retrieved from: https://ore.exeter.ac.uk/repository/handle/10871/38046

This article makes a case for reviewing the legal framework surrounding underwater cultural heritage protection in the UK. It identifies perceived flaws in the legislation that put underwater cultural heritage at risk, including the schism between what the policy hopes to achieve and what it is actually achieving in practice. The authors call for better engagement at the global and regional negotiating table and for policy that aims to be more inclusive and sustainable.

Varmer, O. (2014) *Underwater Cultural Heritage Law Study*. NOAA. Retrieved from: http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CLT/pdf/UCH_Law_Study_OLE.pdf

Currently, no statue protects underwater cultural heritage from unscientific salvage or looting, energy development, dredging, etc. This article provides an analysis of existing laws surrounding underwater cultural heritage and identifies gaps in protection and makes recommendations for legislation to address these gaps. Proposals include recommendations to strengthen the National Marine Sanctuaries Act and the Archaeological Resources Protection Act.

Dromgoole, S. (2013) Underwater Cultural Heritage and International Law. Cambridge Studies in International and Comparative Law. Cambridge University Press. Print

This book is an excellent treatise by one of the most prolific writers in the field of international law regarding underwater cultural heritage. It surveys the history of law pertaining to underwater cultural heritage, including the law of the sea, maritime law, property law, sovereign immunity, historic preservation law and the standards and practices of archaeology. It also involves issues of admiralty jurisdiction, as well as the jurisdiction of coastal states and flag states. Professor Dromgoole untangles all of this to help the reader understand the law and controversies regarding the protection of Underwater Cultural Heritage (UCH) particularly in the context of the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage (2001 UNESCO Convention)1 and its relationship with the 1982 UN Convention of the Law of the Sea.2 She has explained it in a way that is helpful not only to legal academics but also to attorneys, archaeologists, historians, salvors, students and the general public. Varmer, O., Book review in The International Journal of Marine and Coastal Law 29(1):191-192.

Spalding, M. (2010) *The Okinawa Dugong: Application of Section 402 of the National Historic Preservation Act.* The Ocean Foundation. PDF.

The Dugong is threatened by the construction of a new US military base off the coast of Japan in Okinawa. Dugongs are highly susceptible to anthropogenic changes to the ecosystem and are one of the four remaining Sirenia species. Legal suits in favor of dugong protection resulted. They argued that the dugong was protected as a "national monument" under the Law for the Protection of Cultural Properties. The cases were eventually dismissed, and the DoD did not comply.

Vadi, V. S. (2009) *Investing In Culture: Underwater Cultural Heritage and International Investment Law.* Vanderbilt Journal of Transitional Law. Retrieved from: https://www.vanderbilt.edu/wp-content/uploads/sites/78/Vadi-cr_final_final.pdf

States rarely have the financial means to recover ancient artifacts from shipwrecks. Therefore, commercial actors tend to be the main salvagers of these materials, and they often don't follow the proper procedures of scientific inquiry, etc. Thus, commercial actors are a crucial aspect of the regulatory framework governing underwater cultural heritage. This article reconciles public and private interests in underwater cultural heritage protection, calling for a reframing of international law that makes preservation of cultural heritage a key component of social and economic development.

Forrest, C. (2007, February 22) *Defining 'underwater cultural heritage.'* International Journal of Nautical Archaeology. Retrieved from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1095-9270.2002.tb01396.x

The biggest challenge in developing the 2001 UNESCO convention on underwater cultural heritage was defining the term. This article analyzes the development of the agreed upon definition and its utility in providing effective protection.

Frigo, M. (2004, June) *Cultural property vs. cultural heritage: 'A battle of concepts' in international law?* International Review of the Red Cross. Retrieved from: https://www.cambridge.org/core/journals/international-review-of-the-red-cross/article/cultural-

property-v-cultural-heritage-a-battle-of-concepts-in-international-law/DF36EBF545EAD1BEC9053899795922F3

This article explores the complexities surrounding the legal definition of cultural property and how it may limit the scope of international legal protection. It considers extending legal protection of cultural property to cultural heritage for more effective preservation.

Smith, H. D., Couper, A. D. (2003, January) *The management of the underwater cultural heritage.* Journal of Cultural Heritage. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S1296207403000050

This article defines underwater cultural heritage, outlining its development and grouping its evolution into a series of stages. It argues that the valuation of underwater cultural heritage can be cultural and economic and claims that the legal framework for underwater cultural heritage protection is inadequate. It concludes by discussing initial provisions for integrated management.

Varmer, O. (1999, April) *The Case Against the 'Salvage' of the Cultural Heritage*. Journal of Maritime Law and Commerce. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/jmlc30&div=31&id=&page=

This article investigates the conflict between historic preservation laws and the maritime law of salvage, inevitably arguing for the application of historic preservation law and the policy preference for *in situ* preservation unless it is determined to be in the public interest to recover or salvage the UCH and conserve and curate it in a manner that ensures public access.

Migliorino, L. (1995) *In Situ Protection of the Underwater Cultural Heritage under International Treaties and National Legislation.* International Journal of Marine and Coastal Law. Retrieved from: https://heinonline.org/HOL/LandingPage?handle=hein.journals/ljmc10&div=55&id=&page=

Historically, when an object of cultural and historical significance has been found underwater, they are often stolen or destroyed. Therefore, states and regulatory agencies should promote *in situ* protection. The author claims that *in situ preservation*, or preservation in place, is the only way to safely preserve underwater cultural heritage.

Strati, A. (1995) *The Protection of Underwater Cultural Heritage: An Emerging Objective of the Contemporary Law of the Sea.* Martinus Nijhoff Publishers. Retrieved from: https://books.google.com/books?hl=en&lr=&id=4kROa4B8wiIC&oi=fnd&pg=PR15&dq=underwater+cultural+heritage&ots=hm_zRuE9If&sig=7ScNz42OZVc1a0DXvAqfiSx4BEc#v=onepage&q=underwater%20cultural%20heritage&f=false

Dr. Strati thoroughly examines views of underwater cultural heritage through the lens of treasure hunters and their use of the law of salvage and finds ("finders keepers") and criticizes this framework because of the resulting loss and destruction of heritage. The author supports the concept that laws governing underwater cultural heritage protection serve the needs of archaeology, benefiting scientific research, education, and allowing for sustainable public access. It particularly examines the framework of Law of the Sea Convention in protecting UCH.

Brice, G. (1996, July) *Salvage and the Underwater Cultural Heritage.* Marine Policy. Retrieved from: https://www.sciencedirect.com/science/article/pii/0308597X9600022X

This article asserts that Argentina should adopt similar policies to the US regarding underwater cultural heritage protection. It hopes that the country will demand the highest scientific standards in the salvage of historic wrecks, because new technology is making their discovery easier.

Hutchinson, G. (1996, July) *Threats to Underwater Cultural Heritage: The Problems of Unprotected Archaeological and Historic Sites, Wrecks and Objects Found at Sea*. Marine Policy. Retrieved from: https://www.sciencedirect.com/science/article/pii/0308597X96000176

In this article, the *Titanic* is used as a case study to explain the lack of protection for underwater cultural heritage sites. After its wreck was discovered in 1985, there was no way to protect it from salvage. The article calls for better protection of undersea wrecks so we might develop a deeper understanding of our "maritime past."

Risks of Oil Spills & Other Pollutants from Wrecked Vessels

Hackett, J. (2016, March 1) *Deepwater Horizon Spill Altered Shipwreck Ecosystems*. Scientific American. Retrieved from: https://www.scientificamerican.com/article/deepwater-horizon-spill-altered-shipwreck-ecosystems/

This article summarizes research presented at the 2016 Ocean Sciences meeting on the relationship between oil spills and the increased degradation of shipwrecks. In particular, the Deepwater Horizon oil spill resulted in the thriving on microbial life on nearby shipwrecks. These bacteria speed up metal corrosion, resulting in the destruction of these underwater cultural heritage sites. The scientists make an ecological argument for their protection, stating that because shipwrecks can act as artificial reefs, protecting them means protecting a hot spot for biodiversity.

National Oceanic and Atmospheric Administration. (2014, August 4) *Mysterious Oil Spill Traced to Vessel Sunk in 1942 Torpedo Attack.* Retrieved from: https://response.restoration.noaa.gov/about/media/mysterious-oil-spill-traced-vessel-sunk-1942-torpedo-attack.html

This report provides an account of NOAA's response to an oil spill from a sunken warship. A fisherman reported the spill to the U.S. Coast Guard, and archaeologists confirmed that the source was the wreck of the W.E. Hutton, a steamship torpedoed in WWII. In response, NOAA implemented a successful containment and mitigation plan, which included covering a finger-sized hole in the oil tank. This event occurred in North Carolina's Outer Banks, otherwise known as "the Graveyard of the Atlantic" due to its harsh storms, piracy, and warfare.

McGrath, M. (2013, June 7) *Study finds shipwrecks threaten precious seas*. BBC News. Retrieved from: https://www.bbc.com/news/science-environment-22806362

This article summarizes a study conducted for Worldwide Fund for Nature by researchers at South Hampton University that evaluates the environmental risk posed by shipwrecks. It finds that since 1999, 239 ship accidents have occurred in the Coral Triangle, and they worry this number will increase with heightened storm surge as a result of climate

change. The authors of the study call for increased regulation to curb ships operating under flags of convenience.

Parliamentary Assembly. (2012, March 9) *Resolution 1869: The environmental impact of sunken shipwrecks.* Council of Europe. Retrieved from: https://assembly.coe.int/nw/xml/XRef/Xref-XML2HTML-en.asp?fileid=18077&lang=en

The text adopted by the Standing Committee, acting on behalf of the Parliamentary Assembly of the Council of Europe, in response to the report by WWF (see above) and its own report on ocean dumping and human trafficking in the Mediterranean, regarding the environmental threats posed by shipwrecks and recommending, among others, that all European countries become signatories to the Nairobi agreement on the removal of shipwrecks and that create a European database on wrecks, their location, cargo and pollution potential, in co-ordination with national maritime pollution bodies or within the framework of the regional sea conventions.

Symons, L., Wagner, J., Delgado, J., Helton, D., Varmer, O., Gongaware, L., Michel, J., Weaver, J., Boring, C., Priest, B., Holmes, J., Early, W., Etkin, D., McCay, D.F., Reich, D., Balouskus, R., Fontenault, J., Isaji, T., Mendelsohn, J., McStay, L., Goodwyn, N. (2012 September 12) *2012 Risk Assessment for Potentially Polluting Wrecks in US Waters*. NOAA. Retrieved from: https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/archive/protect/ppw/pdfs/2013_potentiallypollutingwrecks.pdf

NOAA provides a detailed assessment of the risk of oil spills from sunken vessels across the United States. NOAA used their RULET and RUST databases to identify 87 priority wrecks. Of these wrecks, 54% are unconfirmed, meaning their location is unknown. They provide recommendations for action including an active monitoring plan and action plan incase oil spills are detected.

Hamer, M. (2010, September 1) *Why wartime wrecks are slicking time bombs* Islands Business. Retrieved from https://www.newscientist.com/article/mg20727761-600-why-wartime-wrecks-are-slicking-time-bombs/

This article provides a comprehensive overview of the potential risks of and solutions for oil leaks from sunken shipwrecks. It anticipates that in five to ten years (2015-2020) we will reach a period of "peak leak," which would last around 50 years. This is dangerous, because past oil spills from shipwrecks have killed thousands of marine animals. NOAA's Resources and Under Sea Threats (RUST) database and the American Salvage Association's Wreck Oil Removal Program (WORP) are helping to prepare for peak leak – it seems the U.S is in the best shape to handle any potentially polluting shipwrecks as of 2010.

Forrest, C. (2012) *Culturally and Environmentally Sensitive Sunken Warships*. Australian and New Zealand Maritime Law Journal. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2620123

This article details the legal and environmental complexities surrounding the recovery and protection of sunken warships. Many sunken ships have significant historical value, but their protection and preservation, especially *in situ* could pose navigational and

environmental hazards (massive oil spills). This article considers these problems in light of recent international conventions that have sought to remedy them.

Symons, L. C. (2012) *NOAA's Remediation of Underwater Legacy Environmental Threats (RULET) database and Wreck Oil Removal Program (WORP)*. NOAA.

This presentation from NOAA gives a detailed overview of the current sunken ships that pose environmental risks and the tools NOAA is using to mitigate these risks. The Resources and Undersea Threats (RUST) database has identified several thousand potentially polluting undersea wrecks, aided by a RULET pollution tree analysis. Worst case scenarios have been mapped.

Barrett, M. J. (2011) *Potentially Polluting Shipwrecks: Spatial tools and analysis of WWII shipwrecks*. Nicholas School of the Environment, Duke University. Retrieved from: https://pdfs.semanticscholar.org/61df/19e296e2305e5bbb4aeb7b942db3ae83c61b.pdf

This study provides a geospatial analysis of potentially polluting shipwrecks. Through that analysis, it creates a risk index to prioritize the most dangerous vessels. Further, spatial tools are designed to offer resource managers a way to predict sensitive ecosystems at risk. Importantly, it provides thorough wreck data for conservation groups and risk managers.

Droomgole, S., Forrest, C. (2007) *The 2007 Nairobi Wreck Removal Convention and hazardous historic shipwrecks*. Lloyd's Maritime and Commercial Law Quarterly. Retrieved from: https://espace.library.uq.edu.au/view/UQ:251868

Hazardous wrecks can be a serious pollution and navigation hazard for states. The adoption of the Nairobi Wreck Removal Convention allows states to remove hazardous shipwrecks. This article examines how the Wreck Removal Convention could be employed to not only remove hazardous shipwrecks but also to preserve the historical significance of the wreck.

International Maritime Organization. (2007) *The Nairobi International Convention on the Removal of Wrecks*. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228988/8243.pdf

This convention developed uniform laws for the removal of shipwrecks that pose an environmental or navigational hazard. It defined an "exclusive economic zone (EEZ)" for states that at times encompassed international waters. EEZs allow states to remove hazardous wrecks in international waters without claiming sovereignty over that area.

Monfils, R., Gilbert, T., Nawadra, S. (2006) *Sunken WWII shipwrecks of the Pacific and East Asia: The need for regional collaboration to address the potential marine pollution threat*. Ocean & Coastal Management. Retrieved from: https://www.sciencedirect.com/science/article/pii/S0964569106000901

This paper highlights the environmental risks posed by WWII shipwrecks that could leak fuel oil and cargo. In light of this, it addresses issues of ownership and responsibility for these shipwrecks in the Pacific.

Impacts of Climate Change

Bethencourt, M., Fernandez-Montblanc, T., Izquierdo, A., Maria-Gonzalez-Duarte, M., Munoz-Mas, C. (2018 February) *Study of the influence of physical, chemical, and biological conditions that influence the deterioration and protection of Underwater Cultural Heritage*. Science of the Total Environment. Retrieved from: https://www.sciencedirect.com/science/article/pii/S0048969717323495

In this article, a multidisciplinary approach is used to understand the threats to underwater cultural heritage. Researchers determine that a correlation exists between environmental conditions and the degradation of underwater archaeological artifacts. They develop a non-destructive technique to obtain information from artifacts in shipwrecks. They also evaluate the effectiveness of cathodic protection as a temporary measure for *in situ* preservation.

Markham, A. (2017 July 17) *Heritage at Risk: How Rising Seas Threaten Coastal Ruins*. Yale Environment 360. Retrieved from: https://e360.yale.edu/features/heritage-at-risk-how-rising-seas-threaten-ancient-coastal-ruins

This is an article for an academic journal by the director for Climate & Energy at the Union of Concerned Scientists. He uses Skara Brae, Scotland (a UNESCO world heritage site) as an example of a cultural heritage site being destroyed by climate change. According to a 2014 Potsdam Institute for Climate Research study, many other sites are at risk due to rising sea levels including the Statue of Liberty and Sydney Opera House. He notes that there is one silver lining – archeologists are paying more attention to Skara Brae and making moves to protect it.

Perez-Alvaro, E. (2016 October) *Climate change and underwater cultural heritage: Impacts and challenges.* Journal of Cultural Heritage. Retrieved from: https://www.sciencedirect.com/science/article/abs/pii/S1296207416300334

Changing sea levels will result in underwater cultural heritage being exposed and tangible sites being submerged. In light of this, *in situ* preservation may not be realistic. This article explores cases of heritage that are already facing the consequences of climate change and calls for a new partnership between natural and cultural resources for preservation.

McGill University. (2013, June 14). Study of oceans' past raises worries about their future. ScienceDaily. Retrieved from www.sciencedaily.com/releases/2013/06/130614111606.htm.

We are changing the amount of nitrogen available to fish in the ocean by increasing the amount of CO2 in our atmosphere. This article summarizes a McGill study that evaluates the effect of this increase. It finds that it takes centuries for the ocean to balance the nitrogen cycle, known as a strong climate sensitivity. This raises concerns about the current rate of CO2 entering our atmosphere, and it shows how the ocean may be changing chemically in ways we wouldn't expect. This could increase the rate of corrosion of underwater cultural heritage sites.

Fagan, B. (2013) *The Attacking Ocean.* Bloomsbury Press. Print.

This book explains the geology behind rising sea levels in the past that led to the submergence of whole cities. It hints at the possibility of this happening again in the near future due to rising sea levels as a result of climate change. The rising sea levels could put some underwater cultural heritage sites outreach, shift nearshore sites, and submerge maritime heritage sites on our coasts.

Spalding, M. (2011) *Perverse Sea Change: Underwater Cultural Heritage in the Ocean is Facing Chemical and Physical Changes.* American Society of International Law. Retrieved from: https://www.oceanfdn.org/sites/default/files/Perverse%20Sea%20Change%20MJS1.pdf

This is an article by the president of the Ocean Foundation for an international law journal. It explains the threats to underwater cultural heritage as a result of ocean acidification and climate change, including increased corrosion rates, more intense storm events, erosion, and rising sea levels. It also provides an overview of laws that have been put in place to address ocean acidification and therefore may also improve underwater cultural heritage protection.

Artificial Reefs

Garcia, A. C., Barreiros, J. P. (2018 May) *Are underwater archaeological parks good for fishes? Symbiotic relationship between cultural heritage preservation and marine conservation in the Azores.* Regional Studies in Marine Science. Retrieved from: https://www.sciencedirect.com/science/article/pii/S2352485517301305

This article finds that underwater archaeological parks (UAPs) and marine biodiversity have a mutually beneficial relationship. Given that, the authors call for better monitoring of UAPs in Azores in order to protect the biodiversity and cultural heritage of the region.

Taylor, A. (2011 April) *Artificial Reefs Around the World*. The Atlantic. Retrieved from: https://www.theatlantic.com/photo/2011/04/artificial-reefs-around-the-world/100042/

Photos are used to show the vast array of underwater cultural heritage sites around the world. These include photos of divers deliberately sinking decommissioned ships, subway cars, and military equipment to create artificial reefs, even underwater sculptures that help form reefs.

Church, Robert A., Warren, Daniel J., Irion, Jack B. (2009) *Analysis of Deepwater Shipwrecks in the Gulf of Mexico: Artificial Reef Effect of Six World War II Shipwrecks*. The Oceanography Society. Retrieved from: https://www.jstor.org/stable/24860959?seq=1#page_scan_tab_contents

This report summarizes the findings of a project that aimed to analyze six WWII shipwrecks that had turned into artificial reefs. It enlisted the help of scientists, archaeologists, and government officials to study the "artificial reef effect," and preserve a vital historical resource. The analysis hoped to improve popular understanding of the impact of WWII on the Gulf coast and the wider world.

Archaeological Significance

Guerin, U., Egger, B., Egger, Penalva, V. (2010) *Underwater Cultural Heritage in Oceania.* UNESCO. Retrieved from: https://unesdoc.unesco.org/ark:/48223/pf0000188770

The Pacific region has a large number of spectacular submerged archaeological sites that are a great opportunity for economic development and a strengthening of cultural identity. This publication was prepared in the wake of a UNESCO meeting on the protection of underwater cultural heritage sites in this region. It hopes to stimulate international reflection on this issue by enlisting archaeologists to discuss the economic and cultural significance of these sites and summarize current preservation efforts.

Viduka, A. (2011) *Managing Underwater Cultural Heritage: A Case Study of the SS Yongala*. Council for the Historic Environment, Australia. Retrieved from: https://search.informit.com.au/documentSummary;dn=137483878548865;res=IELAPA

This journal article is a case study of the S.S. Yongala, which was declared a historic shipwreck in 1981. The shipwreck is a big source of tourism revenue, as visitors can participate in protected diving expeditions into the wreck. Some damage has resulted from these dive tours, raising concerns about protection and conservation of the site. Given this, the article gives an overview of the site's management, current condition, and future conservation options.

National Oceanic and Atmospheric Administration. (2019 July 08) *NOAA designates new national marine sanctuary in Maryland.* Retrieved from: https://www.noaa.gov/media-release/noaa-designates-new-national-marine-sanctuary-in-maryland

NOAA, the state of Maryland, and Charles County announce the designation of a new marine sanctuary to protect 100 abandoned steamships and vessels from WWI, otherwise known as the Mallows Bay "Ghost Fleet." This will be the first marine sanctuary designation since 2000, and lawmakers from both parties have praised the designation as a "win-win" for Maryland.

Cooper, H. (2015 May 31) *Grim History Traced in Sunken Slave Ship Found Off South Africa*. NY Times. Retrieved from: https://www.nytimes.com/2015/06/01/world/africa/tortuous-history-traced-in-sunken-slave-ship-found-off-south-africa.html

This article describes the Slave Wrecks Project and their finding of the wreckage of the Sao Jose, a slave ship that sank off the coast of South Africa. The researchers hope that preserving the wreckage will humanize the global slave trade and raise awareness about the many slaves who died crossing the middle passage. Artifacts, such as iron blasts used to offset the weight of African slaves, will be housed in the African-American Museum.

Perez-Alvaro, E., Gonzalez-Zalba, M. F. (2015 January) *The role of underwater cultural heritage on dark matter searches*. Ocean and Coastal Management. Retrieved from: https://www.sciencedirect.com/science/article/pii/S0964569114003615

Ancient lead ingots from shipwrecks help perform particle experiments in physics, but recovering ancient lead without proper methodology risks destroying these cultural artifacts. This article explores the dilemma between underwater cultural heritage preservation and its use in fundamental physics research.

Fausset, R. (2019 May 26) *'Ship of Horror': Discovery of the Last Slave Ship to America Brings New Hope to an Old Community.* NY Times. Retrieved from:

https://www.nytimes.com/2019/05/26/us/slave-ship-alabama-africatown.html?searchResultPosition=4

This article describes the discovery of the wreckage of Clotilda, the last slave ship to come to the United States. The shipwreck was found off the coast of Africatown, a small town north of Mobile, Alabama, where many residents are descendants of Clotilda slaves. Residents hope to keep the wreckage close to home to bring in tourists, making Africatown akin to Jamestown.

Broad, W. (2016 November 11) *'We Couldn't Believe Our Eyes': A Lost World of Shipwrecks Is Found.* NY Times. Retrieved from: https://www.nytimes.com/2016/11/12/science/shipwrecks-black-sea-archaeology.html

This article details the discovery of a ship from the Ottoman era in the Baltic sea. It describes the work of The Black Sea Project, which explores the Baltic sea to find well-preserved archaeological artifacts. The oxygen-deficient conditions of the Baltic Sea provide the ideal ocean environment for preservation of these sites.

Broad, W. (2019 July 22) *A Shipwreck, 500 Years Old, Appears on the Baltic Seabed.* NY Times. Retrieved from: https://www.nytimes.com/2019/07/22/science/shipwreck-archeology-shipwreck.html

This article reports the discovery of a ship believed to be 500 years old that is nearly intact (complete with mast, some rigging, and its anchor) although its name and origin are unknown. Such discoveries remind us how much underwater cultural heritage remains to be discovered.

Selected Examples of Underwater Cultural Heritage Site

United States

NOAA Office of National Marine Sanctuaries. *National Marine Sanctuary System.* Retrieved from: https://sanctuaries.noaa.gov/

The Office of National Marine Sanctuaries serves as the trustee for a network of underwater parks encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys and from Lake Huron to American Samoa. The network includes a system of 13 national marine sanctuaries and Papahanaumokuakea and Rose Atoll marine national monuments.

Thunder Bay National Marine Sanctuary

Off the coast of Michigan, 200 protected shipwrecks exist in the Thunder Bay National Marine Sanctuary. The Bay acted as an important shipping channel that also experienced severe storms, which is why so many wrecks exist in the area. Divers can explore the area, and scientists have planned research projects.
For more information: https://thunderbay.noaa.gov/

Pearl Harbor National Memorial

The USS Arizona was sunk in the Pacific during the Japanese attack on Pearl Harbor, and it marks the entry of the United States in WWII. The ship is now preserved underwater,

and the National Parks Service has built a memorial on top of it. Scientists and historians are allowed to dive into the wreckage for research purposes.
For more information: https://www.nps.gov/valr/index.htm

Monterey Bay National Marine Sanctuary

Designated in 1992, Monterey Bay National Marine Sanctuary is known best for its abundant, diverse marine ecosystems. The site, which spans 276 miles of shoreline, also contains 463 reported undersea vessels. There are likely hundreds of vessels for which no written record exists.
For more information: https://montereybay.noaa.gov/maritime/welcome.html

Channel Island National Marine Sanctuary

The Channel Island National Marine Sanctuary spans 1,470 square miles of the coast of Santa Barbara. It has a rich maritime heritage, and park employees are mandated to inventory sites, encourage research, and oversee responsible visitor use. Underwater cultural heritage sites include the remains of the earliest island inhabitants, dating back 13,000 years, and the enigmatic Watson A West- a historic shipwreck that disappeared in 1923.
For more information: https://channelislands.noaa.gov/welcome.html

Olympic Coast National Marine Sanctuary

The Olympic Coast National Marine Sanctuary is known for its 3,188 square miles of water teeming with diverse marine wildlife. However, the site also has a rich cultural and historical legacy. Over 200 shipwrecks are documented here.
For more information: https://olympiccoast.noaa.gov

Global Underwater Cultural Heritage Sites

To Add: The Vasa, Uluburun, The Mary Rose, Viking Ships at Skuldelev

Africa

The Alexandria Underwater Museum Project

UNESCO is hoping to protect the remnants of the lighthouse and the Ptolemaic (i.e. Cleopatra) palace in the bay of Alexandria. Unfortunately, the bay is being heavily polluted, which is accelerating the erosion of these ancient artifacts. UNESCO and the Ministry of Culture of Egypt convened a panel in 2006 to discuss plans for an underwater museum that might protect the ruins.
For more information: http://www.unesco.org/new/en/culture/themes/underwater-cultural-heritage/museums-and-tourism/alexandria-museum-project/

Asia

The ancient city of Dwarka, India

This submerged city is around 9,000 years old and features the remains of an ancient port, temples, and settlements.
For more information: https://www.gounesco.com/where-mythology-meets-reality-sunken-city-of-dwarka/

Europe

The Spanish Armada

In 1588, a large fleet of ships sank of the coast of Ireland. Archaeologists are still searching for all the remaining relics.
For more information: https://www.thejournal.ie/archaeology-spanish-armada-ireland-streedagh-3396385-May2017/

The Pavlopetri Underwater Archaeology Project

From 2009 – 2013 University of Nottingham researchers set out to understand the submerged, 5,000-year-old town in Southern Laconia, Greece. The project aimed to learn more about the city, its purpose, and how it became submerged.
For more information: https://www.nottingham.ac.uk/pavlopetri/

La Marmotta

In central Italy, archaeologists discovered a submerged settlement from 5700 BCE. The settlement is said to "reveal the dawning of Western civilization."
For more information: http://discovermagazine.com/2002/nov/cover

South America

The Underwater City of Port Royal

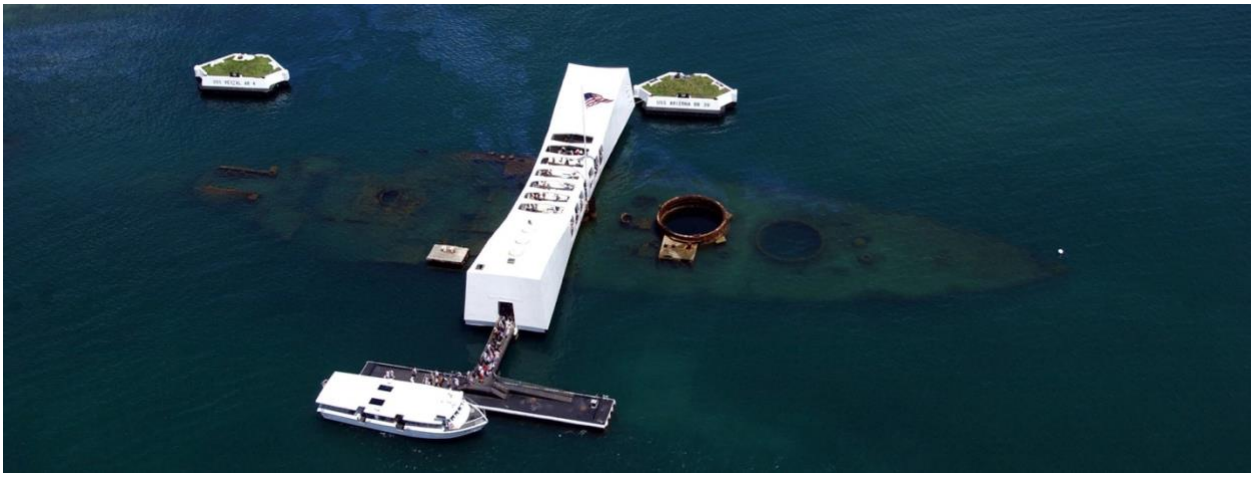
Located in Jamaica, Port Royal sank into the sea after a catastrophic earthquake in 1692. Early excavations recovered thousands of architectural artifacts. The underwater city is currently preserved *in situ*.
For more information: http://whc.unesco.org/en/tentativelists/5430/

Images for use on TOF's webpage:

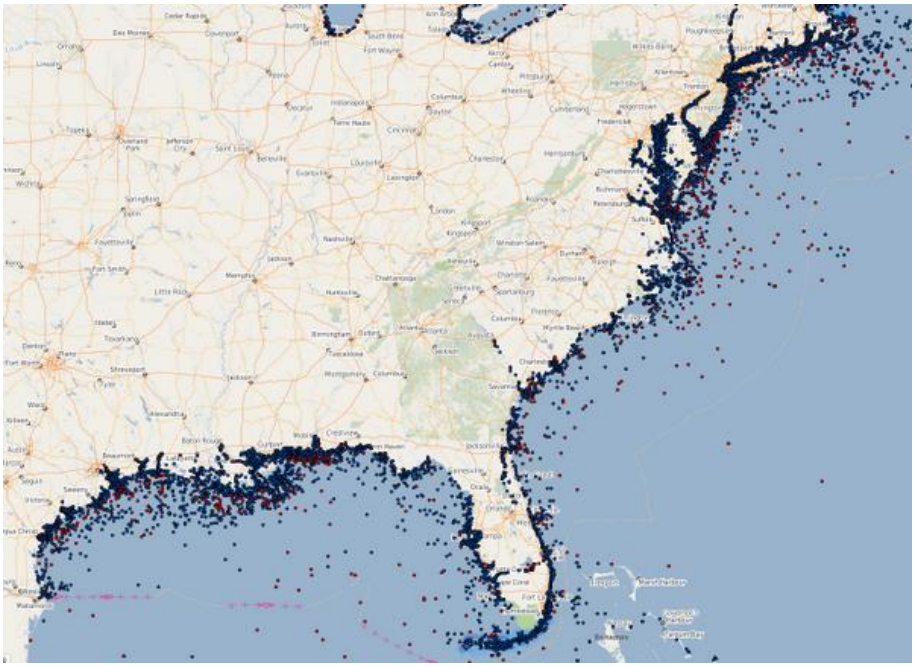
Courtesy of NOAA

Courtesy of NOAA: Thunder Bay National Marine Sanctuary

Courtesy of UNESCO



Courtesy of National Parks Service, Pearl Harbor National Memorial



Courtesy of NOAA, Map of shipwrecks on the Atlantic Coast