Threats to Our Ocean Heritage

The intersection between natural and cultural heritage and the emerging threats to the marine environment

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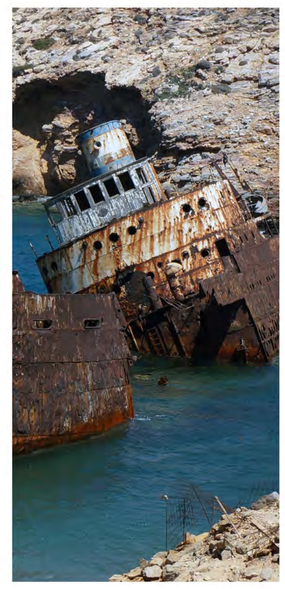
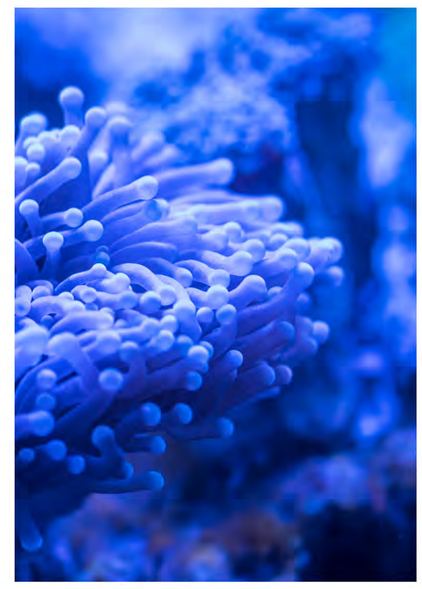
Image credit: Deborah Marx, NOAA Stellwagen Bank NMS

What is Ocean Heritage?

The stories of our societies and our ancestors are wrapped in intangible connection with the ocean and preserved on the seafloor as artefacts, shipwrecks, and remains of those lost or buried at sea. Marine global heritage has largely been based on natural features, and the inextricable link between natural and cultural has been ignored. An emerging field, 'Maritime Heritage Ecology' seeks clarity on this interconnection. Underwater Cultural Heritage (UCH) supports ecological marine biodiversity and helps boost sea connectivity in a shared space of natural and cultural heritage: Ocean Heritage.





Threats to Ocean Heritage...

Bottom Trawling

Every day, thousands of kilometers of the seabed are ploughed by trawlers, destroying both cultural and natural heritage. Maritime archaeologists and marine ecologists need to communicate and work together with fishers and policymakers to find ways to limit harm. Shipwrecks are as much part of the marine landscape - and thus of importance to ecologists - as they are to the cultural, historical landscape.

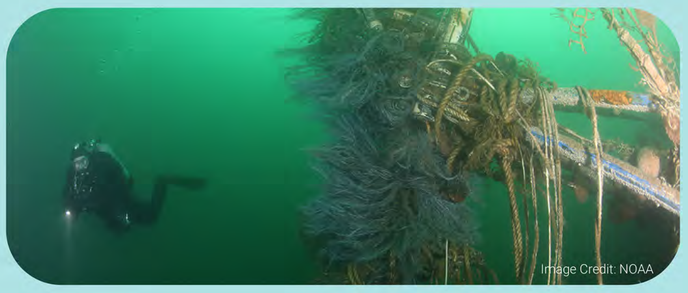


Image Credit: NOAA

Natural Heritage

Bottom trawling gear affects the seabed through

- scraping and ploughing;
- sediment resuspension;
- and physical destruction, removal,

or scattering of non-target benthos. The bottom trawling fishing operation further affects the seabed through waste dumped from the vessel. Indirect effects on the seabed are related to the stress imposed.

Cultural Heritage

It is not just the physical fish habitats that are destroyed—important shipwrecks and artefacts are also lost and have been damaged since the beginning of the practice. Archaeologists have recently begun raising awareness about the impact of trawling on their sites, and more work is needed.

Damage to shipwrecks can include mixed sediments, changing chemical degradation processes, artefact damage and movement, and destruction of a site's context. Additionally, nets and other fishing gear can snag on a wreck, warping the metal features or cutting through wooden elements. The site's integrity can be completely destroyed.

Ocean Heritage

Over time, shipwrecks come into equilibrium with the marine environment and become part of the benthic topography. Trawling destroys this equilibrium and impacts all elements of Ocean Heritage. Shipwrecks can act as artificial reefs and safe habitats for juvenile species as well as their role as part of our shared past and history. Waters around protected wrecks have been documented to produce higher fish population and biomass than in areas of high trawling with no structures on the seafloor. Through this process of 'spill over', protected shipwrecks can help increase the strength of surrounding fish stocks. Thus, shipwrecks should not be viewed solely in a cultural significance context. They are part of the natural ocean landscape as well and our Ocean Heritage.

Potentially Polluting Wrecks

A Potentially Polluting Wreck, or "PPW", is a shipwreck that was sunk with and still shelters a large cargo of pollutants, generally found in the form of oil, heavy metals, ordinance, or other hazardous substances. The major hazard surrounding these vessels is that as soon as they were submerged, they began gradually being degraded by a combination of, among other factors, sea water, micro-organisms, and anthropogenic activities.

Of the nearly 8,600 PPW that have been identified as threats to the marine environment, harboring up to 20 million tons of oil total, a staggering 75% of them stem from the myriad naval conflicts of WWII. As many of these wrecks are nearing 80 years of underwater exposure, their corroding iron hulls are reaching a point of critical failure, meaning that for many of these vessels, a catastrophic release is imminent.

Obstacles to Remediation

The removal of pollutants from these vessels has proven to be very difficult to coordinate for a few reasons. Legal disputes about ownership vs. responsibility to investigate and clean, a general lack of knowledge of PPW locations, especially deep-water wrecks, concerns over the disturbance of war graves, and a large associated price tag mean that very few PPWs have been remediated so far. Additionally, a number of these vessels are protected heritage sites and will only become more legally challenging to clean in the near future. This is due to the additional protections that will be imposed when the vessels eventually cross over the 100-year protection eligibility threshold, as established by the 2001 UNESCO Convention on the Protection of the Underwater Cultural Heritage.

Most Vulnerable Communities

PPW thus far have been dealt with on a case-by-case basis, with the majority of those cleaned being found within the domestic waters of larger, wealthier Western nations. Small island developing nations (SIDS), however, stand to lose the most from a leaking event, as these smaller "blue economies" typically cannot afford the exorbitant price of oil removal, were not involved in these naval conflicts and thus face many legal challenges when attempting an independent remediation campaign, and rely more heavily on their marine resources, making their livelihoods and cultural connections with the sea particularly vulnerable.

Case studies have shown that even a small pollutant release near a SIDS can have dire consequences for the locals, who may have to drastically alter their livelihoods to avoid severe health complications or risk further damage to their marine resources.

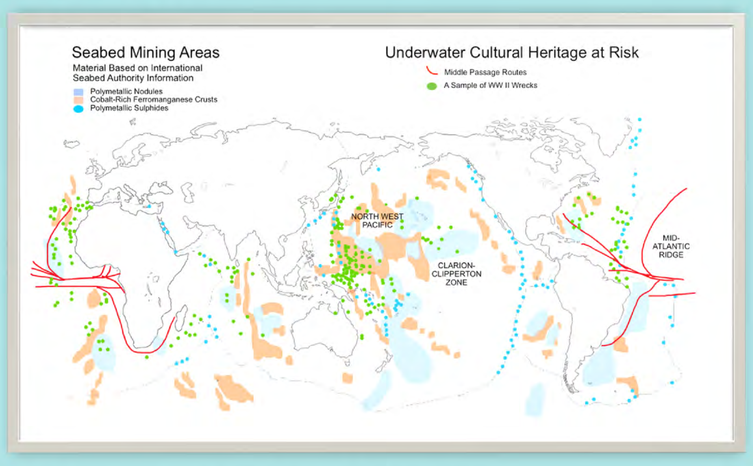
Next Steps

Remediating every single PPW over the next few years is an impossible endeavor, both in terms of the financial burden involved and the amount of time left available to complete the work. Scientists predict that over the next decade, many PPWs will experience structural collapse and will release their pollutant cargoes. Developing the necessary standards for safe and controlled removal procedures, targeting specific vessels that put vital marine resources and communities at risk, and establishing the required funding to remediate are the crucial next steps to protecting ocean heritage and livelihoods from this long dormant threat.

Deep Seabed Mining

Deep Seabed Mining (DSM) is a potential commercial industry attempting to mine mineral deposits from the seafloor, in the hopes of extracting commercially valuable minerals such as manganese, copper, cobalt, and nickel. However, this mining is posed to cause rippling damage to all levels of the ocean, from the physical mining of rocks that take millions of years to grow and churning of the ocean floor to dumping waste into the midwater column and spilling of potentially toxic slurry at the ocean surface, risking deep sea ecosystems, the water column, and underwater cultural heritage (UCH).

Damage to UCH from DSM is analogous to the destruction from bottom trawling. While commercial DSM has not started, prospectors have proposed the deployment of a three-story tall tractor-like mining vehicle to the seafloor to vacuum up the top four inches of the seabed. Proposed regulations in development at the International Seabed Authority (ISA) aim to govern the entire international seabed area, but with 75% of the seabed unmapped, relevant UCH sites have not been located, and consideration for non-physical, or intangible, UCH is only beginning to be discussed.



The Interconnection of Natural and Cultural Heritage

- Pacific Island Indigenous peoples have vocalized their concern about damage to the deep ocean due to extensive ancestral histories connected to deep ocean coral polyps and cultural traditions with marine life, including shark calling, and whale falls.
- In the Atlantic Ocean, the history of American and African descendants of the Transatlantic Era of African Enslavement remains on the seafloor, with an estimated 1.8 million people who did not survive the journey with the Atlantic seabed becoming their final resting place.

Protecting the wide range of natural and cultural heritage in the deep ocean requires consultation and engagement with all stakeholders to effectively protect the existing marine environment and long standing cultural connections. A DSM moratorium has been gaining traction and speed over the last few years, with 24 countries agreeing on a pause, moratorium, or ban on the practice. Incorporation of traditional, ancestral and Indigenous knowledge is key for to protect the ocean and UCH from potential destructive industries like DSM.

... and what can we do?

There is a time-limited conjunction of threat and opportunity. Never has UCH been under greater threat from industrial activity and the adverse effects of accelerating climate change. Equally, the launch of the UN Decade of Ocean Science and the agreement on the High Seas treaty means that there has never been a better opportunity to define and promote the standard and protocols required to deal with the urgent threats and safety challenges.

Science-based decision making is needed to address a path forward for bottom trawling, potentially polluting wrecks, and deep seabed mining. This must be based on baseline surveys that identify the natural and cultural ocean heritage which may be adversely affected by harmful activities. This could be best accomplished through Marine Spatial Planning Surveys, including UCH that may need to be set aside as a marine protected areas. There needs to be a precautionary global moratorium on bottom trawling and deep seabed mining activities until the surveys, environmental and cultural assessments are conducted, and when needed, marine protected areas set aside for present and future generations.

The natural and cultural heritage of our world are intertwined, and we need to protect both, as has been recognized since the 1972 World Heritage Convention. For example, in the US, the Papahānaumokuākea Marine National Monument became the first mixed natural; cultural UNESCO World Heritage Site in the U.S., and other sites can follow suit to ensure adequate protection of ocean heritage. It is time to take the considerations that started in the terrestrial environment and extend them to the territorial sea and continental shelf as well as application in the Area under the high seas.

The Lloyd's Register Foundation Ocean Safety Foresight Review stresses the need for vastly increased effort around purposeful marine data collection and supports the UN Global Compact sustainable ocean principles calling for interventions to stimulate sharing of relevant scientific data. This project is an opportunity to unite cultural and scientific data to effect real change.

The Ocean Foundation

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

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For more information stop by Booth 8: Underwater Cultural Heritage, located in the Banquet Hall