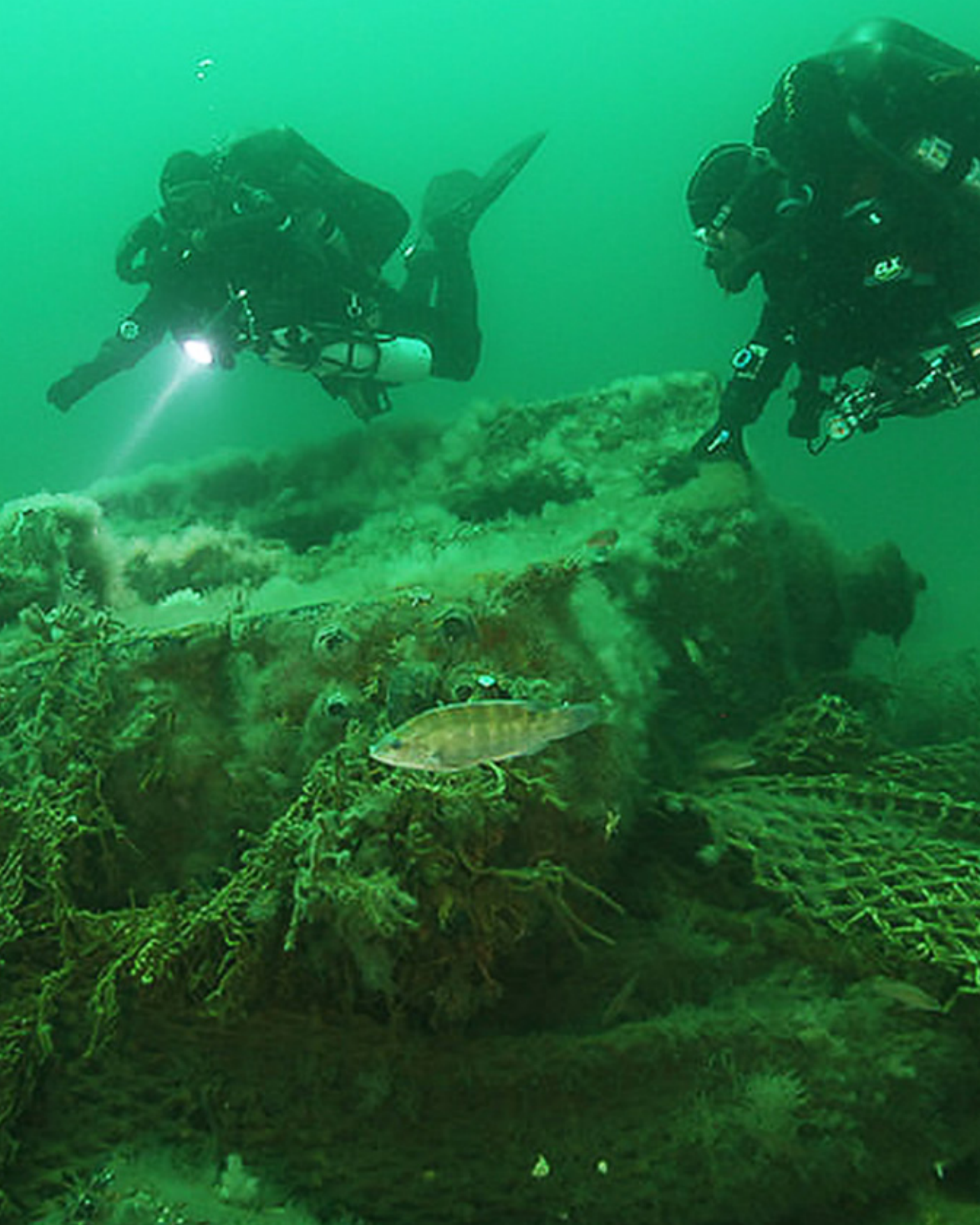

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Threats to Underwater Cultural Heritage from Existing and Future Human Activities

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Our ocean heritage (natural and cultural) is at risk from destructive human activities, including bottom trawling, deep seabed mining (DSM), and potentially polluting wrecks (PPWs). The stories of our societies and our ancestors are often connected with the ocean and captured on the seafloor as artifacts, shipwrecks and the remains of those lost or buried at sea. Previously, marine global heritage protection efforts have been largely focused on natural heritage. However, Underwater Cultural Heritage (UCH) is also ocean heritage and must be considered the same way. We must shine a light on UCH as heritage and insist that it be part of Marine Spatial Planning with integrated ocean and coastal management. Approaches include, but are not limited to, (1) Conducting baseline surveys to identify heritage that should be conserved and preserved for present and future generations; (2) Environmental assessments taking into account the impact of human activities on both natural and cultural heritage; (3) Measures to identify, avoid or minimize the adverse impacts; and (4) The application of a precautionary approach to trawling, DSM and salvage of PPWs, calling for a moratorium on these activities unless and until steps 1 – 3 have been accomplished, permits/other management controls are in place and significant natural and cultural sites have been designated as protected areas.

KEY THEMES

< Fig. 1 A diver examines debris left from fishing gear in the Stellwagen Bank Marine Sanctuary, a nationally protected area in the United States that allows trawling and fishing within its borders (Source: National Oceanic and Atmospheric Administration).

Bottom Trawling, Deep Seabed Mining and Potentially Polluting Wrecks: Current and Future Challenges

Every day, thousands of kilometers of the seabed are ploughed by trawlers, destroying both cultural and natural heritage. Since its first mention in an English 1376 parliamentary petition, trawling has been regarded as a catastrophically damaging practice with long-lasting negative consequences for seabed ecology and marine life (Roberts 2007). Although legislation that limits trawling can help biological communities rebound, the archaeological material lost can never be recovered (Brennan et al. 2015). Maritime archaeologists and marine ecologists need to communicate and work together with fishers and policy makers 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 (fig. 1).

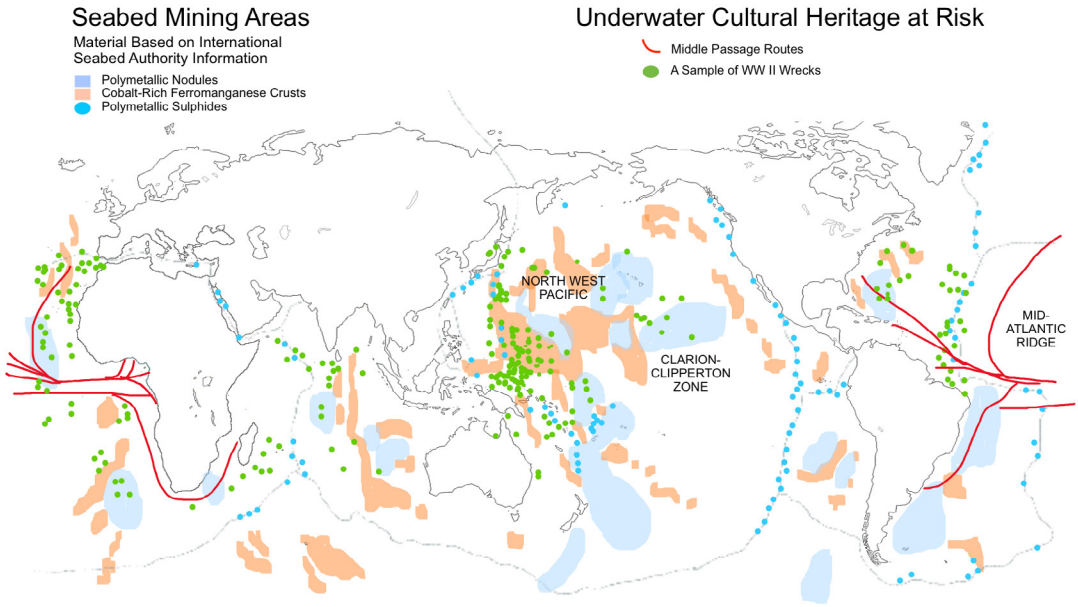
There are also future challenges facing UCH. Deep seabed mining operations (DSM) that interact with tangible UCH will destroy heritage by removing it from the seafloor and processing it through a machine before discharge (The Ocean Foundation, n.d.) (fig. 2). Current International Seabed Authority (ISA) exploration and exploitation draft regulations are not sufficiently protective of UCH. For example, the regulations do not require the real-time monitoring of operations and transmission of relevant data, which would enable identification of tangible UCH and the halting of destructive activities to protect the heritage.

DSM will also affect intangible cultural heritage. For example, noise from DSM has the potential to negatively impact local practices such as shark calling (a ritual connected with a sense of identity and community practiced in the Pacific where, on special occasions, men sing to attract sharks), as well as the migration of whales – which have cultural importance to many communities around the globe (Tilot et al. 2021). Concerns have also been raised about how DSM affects some cultures' awareness of their responsibility to the ocean or particular attention they pay to the deep ocean. Such conversations have not yet found a place in regulatory development at the ISA.

Additional threats to heritage, both natural and cultural, can come from the material itself. While the wrecks from the world wars are part of our cultural heritage, they pose a significant pollution threat to the marine environment as well as to fishing and other livelihoods that depend on a healthy ocean (fig. 3). Millions of gallons of oil lie underwater trapped in shipwrecks, particularly from wars though not all, and unexploded ordinances pose additional threats (Carter 2021). Unfortunately, while some oil leak origins are known, many come from unknown sources and will definitely cause future damage (National Atmospheric and Oceanic Administration 2012).

Current Legal Context

The 1982 United Nations Convention on Law of the Sea (LOSC) recognizes a broad (and arguably vague) duty to protect objects of a historical or cultural nature, which includes UCH, in articles 149 and 303. But it was not until the 2001 UNESCO Convention that sorely needed details were provided about how to implement this duty. At that convention, UNESCO established general principles, including a policy of considering in situ preservation as a first option for management, a ban on the application of the law of salvage and an Annex of scientific rules for research and conservation should re-



^ Fig. 2 Threats to UCH from seabed mining. A sample of the UCH at risk from the ISA's proposed seabed mining activities (Source: Image created by Charlotte Jarvis based on ISA Information, SPREP Pacific Wreck Database and Turner et al. 2020).

covery be deemed necessary or appropriate. UNESCO also recognized "the need to respond appropriately to the possible negative impact on underwater cultural heritage of legitimate activities that may incidentally affect it" and indicated State Parties are obligated to take that need into account in their control of activities such as trawling and mining (UNESCO 2002).

The control of trawling, mining and management of PPWs should integrate the duty to protect underwater cultural heritage under the 2001 Convention and LOSC articles 149 and 202(1) with the duty to protect the marine environment under article 192 of the LOSC and the management of resource exploitation under article 193. As UCH is already an integral part of the UN Decade of Ocean Science for Sustainable Development, it follows that the science of archaeology and conservation of UCH must be considered in the next steps for sustainable development of our ocean heritage – particularly in regard to trawling, DSM and PPWs. Considering the potential serious and irreversible harm that can come from the activities, precautionary action is paramount.

Conclusion: Additional Approaches and Opportunities

In line with the legal framework, there are measures that should be taken to protect UCH properly:

1. Science-based decision making must be subject to baseline surveys that identify the ocean heritage (natural and cultural) that may be adversely affected by harmful activities. This can be best accomplished through Marine Spatial

^ Fig. 3 A diver examines the USS Macaw, a World War II submarine rescue ship that sank in Midway Atoll. Such vessels present UCH preservation issues as they are both cultural and natural heritage that should be protected but also potentially polluting wrecks (Source: Brett Seymour, Exploring the Sunken Heritage of Midway Atoll Expedition and National Atmospheric and Oceanic Administration).

Planning Surveys, including consideration that UCH may need to be set aside as a marine protected area, such as with RMS Titanic.

2. Environmental Impact Assessment (EIA) processes need to be standardized in a way that includes UCH as an integral part of the marine environment. If properly conducted, EIAs can be of great help to the application of the Precautionary Principle since their objective is to gather the maximum possible information on the activity, while assessing the impacts and risks related to that project and find mitigation solutions.

3. A precautionary global moratorium is needed on DSM until the surveys, environmental and cultural assessments have been conducted, and when needed, marine protected areas have been established.

The lack of awareness about threats to UCH outside its own field highlights the need for more education and outreach to policy makers, stakeholders, governments, the public and other scientific professionals. For example, ministries of culture, archaeological programs, or other programs focused on UCH may benefit from being made aware of, and invited into, discussions around DSM, including the drafting of regulations, standards and guidelines occurring at ISA meetings. Additionally, The Ocean Foundation (n.d.) and the Lloyd's Register Foundation, Heritage and Education Centre

are co-sponsoring three volumes highlighting present and future risks to UCH including trawling, potentially polluting wrecks and DSM. The series is intended to further the goals of the UN Decade of Ocean Science for Sustainability and to highlight the importance of ocean heritage – both natural and cultural.

Since the natural and cultural heritage of our world is often intertwined, we need to protect both, as has been recognized since the 1972 World Heritage Convention. For example, in the US, Papahānaumokuākea Marine National Monument became the first mixed natural and cultural UNESCO World Heritage Site in the US and other sites can follow suit to ensure adequate protection of ocean heritage (Papahānaumokuākea 2020). 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 the area under the high seas (UNESCO 2020).

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References

Brennan, Michael L., Dan Davis, Robert D. Ballard, Arthur C. Trembanis, J. Ian Vaughn, Jason S. Krumholz, James P. Delgado et al. 2015. "Quantification of Bottom Trawl Fishing Damage to Ancient Shipwreck Sites." *Marine Geology* 371, no. 2: 82–8. https://doi.org/10.1016/j.margeo.2015.11.001.

Brennan, Michael L. 2016. "Quantifying Impacts of Trawling to Shipwrecks." In *Site Formation Processes of Submerged Shipwrecks*, edited by Matthew E. Keith, 157–79. Gainesville: University Press of Florida.

Carter, Matthew. 2021. "Forgotten Threats: Potentially Polluting Wrecks in the Blue Pacific." Chapter 5 in issue on Marine Pollution. *Environment, Coastal and Offshore (ECO) Magazine*. http://digital.ecomagazine.com/publication/?i=724539&article_id=4133528&view=articleBrowser.

International Seabed Authority. 2019. "Draft Regulations on Exploitation of Mineral Resources in the Area." Twenty-fifth session Council, part II Kingston, Agenda item 11. https://www.isa.org.jm/wp-content/uploads/2022/06/25c-11-e.pdf.

National Atmospheric and Oceanic Administration. 2012. *2012 Risk Assessment for Potentially Polluting Wrecks in US Waters*. https://sanctuaries.noaa.gov/protect/ppw/pdfs/2013_potentiallypollutingwrecks.pdf.

Papahānaumokuākea Marine National Monument. 2020. "Papahānaumokuākea Marine National Monument is the only mixed UNESCO World Heritage Site in the U.S." 30 July 2020. https://www.papahanaumokuakea.gov/wh/2020/.

Roberts, Callum. 2007. *The Unnatural History of the Sea*. Washington, DC: Island Press.

The Ocean Foundation (TOF). n.d. "Seabed Mining." Accessed 7 March 2023. https://oceanfdn.org/seabed-mining/.

Tilot, Virginie, Klaas Willaert, Bleuenn Guilloux, Wenting Chen, Clement Y. Mulalap, François Gaulme, Tamatoa Bambridge et al. 2021. "Traditional Dimensions of Seabed Resource Management in the Context of Deep Sea Mining in the Pacific: Learning From the Socio-Ecological Interconnectivity Between Island Communities and the Ocean Realm." *Frontiers in Marine Science* 8 (April): 637938. https://doi.org/10.3389/fmars.2021.637938.

Turner, Phillip, Sophie Cannon, Sarah DeLand, James Delgado, David Eltis, Patrick Halpin, Michael Kanu, et al. 2020. "Memorializing the Middle Passage on the Atlantic Seabed in Areas Beyond National Jurisdiction." *Marine Policy* 122. https://doi.org/10.1016/j.marpol.2020.104254 .

UNESCO. 2002. "Convention on the Protection of the Underwater Cultural Heritage." Records of the General Conference(in italics) 1:50–61. Paris: UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000124687.page=56.

UNESCO. 2020. "World Heritage in the High Seas." https://whc.unesco.org/en/highseas.

United Nations. 1982. "United Nations Convention on the Law of the Sea." UN Treaty Series (italics), chapter XXI, 1833 U.N.T.S. 397.

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