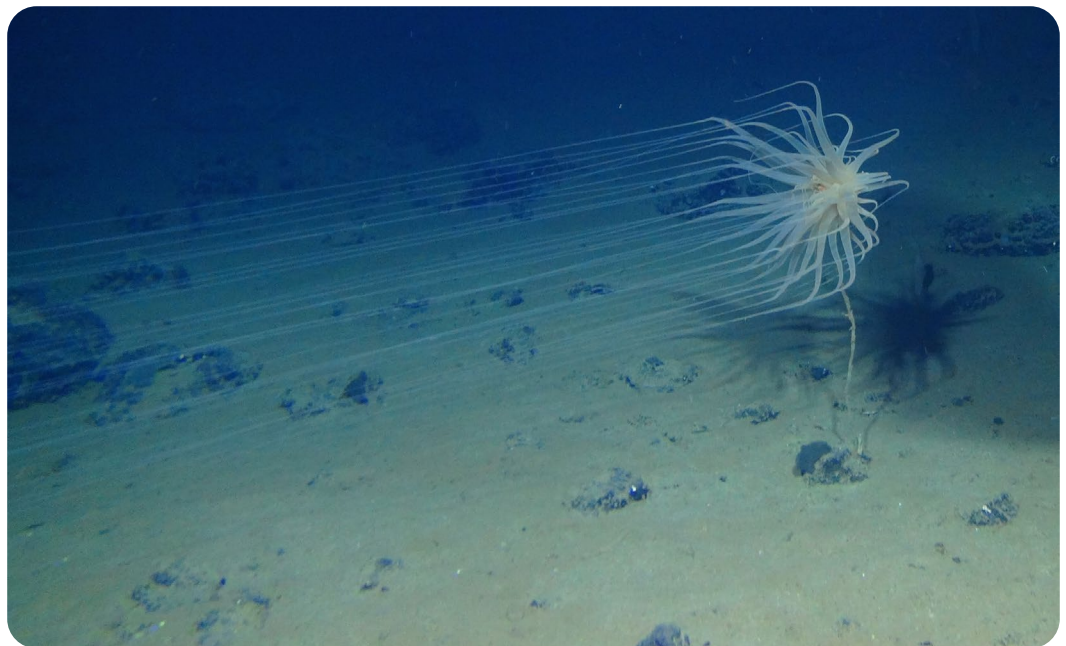


Latest Science on the Impacts of Deep-Sea Mining on Benthic and Pelagic Ecosystems and Fisheries

Researchers are studying the potential impacts of mining activities in the deep sea. This Information Sheet summarises the key points from three presentations delivered by experts Dr. Matthias Haeckel, Dr. Jeffrey Drazen and Dr. Jesse Van Der Grient at the first part of the 28th Annual Session of the ISA. These points span the environmental risks of deep-sea mining in benthic and pelagic ecosystems, as well as interactions between mining and other human activities such as fisheries.

Impacts on the Benthic Ecosystem: Scales, Indicators, Threshold Values, and Gaps

- Nodule ecosystems support a highly diverse fauna of sessile and mobile species that shows a high variability on local and regional spatial scales.
- Understanding of species connectivity (across the CCZ and Pacific) remains poor.
- Deep-sea mining will impact benthic ecosystem functions and biodiversity for hundreds to thousands of years by removing the bioactive surface layer and affecting nodule fields' ecosystem structure.
- The area impacted by mining is much larger than the mined area.
- Transparent, independent scientific assessment of deep-sea mining operations is needed.



Relicanthus sp.—a species of Cnidarian collected at 4,100 meters in the Clarion-Clipperton Zone (CCZ) that lives on sponge stalks attached to nodules. Image courtesy of Craig Smith and Diva Amon, University of Hawai'i at Manoa

Environmental Risks to the Midwaters: Progress on Ecosystem Baselines and Remaining Gaps

- Midwater ecosystems support unique biodiversity, play key roles in carbon export and nutrient regeneration, and provide food for harvestable fish stocks.
- Deep-sea mining poses environmental risks to these ecosystems through midwater discharge of sediments, metals, and noise.
- Midwater baseline studies in the CCZ have begun providing information needed to identify future changes and mitigate risks. However, these studies have also revealed substantial spatial and temporal variability.
- Gaps in our knowledge remain for both baseline research and monitoring actual midwater impacts on ocean life.

Interactions between Deep-Sea Mining and Fisheries

- Licensed mining exploration contract areas overlap with regions used by other industries like fisheries. It is possible that deep-sea mining impacts will affect these other industries.
- Deep-sea mining impacts like noise pollution, sediment plumes, and metal toxicity may affect fish targeted by fisheries directly or indirectly, leading to lower biomass and catches, increased seafood contamination, and movement of fish stocks.
- The potential impact of deep-sea mining on fisheries is influenced by distance, meaning that limiting the spread of mining impacts may reduce their effect on fisheries.
- Overlap between mining exploration contract areas and fisheries vary by nation, meaning that potential negative impacts of mining on fisheries are not equally distributed.
- Modelling predicts increasing conflict between tuna fisheries and deep-sea mining in the Clarion-Clipperton Zone with future climate shifts.

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Scan this QR code for a list of experts to contact about deep-sea mining and its impacts, organized by country and language:



Contact us: DOSIcomms@gmail.com

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About DOSI:

The Deep-Ocean Stewardship Initiative is a global network of experts that seeks to integrate science, technology, policy, law and economics to advise on ecosystem-based management of resource use in the deep ocean and strategies to maintain the integrity of deep-ocean ecosystems within and beyond national jurisdiction.