

PEER-REVIEWED RESEARCH:

First Study to Show Plumes from Ocean Mining would overlap with important international tuna fisheries

Pacific fisheries, including the US fishing fleet, would be at greatest risk in terms of overlap with mining areas; Fisheries in Mexico, Spain, Ecuador, and the Philippines also at risk

Hawaii, USA (November 2021)—As companies and countries push to open international waters to ocean mining in as little as two years, a new study reveals that all contract areas licensed for deep-sea mineral exploration overlap with zones where tuna fishing fleets operate. The study is the first to estimate the potential negative impacts of ocean mining, from wastewater plumes to noise pollution, on the fishing industry.

“Our research shows that the fishing industry should be concerned about the prospect of ocean mining. Fishing fleets operating in the US Pacific should be especially alarmed,” said Jesse van der Grient, the lead author of the study, [Potential spatial intersection between high-seas fisheries and deep-sea mining in international waters](#), and a researcher at the University of Hawai‘i at Mānoa.

“Experts are only beginning to understand the potential impact ocean mining could have on hauls of tuna and other lucrative fish—critical to global nutrition, job creation and economic development. But it’s becoming increasingly clear that the fishing industry could take a significant hit if ocean mining goes ahead.”

The study mapped out massive areas earmarked for ocean mining to determine the extent to which they overlap with tuna fisheries. It found that fishing zones in the Pacific—especially a stretch of sea between Hawaii and Mexico spanning 4.5 million square kilometers (1.7 million square miles) known as the “Clarion Clipperton Zone”—face the greatest overlap with ocean mining, and may therefore see the greatest negative impacts if deep-sea mining directly or indirectly affects tuna fisheries.

The seafloor in this area is littered with the polymetallic nodules—nuggets of minerals—sought by mining companies to supply batteries for electronic vehicles and other low-carbon technologies.

One estimate in the study found that 8.5-16% of fisheries overlap with mining areas in the US Pacific. Fisheries in Mexico, Japan, Spain, Ecuador, and the Philippines are also vulnerable to ocean mining. The study found that risks to the \$40 billion tuna industry could be significant, with global ramifications, especially for small island- and low-income countries that depend on the fish trade for their prosperity.

“A growing body of research has already shown that ocean mining would inflict potentially irreversible damage on extremely sensitive ocean habitats and disrupt the ocean’s natural capacity to store and capture carbon,” said Douglas McCauley, an ocean expert at the University of California Santa Barbara. “This is the first study to reveal just how damaging ocean mining can be for fisheries. Until now, no one has talked about these impacts of deep-sea mining on fishing hauls.”

Two facets of ocean mining threaten fisheries. Waste ejected overboard by mining motherships could create large plumes, leading to toxic and suffocating pollution that will spread widely beyond the machine footprint. Some fish, like bigeye tuna and swordfish, can come directly in contact with the plumes as they either make deep dive (bigeye) or are present in deeper waters (swordfish), while others, like yellowfin tuna, will indirectly be affected if their prey come into contact with the plumes. As a result, harmful toxins work their way into ocean food chains and smother or choke out food for fish, which would reduce the number of fish. Additionally, noise, vibrations and light pollution from the mining equipment could also stress marine life.

Sometime in the near future, perhaps even in the next year, the International Seabed Authority (ISA) is expected to adopt regulations that would allow deep-sea mining to begin in the high seas—an area of international jurisdiction where all countries and people have a responsibility and claim over biodiversity and resource management.

In anticipation of this announcement, companies are wrangling to secure a foothold in the emerging industry, with some already testing their mining machines on the seabed. One million square kilometers—including an area the width of the continental U.S. or almost twice the size of France—has already been set aside for mining, which could begin by 2024 if approval from the ISA Council comes through this year. Some of the governments that already hold exploration licenses and are now lining up to mine the ocean floor include Brazil, Jamaica, Russia, U.K. and Japan.

In a recent statement, more than 600 academics from six continents called on countries and governments to press pause on these plans to open up the deep sea to mining. The cadre of leading ocean experts who issued the statement argue that far too little is known about these sensitive and important ocean ecosystems, which are already under stress from climate change, bottom trawling and pollution, as well as potential impacts of mining. They highlighted the risks to fisheries—among other industries, including tourism.

When issuing this statement, they joined a growing global chorus of more than 90 NGOs, environmental leaders such as Sir David Attenborough, Fiji Prime Minister Voreqe Bainimarama, and ocean scientists around the world that have all spoken out on the hazards of ocean mining.

Right now, the ISA includes observers from a diverse set of concerned marine industries – ranging from the subsea cable industry to the underwater munitions industry. However, the fishing industry is not represented. Furthermore, the Regional Fishery Management Organizations, the body charged with safeguarding the future of fisheries in many of these overlap zones, have not discussed ocean mining.

“I am surprised by the lack of engagement by the fishing industry in the ocean mining discussion,” McCauley said. “If the industry doesn’t act now, they risk fighting an uphill battle once the genie is out of the bottle and the regulations for ocean mining are set in stone. Some Pacific countries, such as Tonga, Fiji and Papua New Guinea, have expressed interest in a moratorium on ocean mining due to the potential impacts on their valuable ocean resources. Other countries with tuna fishing economies might want to follow suit.”

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