

Beneath Our Waves: Why the U.S. Must Reverse Its Policy on Seabed Mining

On April 24, 2025, President Donald Trump signed an executive order authorizing seabed mining. This action will likely damage fragile marine ecosystems, end sustainable oceanic research endeavors, and undermine global deep-sea protective management efforts. As an advocate for environmental protection and justice, Greenpeace USA is taking a public stand against this reckless directive.

Although seabed mining is framed as a solution to satisfy the growing demand for minerals used in private, commercial, medical, and military products, the risks far outweigh the potential gains. Oceans are vital to a healthy climate, covering over 70% of the Earth's surface and holding around 97% of the planet's water. Conserving these bodies of water is essential to protecting the marine life that supports ecosystems—like coral reefs—and economies—such as sustainable fishing. Greenpeace USA firmly opposes the recent executive order permitting seabed mining as it threatens to devastate marine ecosystems and accelerate international deep-sea mining without adequate environmental regulations or knowledge of long-term consequences.

Background

Greenpeace USA

In 1971, a small group of environmental activists from Vancouver, Canada, organized a peaceful protest against a nuclear weapons test on Amchitka Island in Alaska (Baum, 2024). Setting sail on an old fishing ship, the collective made their way over to the site before being confronted by the U.S. Coast Guard. While they did not physically make it to the destination, their courage brought the issue to mainstream media attention and impacted individuals worldwide. The nuclear program was abandoned five months after the initial voyage, and the

island was designated a bird sanctuary. Today, Greenpeace offices are stationed in more than 55 countries, and the movement is internationally supported by over 3.5 million donors (Greenpeace Fund, 2025). The organization's mission is to transform "the country's unjust social, environmental, and economic systems from the ground up to address the climate crisis, safeguard our planet for future generations, advance racial justice, and build an economy that puts people over profits" (2024).

Unleashing America's Offshore Critical Minerals and Resources

President Trump's executive order, titled *Unleashing America's Offshore Critical Minerals and Resources*, aims to advance America's leadership in deep-sea knowledge and secure domestic harvest of seabed minerals in local and international waters. The document also directs federal agencies to expedite mining "...coastal deposits containing strategic minerals such as nickel, cobalt, copper, manganese, titanium, and rare earth elements..." by collaborating with partners and allies to fortify American mineral reserves. This includes working with private and commercial entities. Some scientific activities, such as mapping the U.S. Outer Continental Shelf, were vaguely described, but the research mainly explores locations for mineral processing rather than oceanic conservation efforts. Additionally, concerns about national security threats and economic challenges were cited as two key reasons why the urgency for this order is imperative to American interests. Within 60 days from the date the order was signed, the U.S. seabed mining industry will begin operations.

Arguments

The Destruction of Marine Ecosystems

Mining the seabed will pollute and threaten the natural operations of the diversely abundant ecosystems found in oceans. These macro and microenvironments house flora and fauna which

have survived with little-to-no human intervention for millennia. Scientists fear that introducing an industrial revolution to the ocean's depths will significantly diminish the quantity of these organisms and the likelihood that they will recover to a healthy population (Miller et al., 2018). The extraction equipment used to collect and process mineral deposits is predicted to cause a wide range of negative impacts on the immediate habitats, which can fracture bonds to neighboring terrains. For example, light and noise pollution produced by heavy machinery will confuse and attract animals. The disposal of ore waste will blanket everything in its path, especially harming photosynthetic organisms. In addition, the movement of the equipment will disturb the top layers of sediment—which house food sources for deposit-feeding organisms—and the weight will compress that sediment into uninhabitable conditions (Levin et al., 2016). Seabed mining offers no benefits to marine life and should be avoided.

The Rapid Acceleration of an Under-Studied Industry

Environmentalists and scientists have opposed large-scale mineral mining in the deep sea for many years—and with substantial reason. The ultimate ramifications of drilling rare earth elements and depositing the ore waste back into the ocean are unknown due to limited research and a lack of understanding of the procedure's long-term effects in commercial applications. Of the small-scale tests conducted on deep-sea mining, results showed that habitats took decades to come close to recovering (2018). It is unclear how mineral farming will be monitored, regulated, and enforced. The impending deep-sea resource race will likely begin before adequate research confirms or denies seabed mining's impact on biodiversity loss.

Counterarguments

The Need for Rare Earth Minerals

Supporters of deep-sea mining within U.S. boundaries and international waters argue that the practice is essential for the nation's economic prosperity and security. Although there is no shortage of mineral reserves on land, these deposits are geographically widespread, with some located on indigenous, protected, or sacred lands (IRENA, 2023). On the other hand, the ocean floor is carpeted with the types of minerals used in the rising manufacturing of electric vehicles, renewable energy infrastructure, medical devices, and military defense systems. The U.S. relies significantly on foreign suppliers for these minerals, with China quickly advancing its leadership in deep-sea mineral extraction. Domestic seabed mining is considered a strategic move against China's dominance in this industry and the overall global trade war. Advocates for deep-sea mining are banking on the procedure to ease geopolitical tensions and meet the increasing demands for this new era of electric technology.

The Creation of Jobs and Economic Opportunities

New local job opportunities and expected domestic financial gain come with an emerging industry. Seabed mining supporters assert that the U.S. will grow in science, technology, engineering, mathematics, and robotics (Hatch, 2017). Additionally, policy-makers and environmentalists will be in higher demand to regulate deep-sea mining. Coastal cities near mines may see an increased investment in local infrastructure as offshore operations bring local jobs. Overall, this industry is expected to decrease the price of metals and diversify mineral supply chains in the U.S. at the gain and loss of geopolitical relationships (LaTourrette et al., 2025).

Rebuttals

The Domino Effects of Biodiversity Loss

Home to enormous and microscopic keystone species that are critical in maintaining an ecological equilibrium, oceans are essential to a healthy planetary environment. The biodiversity loss of one keystone species affects the entire food web in its network (Denchak, 2019). The recession or abundance of one species will throw off the food chain and can cause endangerment or extinction. Seabed mining supporters tout deep-sea mining as less volatile than land mining primarily because it produces fewer carbon emissions; however, the impact on marine life should not be underestimated (Santos, 2024). Oceanic organisms, such as phytoplankton, are a massive consumer of carbon dioxide (Falkowski, 2012). When absorbing the carbon dioxide, they also expel organic matter which feeds other marine organisms. Additionally, the bodies of dead phytoplankton eventually sink to the deep sea, feeding bottom-dwellers and turning into oil if conditions allow. Disturbing the sediment layer would disrupt these processes. This is just one keystone species in the marine ecosystem that deep-sea mining could negatively impact.

The Long-Term Ecological and Financial Consequences of Seabed Mining

While seabed mining looks appealing in the present and near future, its long-term effects have not yet been fully discovered. There are strong indications that mining certain minerals, like manganese, will alter the marine ecosystem for millennia (2016).

Nodule removal, sediment disturbance and plume perturbations have the potential to reduce habitat complexity, biodiversity and ecosystem function over large spatial scales both at the seafloor and in the water column. Some effects will likely persist for millennia because the formation of new nodules, and the habitats and heterogeneity they provide, is estimated to take millions of years.

No amount of money can quickly repair a broken ecosystem, though addressing some of the harm caused could become expensive. Besides being a natural habitat for marine organisms,

oceans are essential to human industries such as fishing, recreation, tourism, cultural communities, and native stewardship. Little research has been done to understand deep-sea mining's impacts on these establishments.

Conclusion

Seabed mining poses significant ecological, ethical, and geopolitical risks. With the current administration prioritizing resources over research, what will happen when seabed mining runs dry or damages the planet beyond repair? Stakeholders, scientists, environmentalists, policy makers, and citizens must unite and push for a moratorium on deep-sea mining, advocate for more research in alternative practices like metal recycling and increase the conversation surrounding the negative impacts of seabed mining. Some ways to get involved include contacting local and state representatives, attending anti-seabed mining protests, and staying informed about the mining industry's latest news. Visit [greenpeace.org/usa](https://www.greenpeace.org/usa) for more information on how to protect Earth's oceans.

References:

Baum, M. (2024, November 21). *Our history - Greenpeace*. Greenpeace.

<https://www.greenpeace.org/usa/our-history/>

Denchak, M. (2019, September 9). *Keystone Species 101*. NRDC.

<https://www.nrdc.org/stories/keystone-species-101>

Falkowski, P. (2012, February 29). *Ocean science: The power of plankton*. Nature News.

<https://www.nature.com/articles/483S17a#:~:text=Phytoplankton%20provide%20organic%20matter%20for,to%20samples%20of%20sea%20water>

Greenpeace Fund. (2025). *About Greenpeace*. <https://greenpeacefund.org/about/>

Greenpeace. (2025, April 9). *About us - Greenpeace*. <https://www.greenpeace.org/usa/about/>

Hatch, D. (2017, May 24). *MPI - Could your next career move be into deep-sea mining?*. Mining

News. <https://mpirecruitment.au/news/could-your-next-career-move-be-into-deep-sea-mining>

IRENA. (2023). *Geopolitics of the energy transition: Critical materials*. Geopolitics of the

Energy Transition. <https://www.irena.org/->

[/media/Files/IRENA/Agency/Publication/2023/Jul/IRENA_Geopolitics_energy_transition_critical_materials_2023.pdf](https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2023/Jul/IRENA_Geopolitics_energy_transition_critical_materials_2023.pdf)

LaTourrette, T., Villalobos, F., Yoshiara, E., & Tariq, Z. H. (2025, April 9). *The Potential Impact of Seabed Mining on Critical Mineral Supply Chains and Global Geopolitics*.

RAND. https://www.rand.org/pubs/research_reports/RRA3560-1.html

- Levin, L. A., Mengerink, K., Gjerde, K. M., Rowden, A. A., Van Dover, C. L., Clark, M. R., Ramirez-Llodra, E., Currie, B., Smith, C. R., Sato, K. N., Gallo, N., Sweetman, A. K., Lily, H., Armstrong, C. W., & Brider, J. (2016). Defining “serious harm” to the marine environment in the context of deep-seabed mining. *Marine Policy*, 74, 245–259.
<https://doi.org/10.1016/j.marpol.2016.09.032>
- Miller, K. A., Thompson, K. F., Johnston, P., & Santillo, D. (2018). An overview of seabed mining including the current state of development, environmental impacts, and knowledge gaps. *Frontiers in Marine Science*, 4. <https://doi.org/10.3389/fmars.2017.00418>
- Santos, R. (2024, January 3). *Deep-sea mining technology: The potential job market and challenges*. Technology and Engineering Workforce Solutions: Global STEM Jobs.
<https://www.airswift.com/blog/deep-sea-mining>
- Trump, D. J. (2025, April 24). *Unleashing America’s offshore critical minerals and resources*. The White House. <https://www.whitehouse.gov/presidential-actions/2025/04/unleashing-americas-offshore-critical-minerals-and-resources/>