

Shedding Light on Seabed Mining

- What is seabed mining
- How will it affect our coasts
- What we're doing about it

TWIN HARBORS WATERKEEPER

- Mission: To protect the waters of Grays Harbor, the Chehalis watershed, and the Willapa Bay watershed
- Head to TwinHarborsWaterkeeper.org to learn how you can help us support clean water!



SURFRIDER FOUNDATION

- Mission: A grassroots activist network dedicated to the protection and enjoyment of the world's ocean, waves, and beaches for all people
- Head to Washington.Surfrider.org for more info



WHAT IS SEABED MINING?



WHAT IS SEABED MINING?

Extraction of minerals and metals from the sea floor



DIFFERENT TYPES OF SEAFLOOR EXTRACTION

SGS - Sand, Gravel, Shell
mining

- Beach renourishment
- Spoil island fill

SBM - Seabed Mining

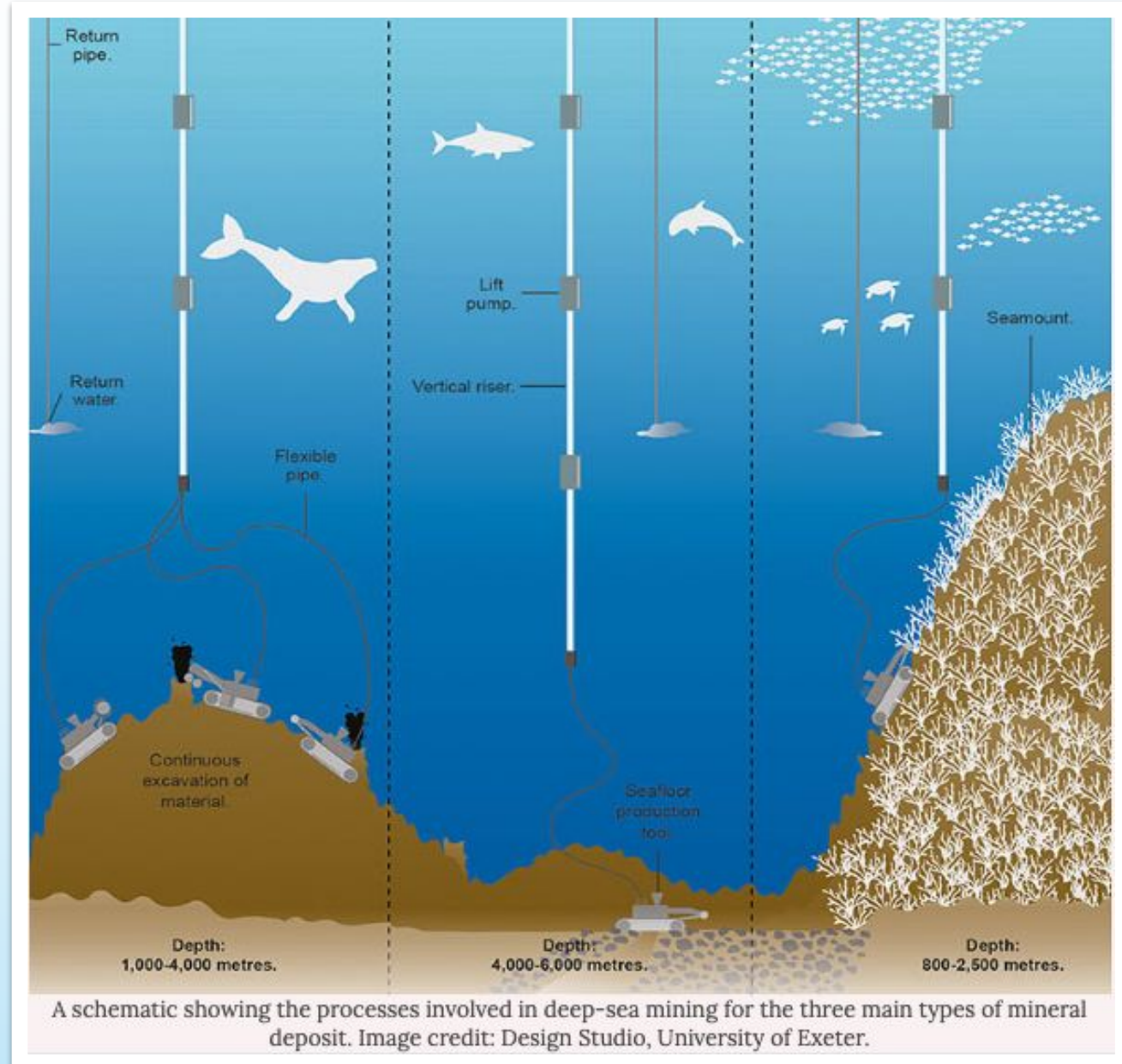
- Mineral extraction from deep sea ($>200\text{m}$)
- Mineral rich sands



TYPES OF SEABED MINING

Three main forms:

- Manganese Nodules
The abyssal plane
- Cobalt-rich crusts
Seamounts
- Seafloor Massive Sulfides
Deep-sea hydrothermal vents



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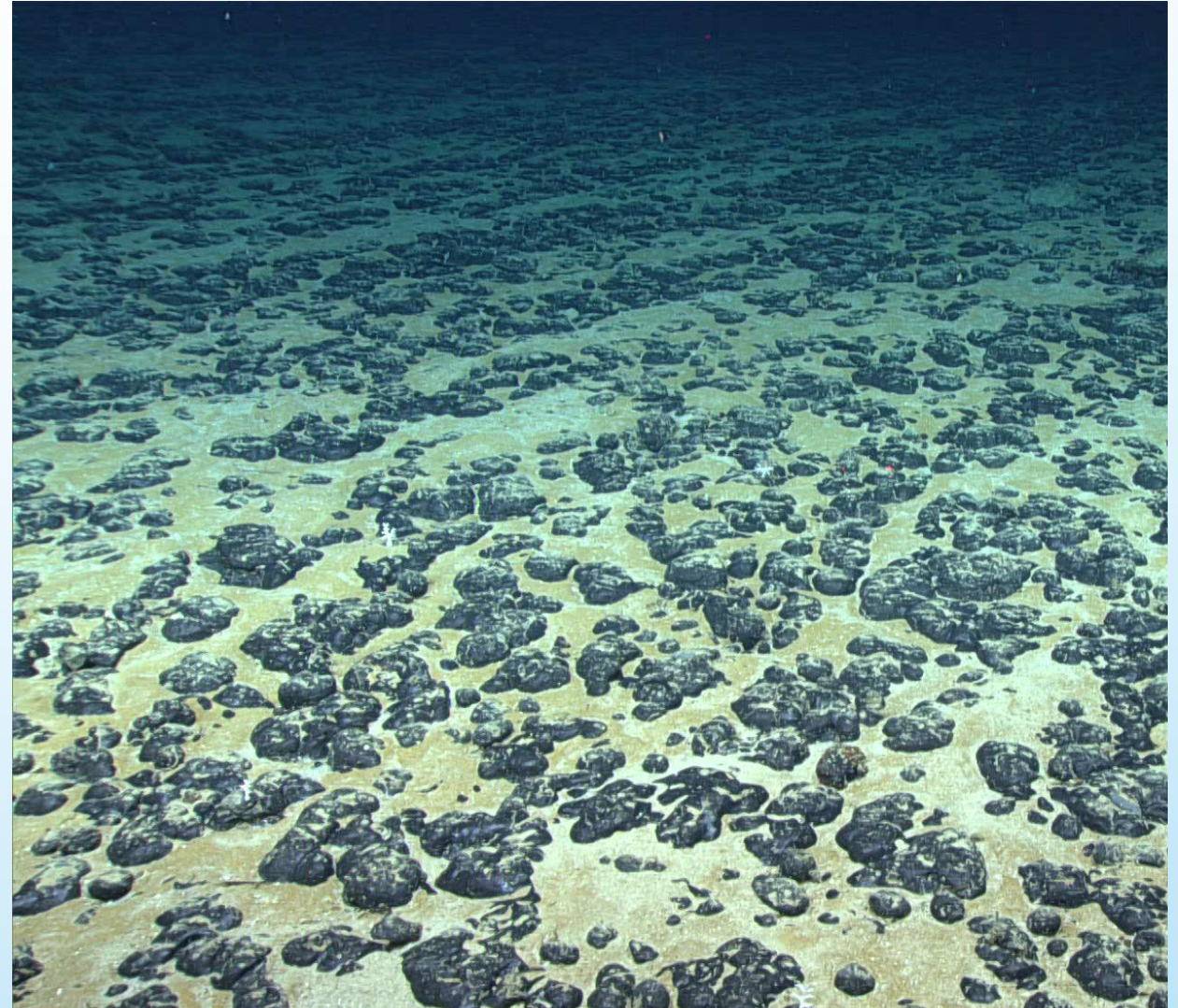
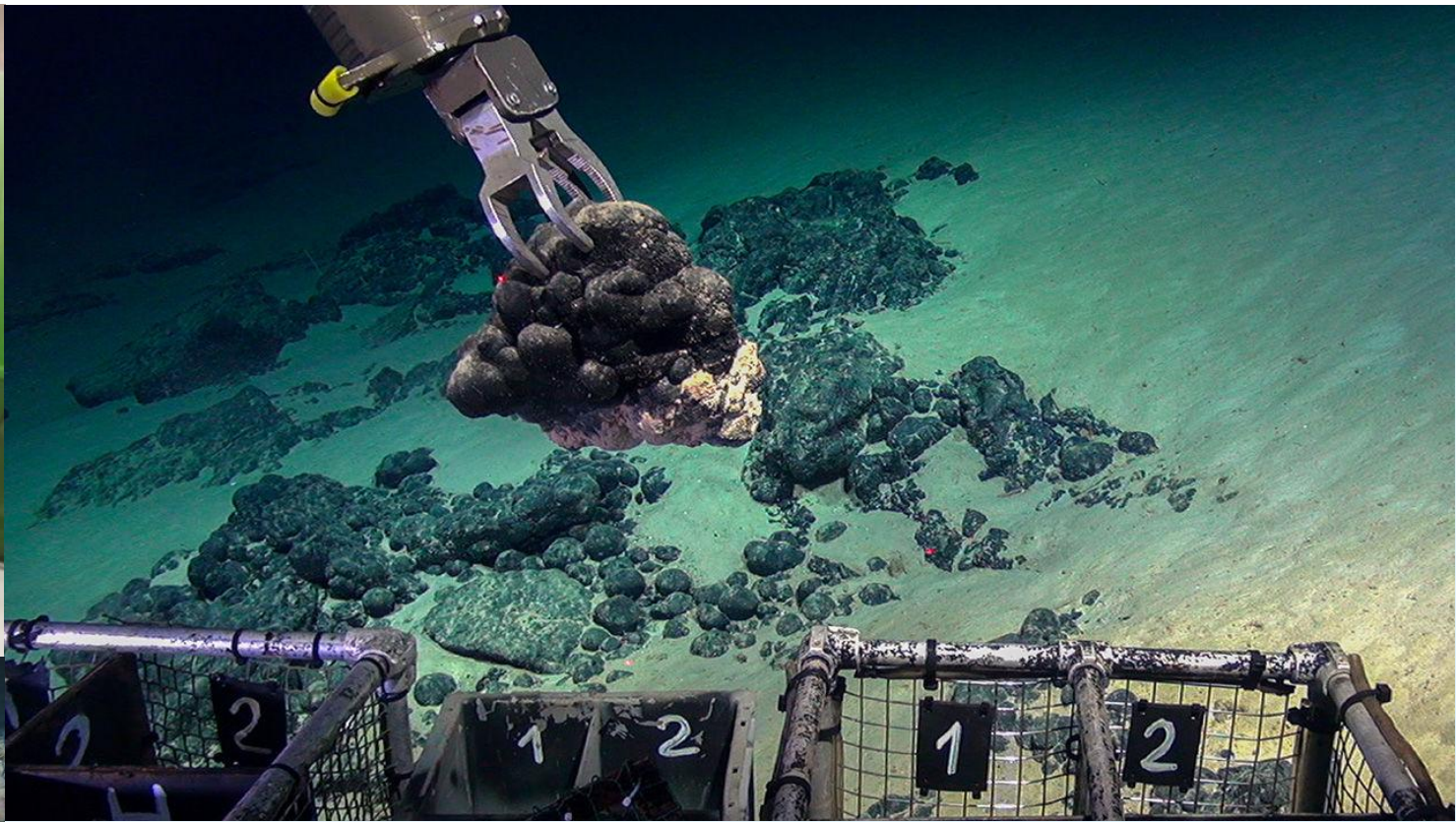


Image credit: ROV KIEL 6000, GEOMAR (CC BY 4.0)



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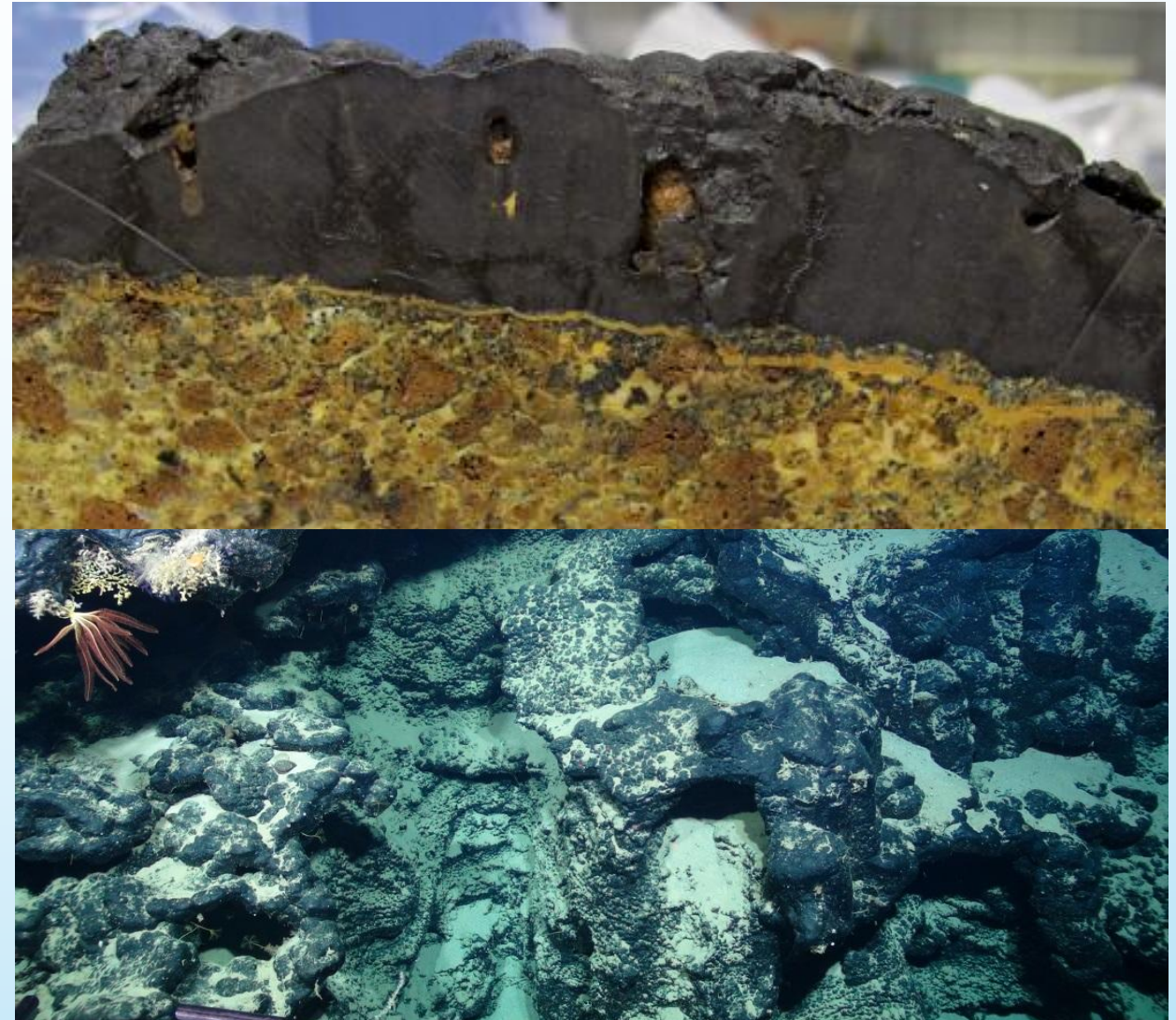


Image credit: NOAA OceanExplorer



Bathymetry

—968
meters
—4323

● Areas with documented
ferromanganese crusts

23 kilometers

Atlantic
Ocean

Cobalt-rich crust

Tuna

Plankton

Strong current flows

Squid

Corals and
sponges

Rattail fishes

Alfonsino

Seastar

Flat-top guyot

800m

2000m

Rocky substrate
with little sediment

Flat-top guyot

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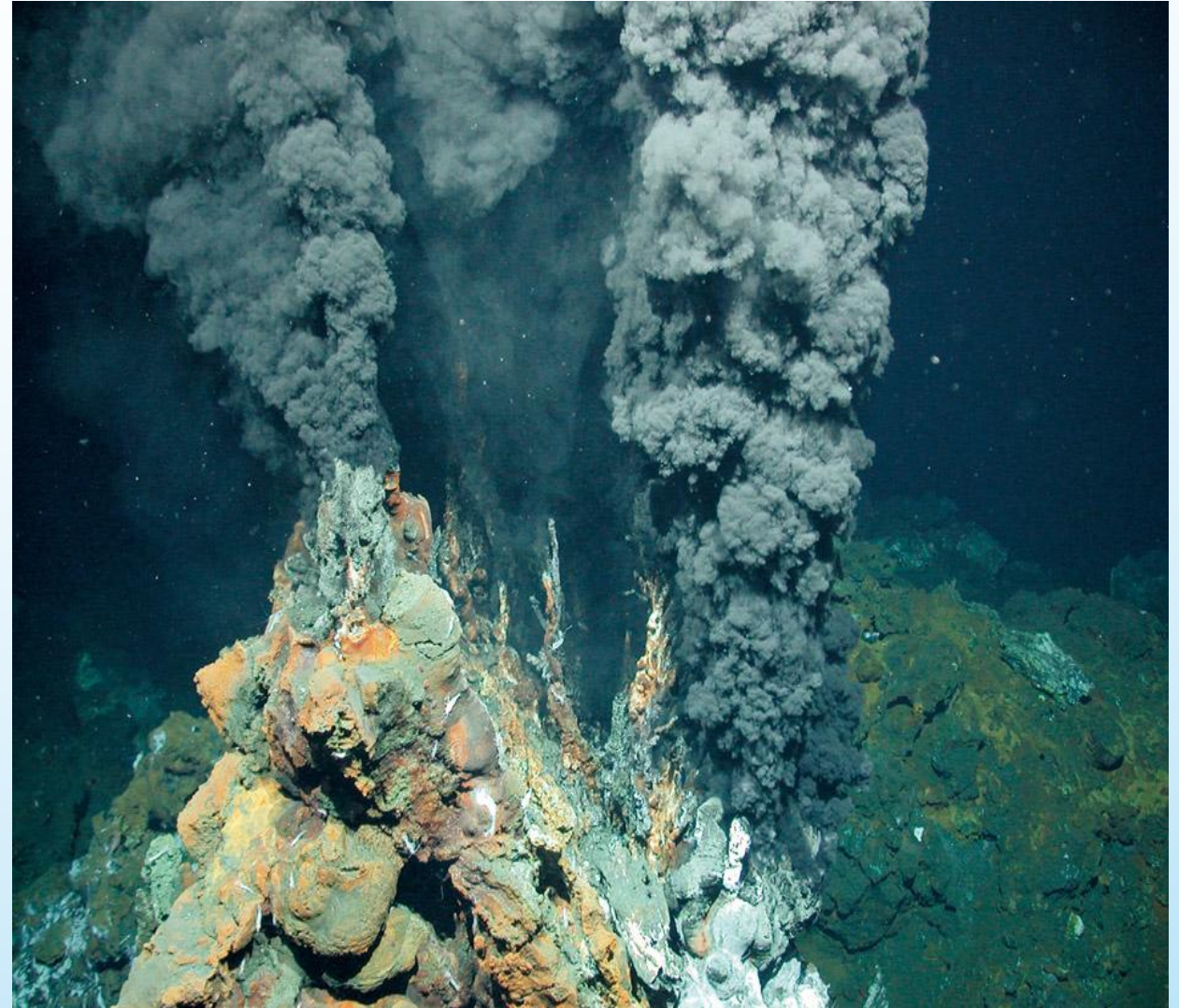
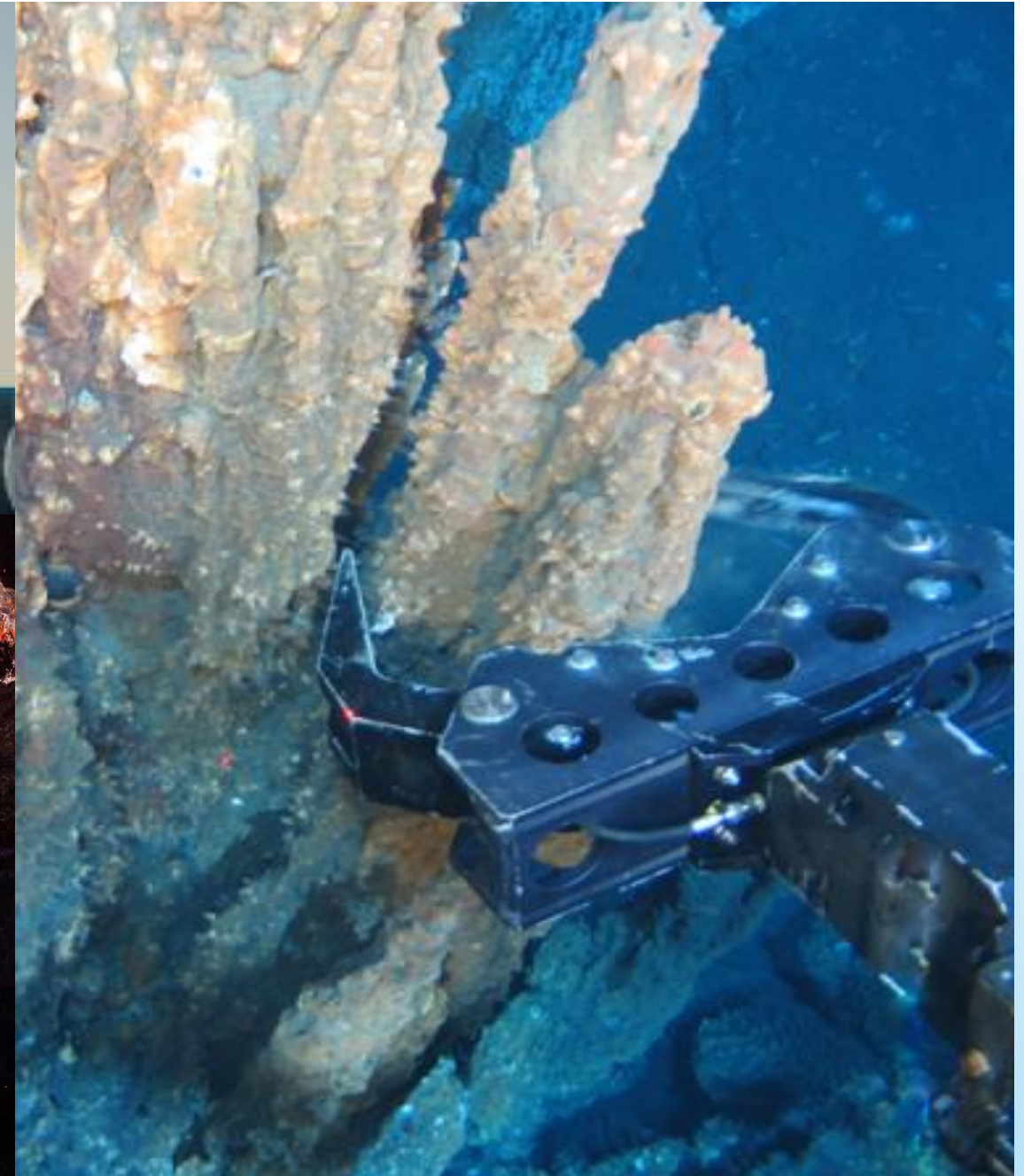


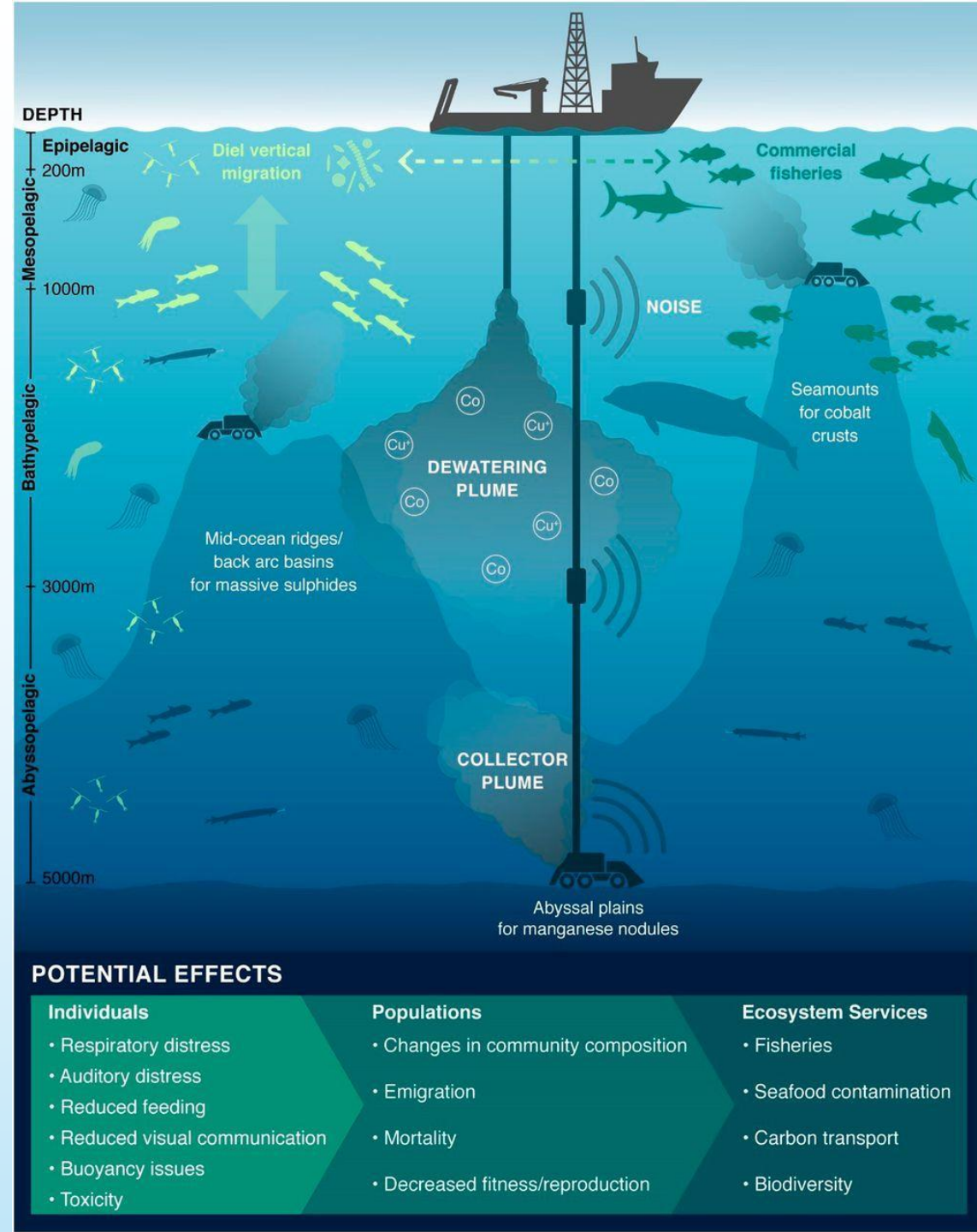
Image credit: NOAA OceanExplorer

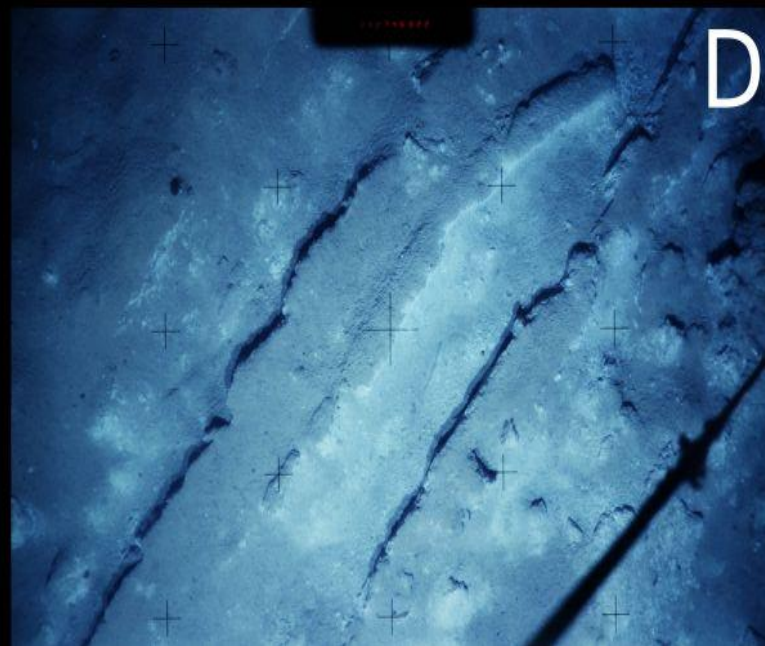
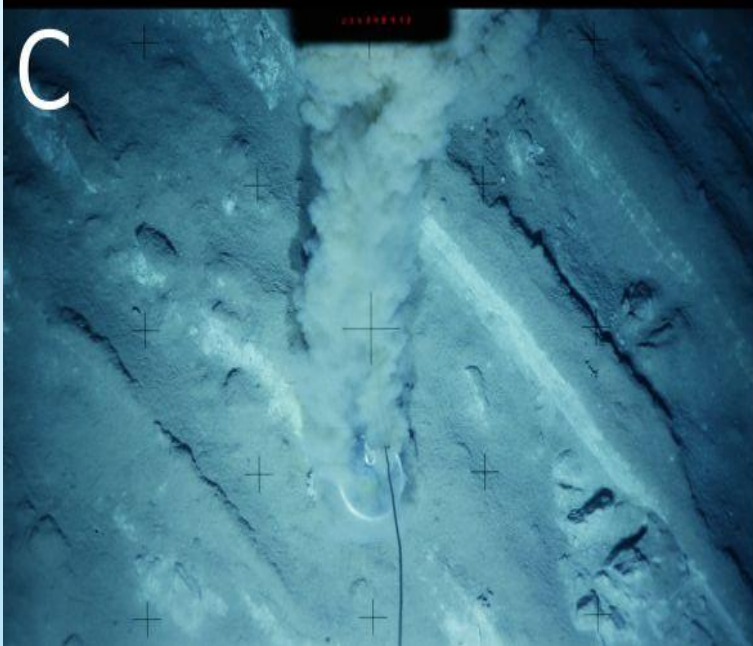
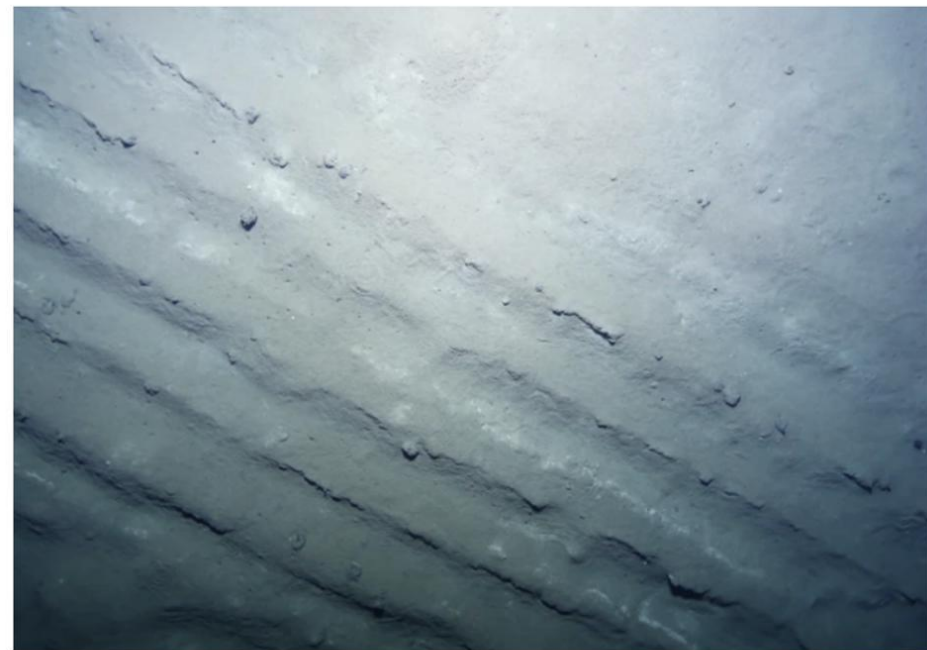
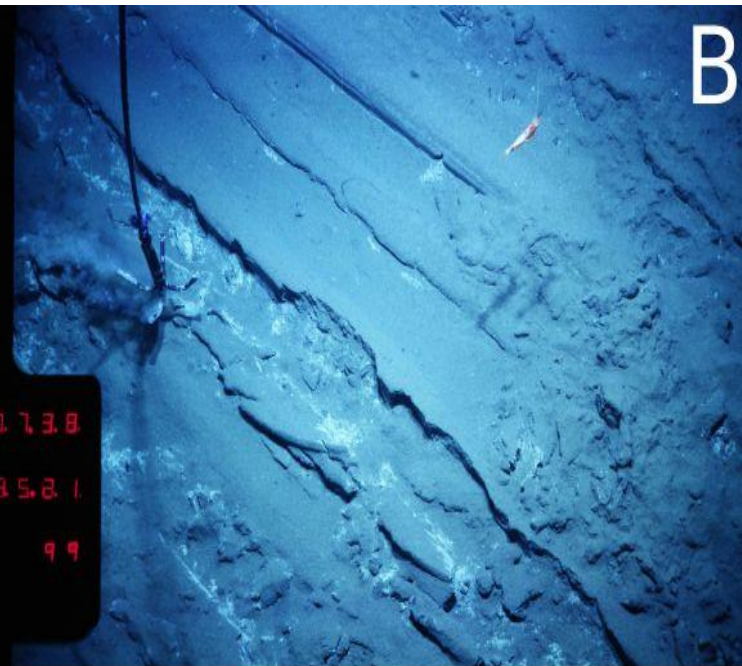
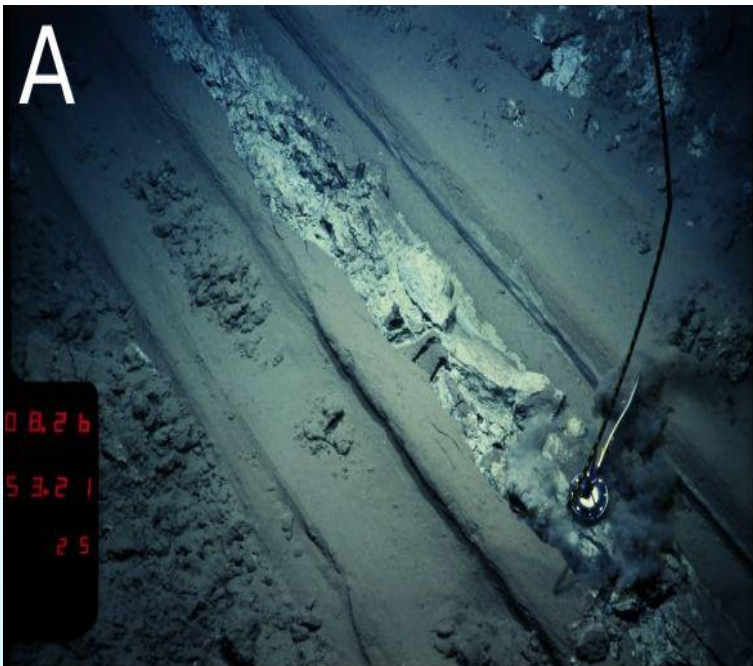


WHAT ARE THE EFFECTS?

- Physical damage at the extraction site - loss of biodiversity and habitat
- Noise pollution
- Light pollution
- Thermal pollution
- Conflict with other industries
- Sediment plumes

Image credit: <https://www.pnas.org/content/117/30/17455>





WHY MINE THE DEEP, AND WHY NOW?

Global industries and our federal government are looking to the sea

- Depleted terrestrial sources
- Increasing demand
- Improving technology



WHY NOW?

- SBM could help meet humanity's insatiable thirst for essential minerals and theoretically power a “greener” economy.
- Many sea floor minerals are deemed essential to the modern digital economy.
- Phosphor-based artificial fertilizers & world food production



- Polymetallic nodules
- Polymetallic sulphides / vents
- Cobalt-rich crusts
- Exclusive economic zones

WHERE ARE THESE RESOURCES?
WHO REGULATES THEM?



Image credit: Redrawn from a number of sources including [Hein et al. \(2013\)](#).

Federally, marine mineral are managed by BOEM (Bureau of Ocean Energy Management)(

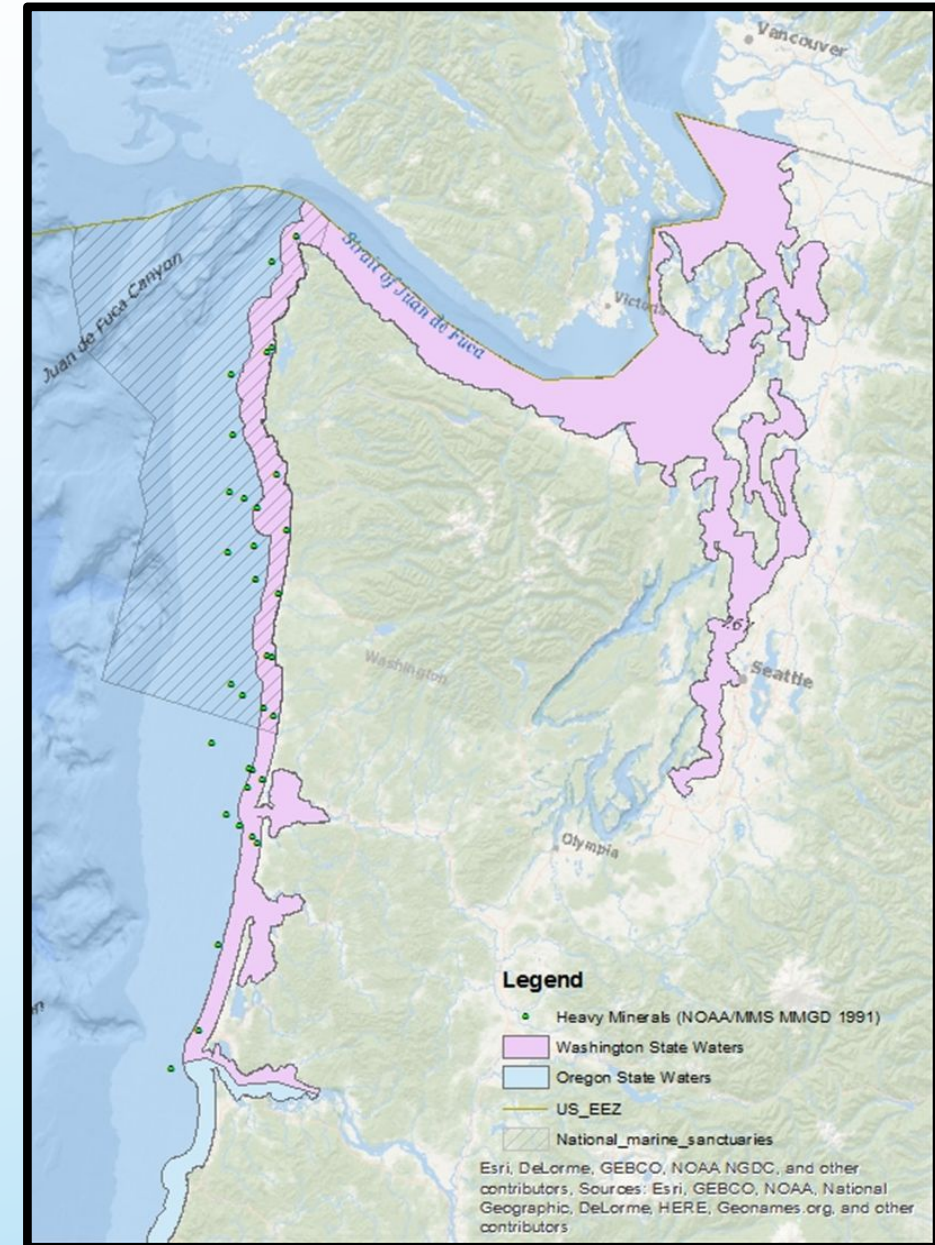
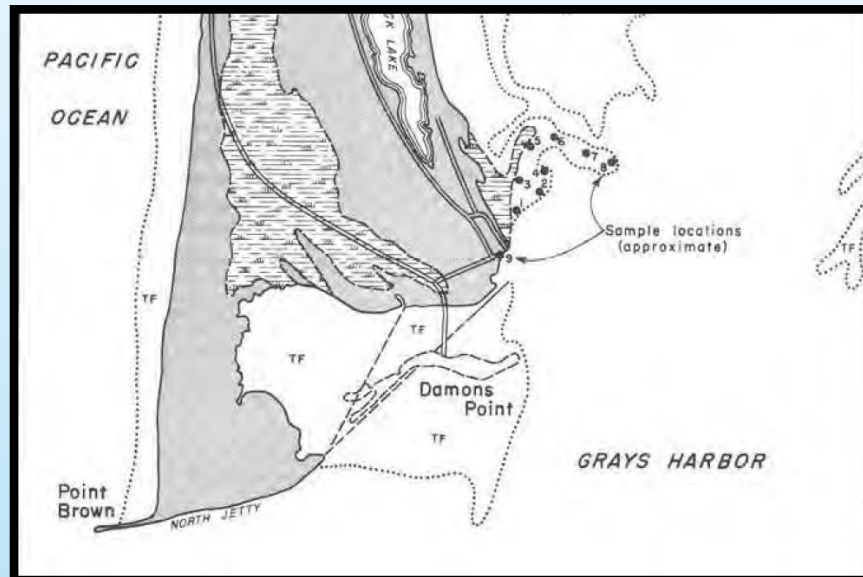
The map displays the following regional groupings:

- California** (Dark Brown)
- Texas** (Light Orange)
- Florida** (Light Orange)
- Northeast** (Dark Brown): Maine, New Hampshire, Massachusetts, Rhode Island, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana.

A legend on the right side of the map indicates "Regional Proposals" with a diagonal line symbol.

THE FUTURE OF SEABED MINING IN WASHINGTON

- There are currently no specific regulations in Washington
- We're partnering with Pew Charitable Trusts to protect vulnerable near-shore waters by banning seabed mining in state waters



WHAT CAN YOU DO?

- Support organizations that work on ocean protection
- Reduce, reuse, recycle – Redesign!
- Promote a circular economy
- Encourage businesses that depend on a healthy ocean and robust coastal communities to sign our petition



BUSINESS SIGN-ON: Say NO to Seabed Mining in Washington

Please add your business to the letter against seabed mining to protect our economy, communities and ways of life. The letter will be shared with decision-makers throughout Washington.

Dear Governor Inslee:

We the undersigned businesses are writing to encourage you to prohibit seabed mining before this destructive practice emerges in Washington. Our marine environment supports thousands of jobs, diverse cultures, and robust recreational opportunities. Seabed mining would severely harm our coastal quality of living.

Around the world, interest in seabed mining is on the rise, and this threat may soon loom off our own shores. Just this August, the Florida-based Odyssey Marine Exploration company indicated it will continue to push a phosphate seabed mining project in Mexico's federal waters (Exclusive Economic Zone or EEZ) despite two permit rejections. Without appropriate protections in place, Washington is vulnerable to similarly persistent and well-financed efforts by mining corporations attracted to the mineral leasing opportunities the state currently offers.

DO WE NEED TO MINE THE DEEP?

- Some say we need these resources to decarbonize
- Others say that we have enough resources b/t recycling and terrestrial sources to meet the demand
- Others argue that new technologies will provide a different pathway to decarbonization



A cobalt mine in the Democratic Republic of Congo. Image credit: Reuters



This is a manganese nodule – HOW NEAT IS THAT?!

“Unlike any other extractive industry in pretty much human history, this is really the first industry where science and environmentalism have had a 50-year head start.”

~ Andrew Thaler, Deep Sea Ecologist

Thank you!

**A huge thanks to our partners at Pew Charitable
Trusts for providing information, resources, imagery,
and expertise!**