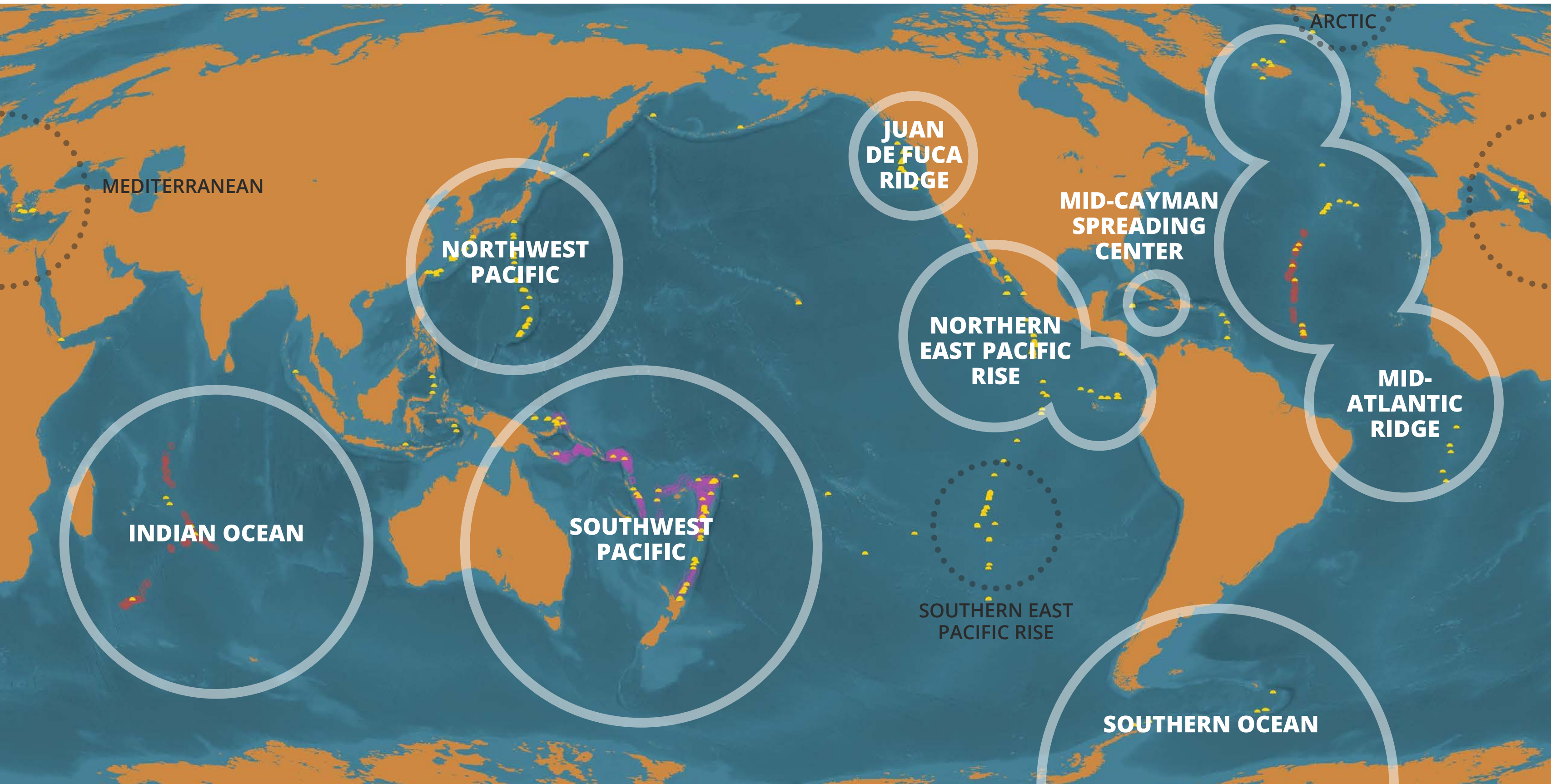


# 262 Voyages Beneath the Sea: A global assessment of macro and megafaunal biodiversity and research effort at deep-sea hydrothermal vents

## BACKGROUND

By reading the cruise reports from over 40 years of expeditions, we provide the first systematic assessment of **biodiversity at deep-sea hydrothermal vents** around the world adjusted for research effort.

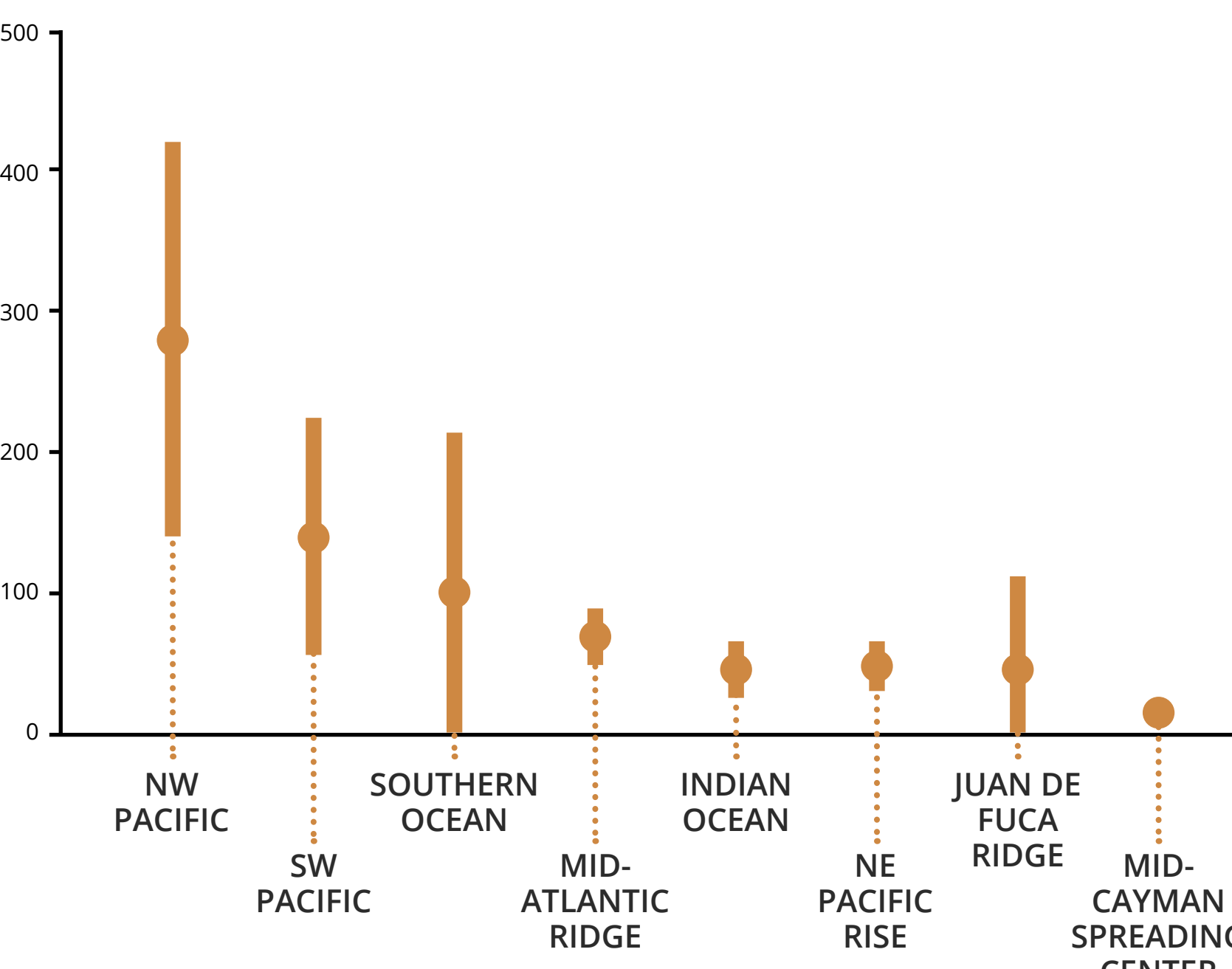
## HYDROTHERMAL VENTS ACROSS THE GLOBE



## FAMILY RICHNESS

We found that the **Northwest Pacific, Southwest Pacific, and Southern Ocean** were regions of high biodiversity, while the North East Pacific Rise, Northern East Pacific, Mid-Atlantic Ridge, and Indian Ocean provinces possessed a medium level of biodiversity relative to other vents systems, and the Mid-Cayman Spreading Center was a province of exceptionally low biodiversity.

### FAMILY RICHNESS BY REGION

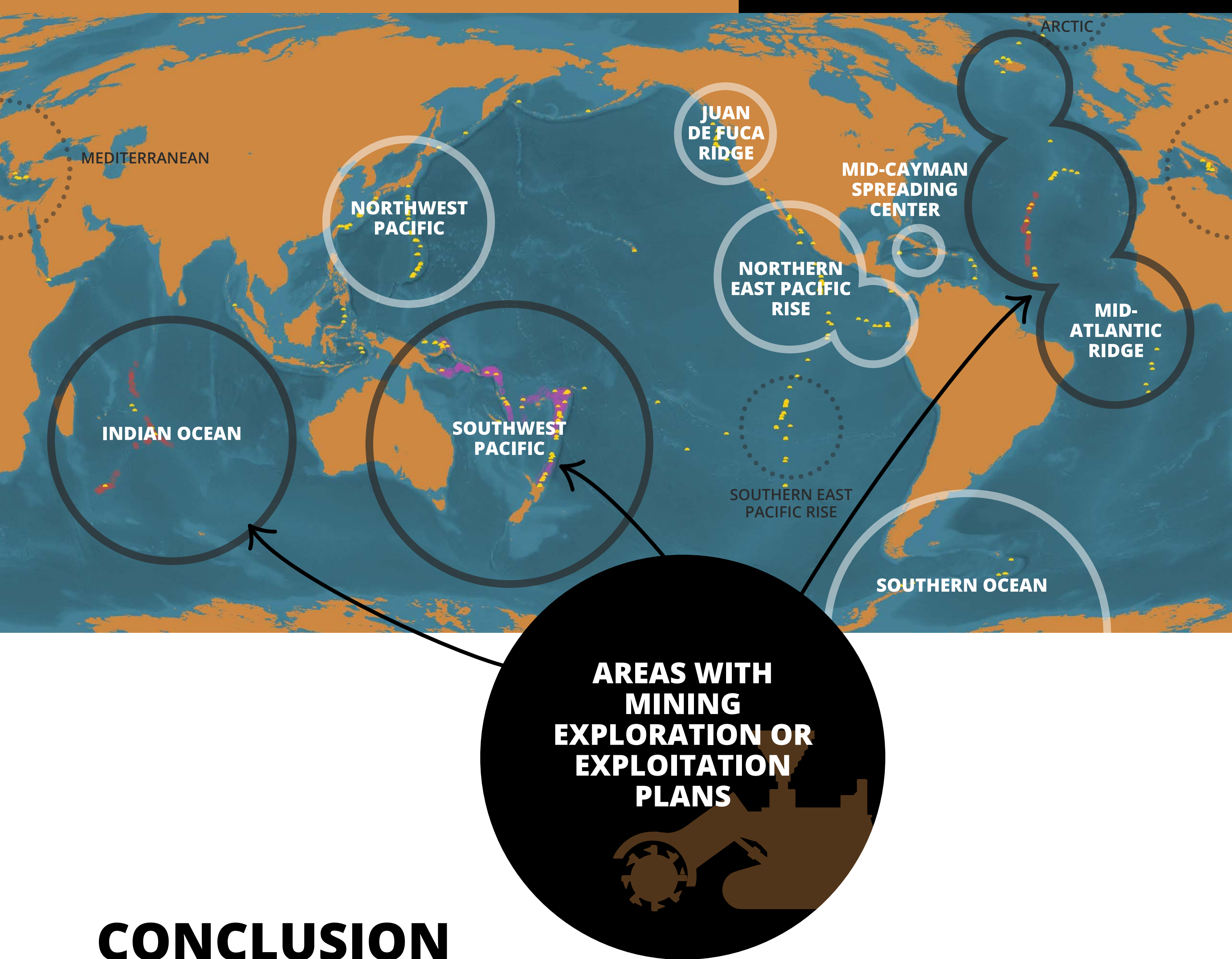


## ICONIC SPECIES BY REGION (IN ORDER OF RESEARCH EFFORT)

- Mid-Atlantic Ridge:** Blind vent shrimp
- Northwest Pacific:** Hairy snail and black snail
- Southwest Pacific:** Hairy snail and black snail
- Juan de Fuca Ridge:** Tubeworm
- Northern East Pacific Rise:** Giant deep-sea tubeworm
- Mid-Cayman Spreading Center:** Eyeless shrimp
- Indian Ocean:** Scaly-foot snail
- Southern Ocean:** Yeti crab

## DEEP-SEA MINING LOCATIONS

A North/South divide exists between biological research and targets of hydrothermal vent mining, with research predominately happening in the northern hemisphere while exploitation overwhelmingly planned for the southern hemisphere.



## CONCLUSION

We study hydrothermal vents ecosystems in the northern hemisphere, but we're planning to mine hydrothermal vent ecosystems in the southern hemisphere. Because of that, **we have a relatively poor understanding of the ecology of the vent systems most threatened by deep-sea mining.**

### Image credits:

Hydrothermal vent chimney: Schmidt Ocean Institute  
Blind vent shrimp: Station Biologique de Roscoff  
Hairy snail and black snail: Ridge 2000 program  
Tubeworm: Verena Tunnicliffe  
Giant deep-sea tubeworm: NOAA Ocean Exploration and Research  
Eyeless shrimp: NOAA Ocean Exploration and Research  
Scaly-foot snail: Nakamura, K. et al. (2012). "Discovery of New Hydrothermal Activity and Chemosynthetic Fauna on the Central Indian Ridge at 18°-20°S". PLoS ONE 7(3): e32965. doi:10.1371/journal.pone.0032965 Figure 5B. doi:10.1371/journal.pone.0032965.g005, CC BY 2.5, <https://commons.wikimedia.org/w/index.php?curid=49055374>  
Yeti crab: A. D. Rogers et al. in PLoS Biology, CC BY 2.5, <https://commons.wikimedia.org/w/index.php?curid=18004422>