

Rare deep-sea brine pools discovered in Red Sea

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Brine pools are one of the most extreme environments on Earth, yet despite their high salinity, exotic chemistry, and complete lack of oxygen, these pools are teeming with life. Credit: University of Miami

Researchers at the University of Miami (UM) Rosenstiel School of Marine and Atmospheric Science recently discovered rare deep-sea brine pools in the Gulf of Aqaba, a northern extension to the Red Sea. These salty underwater lakes hold secrets into the way oceans on Earth

formed millions of years ago, and offer clues to life on other planets.

In partnership with OceanX, Sam Purkis, professor and chair of the UM Department of Marine Geosciences and team made their discovery more than one mile beneath the [sea surface](#) (1,770 meters) using a remotely operated underwater vehicle (ROV) on the OceanXplorer, OceanX's highly equipped marine research vessel capable of exploring the most unreachable places on Earth.

"Until we understand the limits of life on Earth, it will be difficult to determine if alien planets can host any living beings," said Purkis. "Our discovery of a rich community of microbes that survive in [extreme environments](#) can help trace the limits of life on Earth and can be applied to the search for life elsewhere in our solar system and beyond."

Brine pools are one of the most extreme environments on Earth, yet despite their high salinity, exotic chemistry, and complete lack of oxygen, these pools are teeming with life. Bioactive molecules with potential anticancer properties have previously been isolated from [brine](#) pool microbes in the Red Sea.

The research, published in *Communications Earth & Environment*, is the first discovery of brine pools in the Gulf of Aqaba.

"We were very lucky," said Purkis. "The discovery came in the last five minutes of the ten-hour ROV dive that we could dedicate to this project."

Located close to the coastline, these extremely salty, zero oxygen pools preserve information on tsunamis, flashfloods, and earthquakes in the Gulf of Aqaba that took place thousands of years ago. There are many faults and fractures in the seabed associated with the tectonics of the region in this area of the Gulf of Aqaba.

Earlier this year, Purkis and team discovered evidence of a 500-year-old submarine landslide that likely spawned a sizable tsunami in the region, which could have implications for coastline development in Egypt and Saudi Arabia.

The study, titled "Discovery of the deep-sea NEOM Brine Pools in the Gulf of Aqaba, Red Sea," was published July 27 in the journal *Communications Earth & Environment*.

More information: Sam J. Purkis et al, Discovery of the deep-sea NEOM Brine Pools in the Gulf of Aqaba, Red Sea, *Communications Earth & Environment* (2022). [DOI: 10.1038/s43247-022-00482-x](https://doi.org/10.1038/s43247-022-00482-x)

Provided by University of Miami

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