

Heat-resilient Red Sea reefs offer last stand for corals

October 10 2022, by Bahira AMIN



A woman snorkels alongside sergeant major fish by a coral reef.

Beneath the waters off Egypt's Red Sea coast a kaleidoscopic ecosystem teems with life that could become the world's "last coral refuge" as global heating eradicates reefs elsewhere, researchers say.

Most shallow water corals, battered and bleached white by repeated [marine heatwaves](#), are "unlikely to last the century," the Intergovernmental Panel on Climate Change said this year.

That threatens a devastating loss for the hundreds of millions of people worldwide who depend on the [fish stocks](#) that live and breed in these fragile ecosystems.

Even if [global warming](#) is capped within Paris climate goals of 1.5 degrees Celsius above pre-industrial levels, 99 percent of the world's corals would be unable to recover, experts say.

But Red Sea [coral reefs](#), unlike those elsewhere, have proven "highly tolerant to rising sea temperatures," said Mahmoud Hanafy, professor of marine biology at Egypt's Suez Canal University.

Scientists hope that at least some of the Red Sea corals—five percent of the total corals left worldwide—could cling on amid what is otherwise a looming global collapse.

"There's very strong evidence to suggest that this reef is humanity's hope for having a [coral reef ecosystem](#) in the future," Hanafy said.

Eslam Osman from the King Abdullah University of Science and Technology in Saudi Arabia said: "It is crucial that we preserve the northern Red Sea as one of the last standing [coral](#) refuges, because it could be a seed bank for any future restoration effort."



Orange-spine unicorn fish (*Naso lituratus*) swim by a coral reef.

Livelihoods for millions

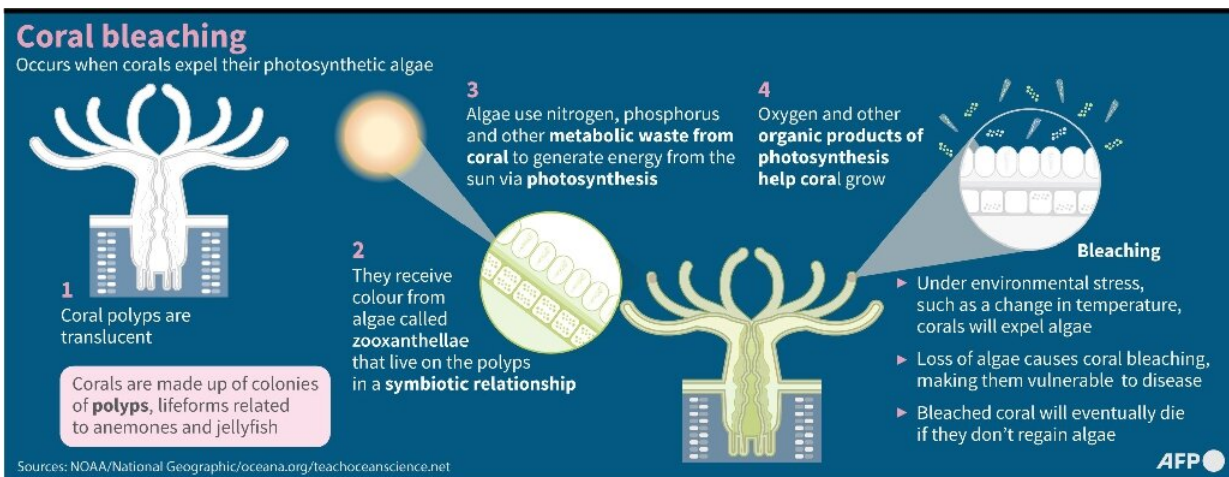
The impacts of coral loss are dire: they cover only 0.2 percent of the [ocean floor](#), but are home to at least a quarter of all marine animals and plants, helping sustain livelihoods for half a billion people worldwide.

Global warming, as well as dynamite fishing and pollution, wiped out a startling 14 percent of the world's coral reefs between 2009 and 2018, according to the Global Coral Reef Monitoring Network.

Graveyards of bleached coral skeletons are now left where once vibrant and species-rich ecosystems thrived.

Recent studies have shown the northern Red Sea corals are better able to resist the dire impact of heating waters.

"We have a buffer temperature before the coral sees bleaching," Osman said. "One, two, even three degrees (Celsius) of warming, we're still on the safe side."



Graphic on coral bleaching.

Osman said one theory explaining the corals' apparent resilience to heat is due to "evolutionary memory" developed many thousands of years ago, when coral larvae migrated north from the Indian Ocean.

"In the southern Red Sea, coral larvae had to pass through very warm waters, which acted as a filter, only letting through species that could survive up to 32 degrees Celsius (89 degrees Fahrenheit)," Osman said.

However, scientists warn that even if Red Sea corals survive surging water temperatures, they risk being damaged from non-climate

threats—pollution, overfishing and habitat destruction including from costal development and mass tourism.

"When non-climate threats increase, the vulnerability to climate change increases as well," Osman said.

'Global responsibility'

Reefs off Egypt are hugely popular among divers, and some Red Sea dive sites are operating at up to 40 times their recommended capacity, Hanafy said.

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