

# Signs of coral recovery here amid global bleaching event

This is as sea surface temperatures fall after marine heatwave takes toll over past months

Chin Hui Shan

Amid the largest recorded global bleaching event, Singapore's corals are showing signs of recovery as sea surface temperatures begin to fall, with about 20 per cent to 30 per cent of them still showing signs of bleaching.

But the marine heatwave has taken its toll on some corals here, with 30 per cent to 55 per cent observed to be bleached in July, said the National Parks Board (NParks) and National University of Singapore (NUS).

This comes amid the most extensive global coral bleaching event, which saw 77 per cent of the world's coral reef areas subjected to bleaching-level heat stress, Reuters reported on Oct 18.

In mid-April, the US National Oceanic and Atmospheric Administration (NOAA) declared the global bleaching event, making it the fourth of its kind.

Global coral bleaching also took place in 1998, 2010 and 2016, and Singapore experienced mass coral bleaching then. Those years and 2024 have been El Niño years – referring to a climate phenomenon that causes sea surface temperatures in the eastern Pacific to

heat up and elevate global temperatures.

Corals get their vibrant colours from microscopic algae that live in their tissues. When they get stressed from rising sea temperatures, the corals expel the algae and turn ashen white.

The first sign of mild bleaching was reported by NUS and NParks researchers in early May at Pulau Satumu and Pulau Hantu. This was around the time when sea surface temperatures were above monthly mean temperatures and annualised monthly means for extended periods, which is not normal.

In May, the sea surface temperatures around Singapore ranged between 30.84 deg C and 31.84 deg C, according to the St John's Island National Marine Laboratory's (SJINML) Marine Environment Sensing Network. The highest average monthly temperature here is usually 30.5 deg C.

The corals at other sites – Kusu Island, Lazarus Island and Sisters' Islands – were also mildly bleached. Most of Singapore's intact coral reefs are found in the southern waters.

The situation worsened in mid-July as more extensive bleaching was observed at all five sites, with 30 per cent to 55 per cent of



Corals at Pulau Hantu with signs of bleaching on Oct 9. Corals get their vibrant colours from microscopic algae that live in their tissues. When they get stressed from rising sea temperatures, the corals expel the algae and turn ashen white. Different corals have different tolerances to temperature changes. ST FILE PHOTO

bleached corals reported at Pulau Hantu, Pulau Satumu, Kusu Island and Sisters' Islands.

As sea surface temperatures began to drop by the third week of July, some early signs of recovery – where bleached corals begin to regain their colours – were observed. There was also no further bleaching observed.

In September, the corals were showing signs of recovery, although about 20 per cent to 30 per

cent were still bleached or partially bleached.

Ms Sue Ye, founder of marine conservation non-governmental organisation Marine Stewards, said her team observed about 30 per cent of hard corals showing signs of being stressed or bleaching during a dive survey on Sept 24. Although temperatures have fallen, the remnant effects of bleached corals remain, she said.

In June, The Straits Times re-

ported that SJINML researchers observed the extent of bleaching to be about 40 per cent, at the same time that an oil spill spread to the beaches and waters of St John's, Lazarus and Kusu islands.

The June 14 oil spill – the largest experienced by the country in over a decade – was the result of a Netherlands-flagged dredger hitting a Singapore-flagged bunker vessel at Pasir Panjang Terminal, causing 400 tonnes of fuel to leak into the sea.

But Dr Jani Tanzil, SJINML's facility director, said the oil spill had unlikely worsened bleaching, and there was no difference in coral bleaching levels found in areas where oil was seen floating compared with sites farther out.

She added that this was during neap tide – where the difference between high and low tides is smallest. This means the waters do not recede as far back as they do during spring tide, which occurs at full moon and new moon.

Studies have shown that exposure to oil can stunt corals' growth and reproduction, and affect other biological processes and feeding behaviour.

With signs of recovery observed in September, Dr Tanzil said more recovery can be expected in the months to come, provided the corals are not exposed to stressors or disturbance events like oil spills.

"If the recovery trajectory is similar to that of past mass bleaching events, we can expect corals that have survived till now to fully recover by early 2025," she said.

To document the extent of mortality and the health of corals, NUS scientists have tagged 100 coral colonies and are tracking their status in the coming months for research on ecological resilience under the Marine Climate Change Science Programme managed by NParks.

CONTINUED ON PAGE A18

# Corals have symbiotic relationship with algae

## FROM A17

Corals can recover if environmental and water temperature conditions return to normal, with the ideal water temperature for corals to thrive lying between 23 deg C and 29 deg C.

Coral bleaching events usually last from a few weeks to several months, with the duration depending on external stressors such as anomalies of sea surface temperatures, the susceptibility of species to bleaching, severity of environmental conditions, and the geographical location.

Different corals have different tolerances to temperature changes and some species may be more adaptable to differing conditions and stressors, said Ms Ye, adding that those that can withstand high temperatures have a higher chance of recovering. "Corals in Singapore have evolved to tolerate higher water temperatures, but 31 deg C is already very close to their upper tolerance limit," she said.

One critical factor determining corals' recovery is their ability to re-establish their symbiotic relationship with algae, she added.

It was noted that coral reefs did not bleach in 2023 – despite showing signs of stress – as sea surface temperatures did not exceed the bleaching threshold. But in 2024, the threshold was exceeded and extensive coral bleaching in the region was observed.

Dr Karenne Tun, director at NParks' National Biodiversity Centre, said NParks is in discussion with scientists from the Centre for Climate Research Singapore under the National Environment Agency to develop a bleaching assessment tool based on on-site sea surface temperatures to determine bleaching stress levels of corals.

"The team will take reference from NOAA's bleaching watch products to develop this monitoring tool, which will help us optimise resources for response planning and monitoring," said Dr Tun.

NParks has also reached out to marine enthusiasts who survey intertidal reefs and dive operators to submit reports on the Bleach Watch Singapore Facebook page to consolidate local observations.

Over the next 10 years, starting in 2024, 100,000 corals will be progressively planted and grown in Singapore's waters to beef up its reef cover.

The Republic's waters are home to around 250 species of hard corals of various colours and shapes – about one-third of the more than 800 species in the world. They serve as habitats for more than 100 species of reef fish, about 200 species of sea sponges, and rare and endangered seahorses and clams, among other creatures.

---

chuishan@sph.com.sg