CAN-004-Coral and Reefs-Worlds Oceans

Decline of corals and reefs

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5.1.13

About the author

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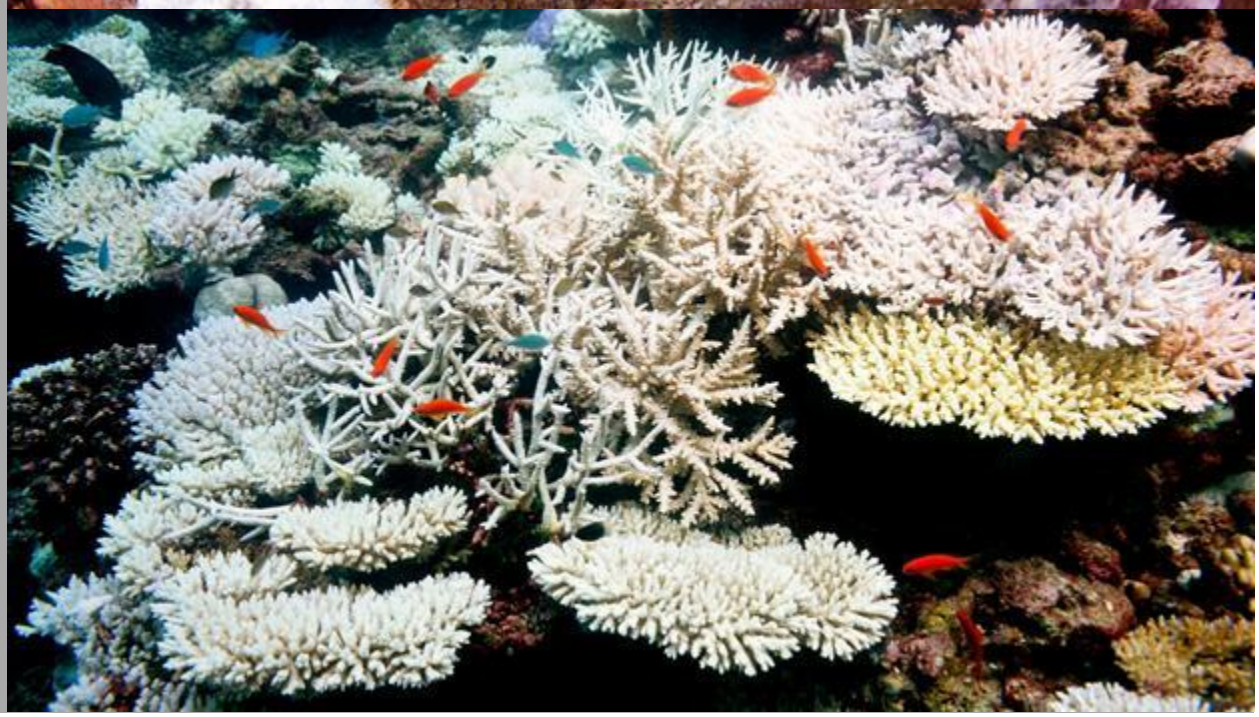
- 

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Glorious history

In many underwater regions around the world, the image of colour-filled coral reefs are becoming a thing of the past.

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All over the world, reefs are being killed off to such an extent that the question is not whether things will get worse but whether we will lose them entirely.

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Half Great Barrier Reef lost

Australia's Great Barrier Reef has lost more than half its coral cover in the past 27 years, a new study shows.

John Bruno remembers swimming through Florida's coral reefs as a child in the 1970s. At the time, the reefs were dominated by elkhorn and staghorn corals, whose vivid, branching structures provided shelter for a smorgasbord of marine life. "It was like snorkelling over a wheatfield – vast, golden coral coverage as far as you could see," says Bruno, now a marine biologist at the University of North Carolina.

Such days are gone. In just a few decades, the Caribbean's reefs have collapsed. Golden beds of elkhorns and staghorns have disappeared and been replaced by thick mats of green algae. The proportion of the reef covered by live coral has plummeted from 50% in the 1970s to just 8% now, changing the fish communities dramatically. "Florida was a scary place to snorkel then, with hammerhead sharks, groupers and sailfish," says Bruno. "Now, it's like snorkelling in an aquarium."

It's not just the Caribbean. A third of reef-building corals are in danger of extinction, and reefs the world over are in serious decline. Even Australia's Great Barrier Reef, long held as a shining testament to careful management, has lost the majority of its coral. "Ten years ago, we thought, 'At least we have the [Great Barrier Reef]', but even that's starting to look pretty grim," says Bruno. The question now is not whether things will get worse – they assuredly will – but whether we will lose our reefs entirely.

This is a chilling prospect. To lose the reefs would be to lose the planet's most diverse ecosystems – habitats that make even tropical jungles seem impoverished. "I'm not dissing rainforests, but you could walk for kilometres and see a thousand beetles and a hundred birds, all variations on a theme," says Rick MacPherson from the Coral Reef Alliance. "But in one square metre of a reef, you could get every animal phylum known."

People would also suffer. More than 450 million people live close to coral reefs and rely on them as sources of tourism revenue and protein, and as buffers that dampen the energy of incoming storms. "There are humans that depend on them for a daily basis not just as a nice place to visit for a holiday," says MacPherson.

One-two punch

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Coral reefs are besieged on many fronts. “It’s not like trying to protect rhinos, where we know that the cause of the decline is poaching,” says Bruno. “There are so many things happening and at such big scales that local managers are largely powerless to do anything.”

Rampant overfishing removes herbivorous fish that keep competitors like seaweed and algae at bay. Cyclones and hurricanes physically batter the reefs, as do sticks of dynamite thrown by fishermen. Diseases, some of which are exacerbated by bacteria carried in human sewage, kill them off. The voracious crown-of-thorns starfish – an evil-looking sunburst of spikes – liquefies them with its extruded stomach. Agricultural run-offs flood the oceans with nutrients, spurring the growth of algae and plankton that choke the waters and block out sunlight. Coastal construction projects cut down trees that hold topsoil together, allowing rain to wash sediment into the reefs, smothering the corals.

But climate change is the “big bad”, according to McPherson. The greenhouse gases that we pump into the atmosphere create an insulating blanket that warms the seas along with the rest of the planet. In warmer water, corals expel the algae that live inside their tissues and produce nutrients by harnessing sunlight. Without these lodgers, the corals lose their energy supply and their bright colours, becoming bleached and weak. Meanwhile, carbon dioxide also dissolves in the oceans, making them more acidic and depleting the carbonate ions that the corals need to build their limestone fortresses. They dissolve faster than they can be rebuilt. Hit by the one-two punch of hotter and more acidic waters, the corals, homeless and starving, become more vulnerable to the other threats they face.

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