

Could the High Seas Be Closed to Fishing?

by Alastair Bland Aug. 15, 2018

Bluefin tuna. Patrick Aventurier/Gamma-Rapho via Getty Images

As the United Nations prepares to begin negotiations next month on a high seas biodiversity treaty, some scientists and advocates say a spate of recent research supports banning commercial fishing in international waters to protect remote ecosystems.

MOMENTUM IS GROWING for a radical yet potentially realistic proposal to close international waters to commercial fishing. The idea first began to snowball in 2014, and since then more and more scientists and conservationists have joined the call to transform the high seas – the ocean beyond the national jurisdiction – into an enormous marine reserve.

Fishing interests are likely to fight the proposal, but according to a rapidly growing body of research, science supports such a move.

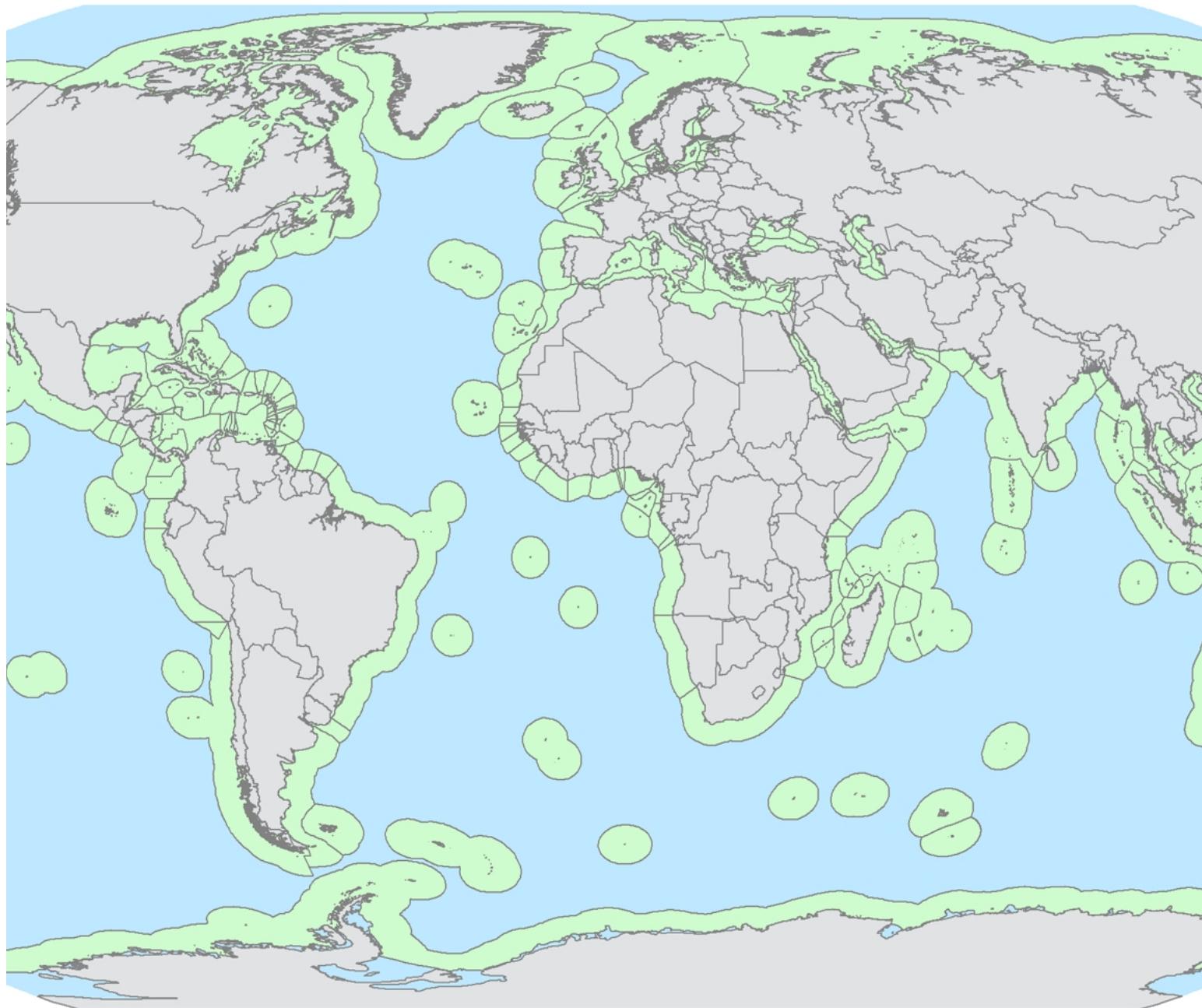
“Fishing the high seas just doesn’t make much sense,” said Enric Sala, a marine ecologist, National Geographic explorer-in-residence and one of the leading proponents of a high seas fishing ban. “It’s just a few countries monopolizing the global commons.”

New research shows that not only are those nations – China, Taiwan, South Korea, Spain and Japan – taking what under international law belongs to all fishing countries, they are doing so without providing the world with a significant amount of seafood. In fact, according to a

recent analysis, fishing the high seas wouldn't even be commercially feasible without large government subsidies, mainly to pay for fuel so that vessels can make long journeys to remote regions of the ocean.

Though high seas catches may be small, the conservation gains potentially to be had from banning high seas fishing could be huge. A study published in 2014 in the journal PLOS Biology concluded that prohibiting fishing on the high seas would eventually boost fish stock biomass by more than 150 percent. Sala said part of this benefit would come from the elimination of deep-sea trawling, which produces large amounts of discarded bycatch of nontargeted species.

The push for a fishing ban comes as the United Nations convenes next month in New York City to begin two years of negotiations to draft a high seas biodiversity treaty. Among other things, negotiations will focus on protocols to establish marine protected areas on the high seas.



Global map of exclusive economic zones (green) and high seas (blue) oceanic areas. (Courtesy of PLOS Biology)

A Rome-based fisheries expert with the United Nations' Food and Agriculture Organization did not respond to an interview request.

Casson Trenor, a fisheries sustainability analyst who once worked with Greenpeace, said he favors tightened high seas fishing restrictions. He noted that the mere fact that a high seas fishing ban is being discussed marks an important step forward in global fisheries management.

"It indicates a significant change in the way we think about the commons, that being the high seas," Trenor said. "It also indicates a growing awareness of the world's overfishing crisis."

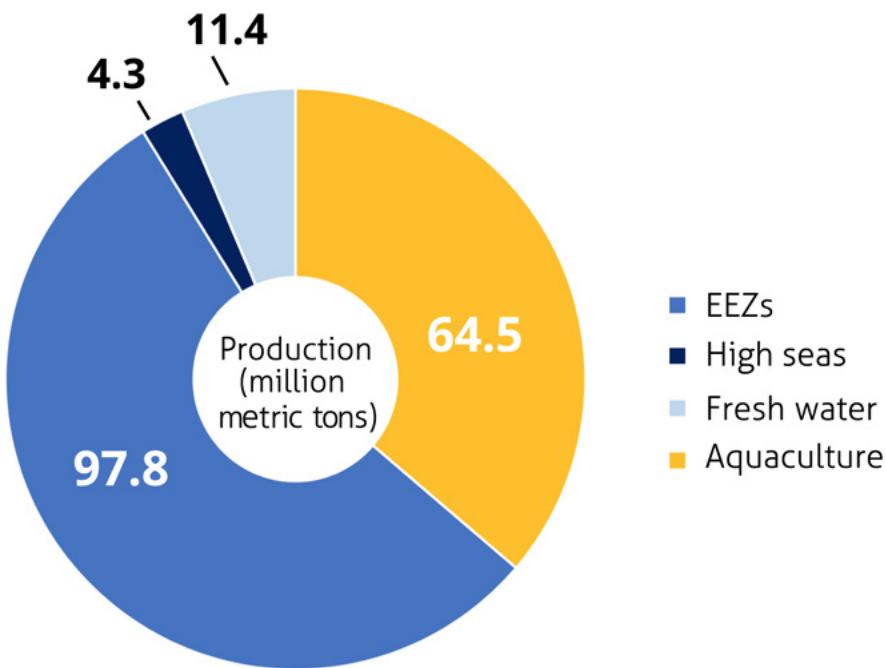
He questions, though, how such a ban would work.

"Who would enforce it, because whose law would be getting violated when someone decides to fish the high seas?" said Trenor, who is the author of the book "Sustainable Sushi." He noted that hunting whales is banned but that Japan still commercially targets the animals with impunity.

A paper published August 1 in the journal Science Advances determined that fishing boats are now catching only one-third the fish they caught in 1950 per kilometer traveled. Dirk Zeller, a University of Western Australia researcher and a coauthor on that study, said the findings applied across the ocean and demonstrate how closing the high seas to fishing could benefit global fisheries. When a fish stock is depleted, the fish contract their geographical range, he explained. This causes the species' abundance to decline in outlying areas. For wide-ranging species such as tuna, this pattern tends to be seen in nearshore waters.

"The periphery of the range thins out first, so the first countries to suffer are the nations where their stocks thin out," Zeller said.

Banning fishing in the high seas would, in theory, allow stocks to rebound and spread outward again, spilling into nations' exclusive economic zones (EEZs), which extend 320km (200 miles) from shore. According to the 2014 PLOS Biology paper, halting high seas fishing would eventually increase yields for fisheries in coastal waters by more than 30 percent and double these fisheries' profits since vessels would not have to travel as far.



Average contribution (million metric tons) of seafood-producing sectors, 2009–14.

The high seas catch represents 2.4 percent of total global production. (Data: FAO 2016 and Sea Around Us.) (Courtesy of Science Advances)

Sala said monitoring studies have shown that closing a marine area to fishing results, on average, in a sixfold increase in biomass over a decade. He envisions similar gains from a high seas fishing closure.

“We know that marine reserves work,” he said. “The world has shown itself incapable of sustainably managing industrial fishing globally, except for a few fisheries, so let’s add some insurance – let’s protect some areas, create a refuge that helps to replenish the rest of the ocean.”

The Inter-American Tropical Tuna Commission (IATTC) manages the tuna fisheries of the eastern Pacific. According to Jean Francois Pulvenis de Séligny, the commission’s senior policy advisor, this regional fishery management organization takes no position on a potential high seas fishing closure, partly because the idea is so relatively new and because it has not been formally proposed.

“What is important here is the adoption of good policies and measures for the conservation and management of the resources,” he wrote in an email.

The high seas comprise about 58 percent of the ocean. Governed by no individual nation or international treaty, high seas waters are loosely managed by regional fishery management organizations, like the IATTC, that oversee the huge trawlers, long liners and purse seiners that work these remote regions. However, fishing these waters isn’t especially profitable. Sala said more than half of high seas fishing activity would come to a stop if it wasn’t subsidized.

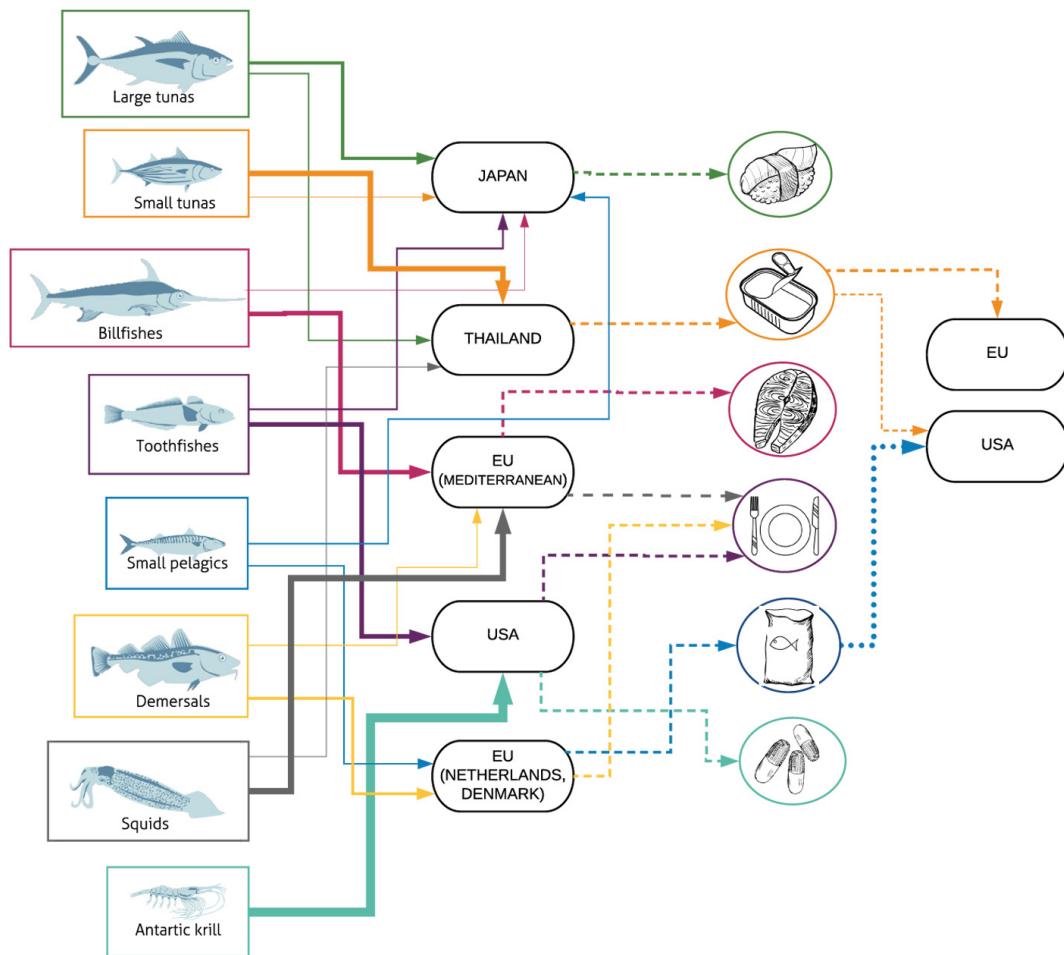
High seas fishing also produces an insignificant fraction of the world’s seafood – estimated to be less than 5 percent of the global fish catch, according to a paper coauthored by Sala and published August 8 in the journal *Science Advances*.

“Aside from the high seas catch contributing little to total global food supplies, most of the

catch from the high seas is sold as upscale food items to food-secure countries, so it doesn't really help us address the global food security issues," Sala said, noting that high seas fisheries produce large amounts of such delicacies as tuna sashimi, shark fin soup and exorbitantly expensive Antarctic toothfish, marketed as Chilean sea bass.

"I don't think the world would collapse if we stopped eating the Antarctic toothfish," Sala said.

Prohibiting high seas fishing would mean enforcing this ban. Some argue that doesn't present insurmountable obstacles, given recent technological advances.



Each solid arrow's width is proportional to the destination's share of total global imports for each species group (fresh, frozen, unprocessed form), with the dashed arrows indicating the likely form of consumption in the primary importing country or, if applicable, the processed product produced. The primary and secondary importers of processed products are indicated by weighted dashed lines based on the market share of imports (taken from information in the literature). (Data: FishStat) (Courtesy of Science Advances)

"A pragmatic reason for banning high seas fishing would be that it makes surveillance so much easier," said David Tickler, a scientist with the University of Western Australia and a coauthor with Zeller on the recent fishery viability analysis. In other words, any suspicious boat movements, such as slowing, stopping and circling in international waters and visible via satellite surveillance, would indicate illegal fishing.

In fact, new technology and social media have made it possible to closely watch boat activity across the entire ocean. Global Fishing Watch is a public platform that displays a vast inventory of tracking data from satellite-based fishing boat surveillance, which has already

resulted in high-profile poaching busts far from shore.

Zeller described a frequent form of fishing fraud that a high seas fishing ban would effectively eliminate. Often, he said, boats from one country will fish without permission inside another country's waters but claim to have been fishing just beyond the international boundary to avoid paying access fees to the coastal nation's government. This happens frequently in the waters off Papua New Guinea and the Solomon Islands, he said. A high seas fishing ban would render this fraudulent tactic powerless.

"They would have to pay coastal nations for the right to fish," Zeller said.

Trenor said the ecological benefits of a high seas moratorium need further scientific investigation. He noted that Atlantic bluefin tuna travel around much of the North Atlantic Ocean. However, a major spawning area of the highly depleted species is the Gulf of Mexico – virtually all of which lies in the territorial waters of the United States, Mexico and Caribbean nations.

"A ban would protect the fish while in transit across the Atlantic, but it wouldn't protect them when they're doing the things that make them vulnerable," he said.

Trenor said he is all for a high seas fishing closure but would be concerned that fishing interests would exploit the fact of such a ban to oppose the creation of additional, possibly more effective, marine reserves.

A fishing ban on the high seas is likely many years away, and Zeller and Tickler think the way forward might begin with the establishment of large marine protected areas on the high seas that, hopefully, would grow bigger over time. Zeller added a word of caution: Banning high seas fishing could displace a large number of boats, which might then begin fishing coastal waters, potentially overfishing stocks that were intended to benefit from the ban.

"That's always the argument people use who are against marine reserves – that they will cause overfishing in other areas," he said. "So you can't just impose a high seas fishing ban, or ban the fisheries subsidies, and walk away. These efforts would have to go hand in hand with a reduction in fishing effort, because that's the underlying problem – the world has far too many fishing boats."

Another Threat to Coral Reefs: 'Shifting Baselines' of What's Normal

A 19-year-long study on the impact of bleaching and cyclones on a section of the Great Barrier Reef underscores the challenges of determining what a healthy coral

ecosystem looks like in an era of rapidly accelerating climate change.

WRITTEN BY
Todd Woody

PUBLISHED ON
Aug. 13, 2018

READ TIME
Approx. 5 minutes



A sea turtle swims over bleached corals on the Great Barrier Reef. The Ocean Agency/XL Catlin Seaview Survey

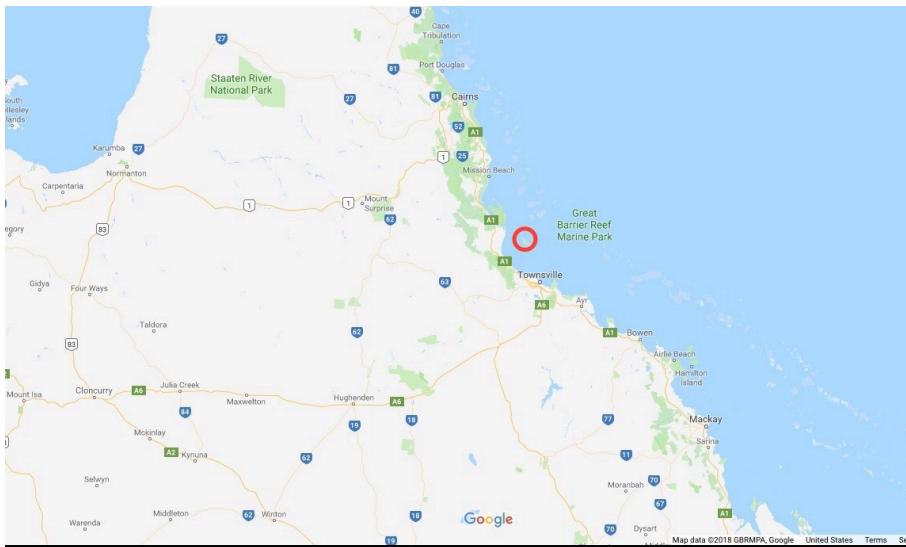
BEFORE CLIMATE CHANGE triggered increasingly frequent and deadly coral bleaching events, cyclones posed one of the biggest threats to the health of the Great Barrier Reef.

Scientists estimated that prior to 2016, destruction from tropical hurricanes was responsible for between a third and nearly half the loss of coral cover on the world's largest reef system over the previous 30 years, according to a new study published in the journal *Scientific Reports*. Coral bleaching, on the other hand, had contributed only between 5 percent and 10 percent of coral loss.

That all changed two years ago when the first of two unprecedented back-to-back bleaching events struck the 2,300km (1,400 miles)-long Great Barrier Reef, ultimately killing half its corals (and devastating other tropical reefs worldwide). The new study analyzes how corals have recovered from a combination of cyclones and bleaching events over the past 19 years in the Palm Islands Group, a collection of fringing reefs in the central section of the Great Barrier Reef.

The conclusion: 47.8 percent of the study sites' hard coral cover has been lost since 1998 and the composition of the reef ecosystem has been dramatically altered. That was chiefly due to a 1998 bleaching event and Cyclone Yasi, a Category 5 storm that scored a direct hit on the reefs in 2011. (The 2016 bleaching event hit the northern section of the Great Barrier Reef the hardest, leaving the Palm Islands Group in the central section relatively unscathed. The impact of the 2017 bleaching event will be published in a forthcoming paper.)

“With interludes between bleaching and cyclones predicted to decrease, the probability of another severe disturbance event before coral cover and assemblage composition approximates historical levels suggests that reefs will continue to erode,” wrote scientists with the Australian Research Council (ARC) Centre of Excellence for Coral Reef Studies at James Cook University in Townsville, Queensland.



The study area in the Palm Islands Group of the Great Barrier Reef in Australia. (Google Maps)

The findings underscore the importance of such long-term “longitudinal” studies, given “shifting baselines” on what constitutes a healthy coral reef and the subsequent risk of “baseline bias” among scientists and the public. For instance, the Palm Islands Group study used 1998 as a baseline to calculate the decline in coral cover over the subsequent 19 years. But as the authors noted, the reefs likely had already suffered an unknown amount of degradation before 1998.

“Shifting baselines is a serious issue,” Gergely Torda, one of the study’s lead authors and a senior research fellow at the ARC Centre of Excellence for Coral Reef Studies, said in an email from the field in French Polynesia. “From a scientific point of view, the problem is that we have probably missed the opportunity to understand how pristine coral reefs function. We know that coral reefs persisted, in fact thrived, for tens of millions of years. But whether modern reefs – that are degraded to various degrees and have probably lost a lot of their biological and functional diversity and redundancy – can survive in the coming decades of dramatic climate change remains elusive.”

That presents significant challenges for policymakers and natural resource managers, Torda noted, as conservation goals may also succumb to baseline bias.

“Tourists coming to visit the degraded parts of the [Great Barrier Reef] still say that it’s beautiful, and they don’t understand what researchers are talking about,” he added. “It is because they haven’t seen it when it was alive and functional. Shifting baselines can ease us into a comfortable ‘business as usual’ is

good enough' mindset, without noticing how we are heading toward a global-scale ecological collapse."

Coral reefs have weathered ecological upheaval for countless millennia, suffering widespread destruction and eventually bouncing back. But the new study details how the one-two punch of bleaching and cyclones can sap coral resilience and result in the restructuring of reef ecosystems.

Scientists conducted surveys of corals using identical methodology at two fringing reef sites off Orpheus and Pelorus islands in the Palm Islands Group in 1998, 1999, 2001, 2008, 2011, 2014 and 2017. Coral cover dropped from 51.7 percent to 15.4 percent following the 1998 bleaching event. (Spikes in ocean temperatures caused by the burning of fossil fuels and natural weather phenomena trigger bleaching, in which the symbiotic zooxanthellae algae that provide corals nutrition and color in exchange for shelter become toxic and are expelled. Deprived of food, corals turn white and can die unless water temperatures cool and the zooxanthellae algae return.)



The Great Barrier Reef. (Jayne Jenkins)

Coral cover at the study sites recovered to 27.8 percent in the decade following the 1998 bleaching event, only to be obliterated by Cyclone Yasi in 2011, when it plunged to 4.1 percent, according to the study. Over the next three years, coral cover continued to fall, hitting 1.6 percent in 2014. But in a sign of a reef's resilience under the right conditions, coral cover had grown to 27 percent by 2017.

The consequence of the 2017 bleaching event is the subject of a paper currently under review. Torda could not discuss the details of the findings but said, "Anecdotally, I can tell you that on our study sites for the recent paper, the 2017 bleaching was not as bad as in other parts of the central [Great Barrier Reef] and did not result in mass (multispecies) mortality."

"In general the reefs of the Palm Islands got away with minor damage," he added.

Still, the reef ecosystem that was present in 1998 is gone, perhaps forever, as some species of coral dramatically declined and were supplanted by others. For instance, complex branching corals that provide habitat for a variety of marine life were virtually wiped out and slow to recover while massive corals proved more resilient and became a dominant species at the study sites.

Torda said that any long-term changes in the reef fish communities that depend on those habitats remain unknown, as the research has focused on coral composition. However, research conducted by Torda's colleagues on another section of the Great Barrier Reef found a loss of fish diversity in the wake of the 2016 bleaching event.

The researchers observed that overall, coral species continued to decline years into the recovery period. "The disruption of the intricate ecological feedback loops that exist among corals, their competitor algae, their predators and myriads of species of reef fish can cause further mortality in the aftermath of the disturbance, and retard recovery," the scientists wrote. "Importantly, the loss of large colonies of slow-growing species can leave a footprint on the assemblage composition for many decades, if not for centuries."

"The increase in frequency and severity of acute disturbances due to weather extremes associated with global climate change suggests that the exposed fringing reefs of Orpheus and Pelorus Islands, along with many other coral reefs in the world, may never recover to pre-disturbance conditions, and will continue to erode," they concluded.

CORAL BLEACHING # GREAT BARRIER REEF

About the Author

Todd Woody

Todd Woody is executive editor for environment at News Deeply. A veteran environmental journalist based in California, Todd previously served as editorial director for environment at TakePart, a digital magazine owned by Participant Media. He formerly was the environment editor at Forbes magazine, a senior editor at Fortune magazine, an assistant managing editor at Business 2.0 magazine and the business editor of the San Jose Mercury News. He has been a frequent contributor on environmental issues to The New York Times, The Atlantic, Quartz and other publications.

Get the latest humanitarian news, direct to your inbox

Sign up to receive our original, on-the-ground coverage that informs policymakers, practitioners, donors, and others who want to make the world more humane.

[Sign up](#)

Become a member of The New Humanitarian

Support our journalism and become more involved in our community. Help us deliver informative, accessible, independent journalism that you can trust and provides accountability to the millions of people affected by crises worldwide.

[Join](#)