# Under threat: Puerto Rico and Caribbean corals lose half their population in less than 45 years [1]

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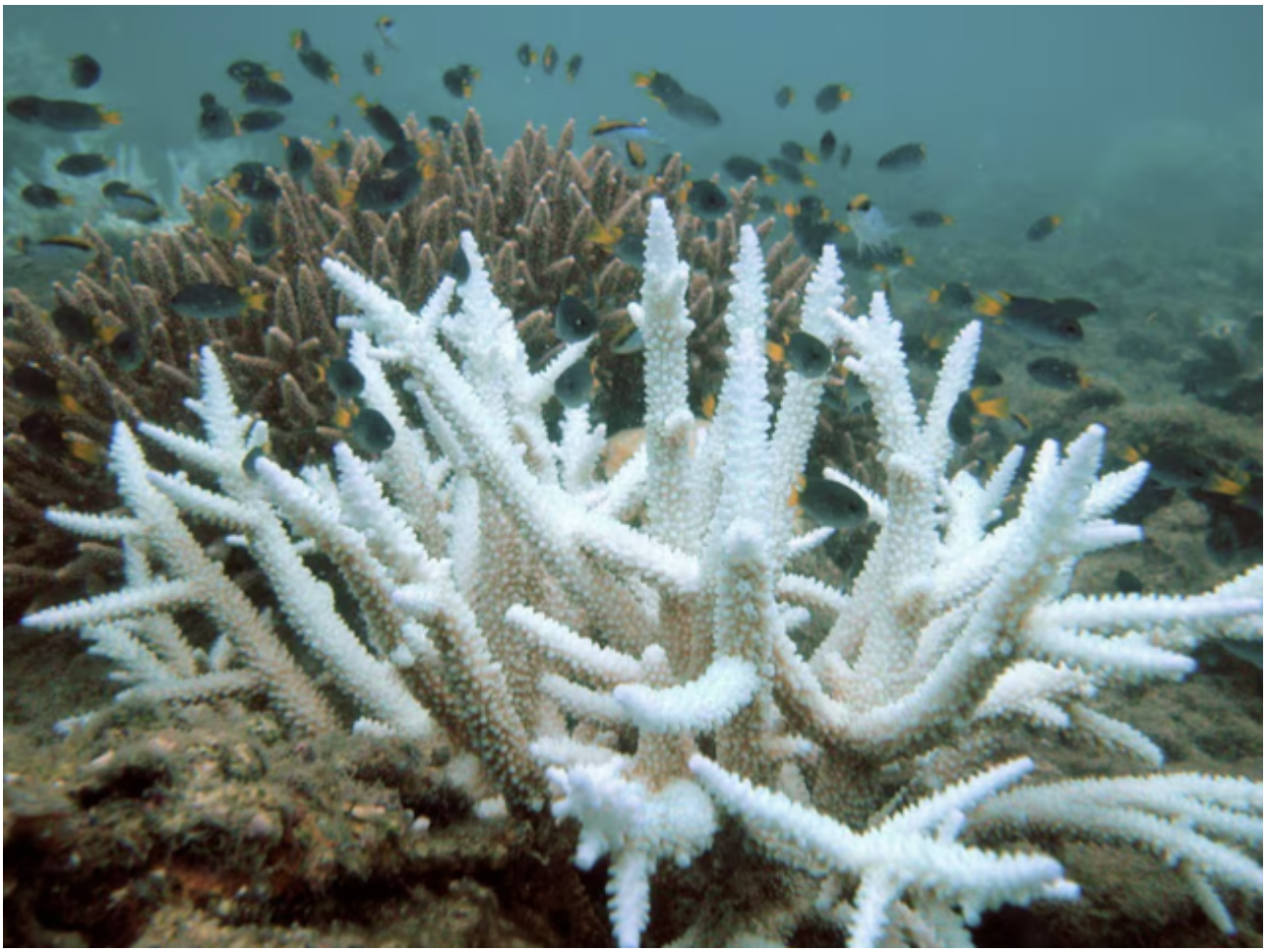

A new report from the Global Coral Reef Monitoring Network reveals the condition of reefs in the region and warns it will not improve without immediate action

The Caribbean region lost nearly half of its coral reefs between 1980 and 2024 due to factors such as rising ocean temperatures, the presence of invasive species, and human activities—a problem that has been documented in Puerto Rico for years and will not be reversed without immediate action, according to a new report that involved more than 300 scientists and data collected from 14,000 ocean sites.

The presence of hard corals around the Puerto Rican archipelago has declined in recent decades, with no major advances recorded in their recovery, according to the report *“Status and Trends of Caribbean Coral Reefs: 1970–2024,”* by the Global Coral Reef Monitoring Network (GCRMN).

The report highlights that by the mid-1990s, reef presence around Puerto Rico had fallen to 15% of benthic cover, which refers to everything that covers the seafloor.

“It has remained low since then, underscoring the limited recovery capacity of Puerto Rico’s reefs and reflecting broader Caribbean trends, where cumulative pressures and recurring impacts have hindered coral resurgence,” the report states. It was published Tuesday.

Marine biologist Edwin Hernández believes the figures are “very conservative” and that reality is likely more severe.

“The problem isn’t just that the amount of coral has been reduced; there are sites where coral cover barely fluctuates between 1% and 2%. The difference between before and after is extremely noticeable. In Vieques and Culebra, there were places where coral cover reached 80% to 90%… But with these increasing bleaching events, all of that has been lost,” said Hernández, senior scientist at the Marine Environment Society, in an interview with *El Nuevo Día*.

Research by Hernández and other Puerto Rican scientists is part of the work compiled by the GCRMN.

Hard corals in the Caribbean cover an area of 24,230 square kilometers, equivalent to 9.7% of the world’s total coral reefs. This represents a reduction from the beginning of the decade, when the report *“The State of the World’s Coral Reefs: 2020”* indicated that Caribbean corals covered 26,397 square kilometers, or 10.17% of the global total.

According to the new report, waters around Puerto Rico are home to 471 square kilometers of corals, representing 1.9% of the Caribbean total and 0.19% globally.

Despite this limited coral extent, Puerto Rico is the second territory in the Caribbean with the highest number of monitoring sites—2,825—most of them in the southwest and eastern zones, including the island municipalities. The U.S. Virgin Islands rank first, with 5,183 sites.

Monitoring across various areas has allowed scientists to detect the presence of invasive species and diseases in Puerto Rican waters, among other threats to hard corals. Two species of soft corals—*Xenia umbellata* and *Latissimia ningalooensis*—were detected for the first time around the island in 2023 and 2025, respectively. Their ability to spread rapidly and consume ecosystem resources represents one of the main threats to hard corals in Caribbean waters, the report notes.

Nilda Jiménez, a biologist with the Department of Natural and Environmental Resources (DRNA), explained that the presence of these soft corals poses a risk to the survival of hard corals that play a critical role in the ecosystem, such as brain coral, elkhorn coral, and staghorn coral.

“There is a portion of coral that we consider functionally extinct,” Hernández noted. “When the physical separation between surviving colonies becomes kilometers apart… there’s no way that, when these corals spawn, the gametes will meet in the water and successfully fertilize. They haven’t disappeared entirely, but the reproductive situation is so precarious that they won’t reproduce naturally,” he added.

Hernández emphasized that hard corals are crucial to “marine infrastructure,” as they form the foundation of reefs and provide habitat for other species.

## What are the main threats?

The GCRMN report outlines the major events that have caused mass coral mortality in the Caribbean since 1970.

Since then, chronic stressors affecting corals have increased. At least three mass bleaching events have been documented—in 1998, 2005, and 2023–2024. In 2014, stony coral tissue loss disease (SCTLD) was detected in the region; in Puerto Rico, it has been observed since 2019. Two mass mortality events involving a species of sea urchin (*Diadema antillarum*) in 1983–84 and in 2022 led to an increase in macroalgae following the loss of these herbivores. In Puerto Rico, macroalgae presence has increased “steadily (since 2005) and exceeded 20% since 2015,” the report states.

The impact of bleaching events has been documented throughout Puerto Rico. Hernández noted that the 2005 event affected much of the local reefs. Not all corals died, but some took three years to recover and showed growth by 2008.

“2023 was very significant in the southwest—we lost almost all the corals in the shallow areas there. In 2024, it affected the entire island, with even greater impact,” said Jiménez, whose work is also cited in the report.

Rising temperatures due to climate change are also identified as a major risk to reefs. Sea surface temperatures around Puerto Rico increased by 1 degree Celsius between 1985 and 2024, averaging 0.026 degrees per year.

Competition for space and resources from soft corals and certain algae has caused drastic changes to the seafloor. Hernández described, for example, invasive coral colonies off the coast of Guánica that extend more than 200 meters wide and continue beyond depths of 200 feet.

“When coral dies, the exposed skeleton surface remains. In theory, that space should be available for new coral larvae to settle and establish, but that process is absurdly slow, while these algae—and invasive corals—can colonize open space almost instantly once they become established,” he explained.

In May 2014, the DRNA declared an emergency for marine ecosystems, coral reefs, and protected species due to the arrival of invasive species, specifically octocorals from the family *Xeniidae*.

The emergency declaration, which has since expired, allowed for intervention and removal of the species in some areas, although Jiménez acknowledged challenges in the process—particularly after recommendations were made to suspend manual removal of these corals, which can regenerate “from a single tentacle.”

Hernández said the declaration enabled access to $1 million to study their impact, with results to be published soon.

## Current and future actions

The GCRMN outlines a series of recommendations Caribbean nations should follow to protect and promote coral restoration. These include integrating coral reef protection and restoration into climate and biodiversity strategies, reducing local threats and greenhouse gas emissions, and implementing effective conservation measures tailored to each region and its “ecologically connected” areas.

Jiménez noted that multiple efforts are underway to support coral restoration. One DRNA project seeks to use sexual reproduction techniques, collecting gametes released by corals, raising them in nurseries, and later returning them to the sea.

There is particular concern for pillar coral colonies, which are endangered. Six other hard coral species present in Puerto Rico are classified as threatened, Jiménez added.

“The colonies we have left are so far apart that natural reproduction is very unlikely,” she said. “We’ve already identified where those colonies are… We want to maintain genetic diversity in nurseries and, when we outplant them, place them in ways that allow reproduction.”

Hernández emphasized that efforts must involve government, the private sector, academia, and nonprofit organizations currently leading coral research and protection projects. He suggested that the government identify a funding source, such as a tax on luxury items or a fee included in vehicle registration payments.

“If we want reefs 50 years from now, we have to start now, given how slowly corals grow,” he concluded.

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