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Press Release



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LARGEST ANALYSIS OF CORAL REEF HEALTH EVER UNDERTAKEN

RISING SEA SURFACE TEMPERATURES DRIVING THE LOSS OF 14 PERCENT OF CORALS SINCE 2009; SOME SHOW RESILIENCE, OFFERING HOPE FOR RECOVERY

5th October 2021: The “[Status of Coral Reefs of the World: 2020](#)” report, released today, documents the loss of approximately 14 per cent of the world’s coral since 2009. The report, the sixth edition produced by the [Global Coral Reef Monitoring Network \(GCRMN\)](#), provides the most detailed scientific picture to date of the toll elevated temperatures have taken on the world’s reefs.

This, the largest analysis of global coral reef health ever undertaken draws on data:

- spanning 40 years
- in 73 countries
- across 12,000 sites
- collected by more than 300 scientists
- through 2 million individual observations.

Corals reefs across the world are under relentless stress from warming caused by climate change and other local pressures such as overfishing, unsustainable coastal development and declining water quality. An irrevocable loss of coral reefs would be catastrophic. Although reefs cover only 0.2 per cent of the ocean floor they are home to at least a quarter of all marine species, providing critical habitat and a fundamental source of protein, as well as life-saving medicines. It is estimated that hundreds of millions of people around the world depend on them for food, jobs and protection from storms and erosion.

However, the report also found that many of the world’s coral reefs remain resilient and can recover if conditions allow, providing hope for the long-term health of coral reefs if immediate steps are taken to stabilize emissions to curb future warming.

Dr Paul Hardisty, CEO of the Australian Institute of Marine Science: *“This study is the most detailed analysis to date on the state of the world’s coral reefs, and the news is mixed. There are clearly unsettling trends toward coral loss, and we can expect these to continue as warming persists. Despite this, some reefs have shown a remarkable ability to bounce back, which offers hope for the future recovery of degraded reefs. A clear message from the study is that climate change is the biggest threat to the world’s reefs, and*

we must all do our part by urgently curbing global greenhouse gas emissions and mitigating local pressures.”

The analysis which examined 10 coral reef-bearing regions around the world¹ showed that coral bleaching events caused by elevated sea surface temperatures (SSTs) were the main driver of coral loss, including an acute event in 1998 that is estimated to have killed eight percent of the world’s corals, which, to put this in context, is more than all the coral that is currently living on reefs in the Caribbean or Red Sea and Gulf of Aden regions. The longer-term decline seen during the last decade coincided with persistent elevated SSTs.

Albert II, Prince of Monaco: *“Coral reefs, so fragile and of such importance, are currently under serious threat. Ocean acidification, global warming, pollution: the causes of these threats are many and particularly difficult to address, insofar as they are extremely diffuse, and result from our entire development paradigm. We know that solutions exist that will help us to protect the corals more effectively, to mitigate the threats hanging over them and, by developing scientific research, to gain a better understanding of how we can save them”.*

The analysis investigates changes in the cover of both live hard coral and algae. Live hard coral cover is a scientifically based indicator of coral reef health, while increases in algae are a widely accepted signal of stress to reefs. Since 1978, when the first data used in the report were collected, there has been a 9 per cent decline in the amount of hard coral worldwide. Between 2010 and 2019, the amount of algae has increased by 20 per cent, corresponding with declines in hard coral cover. This progressive transition from coral to algae-dominated reef communities reduces the complex habitat that is essential to support high levels of biodiversity.

The report also highlighted that although during the last decade the interval between mass coral bleaching events has been insufficient to allow coral reefs to fully recover, some recovery was observed in 2019 with coral reefs regaining 2% of the coral cover. This indicates that coral reefs are still resilient and if pressures on these critical ecosystems ease, then they have the capacity to recover, potentially within a decade, to the healthy, flourishing reefs that were prevalent pre-1998.

Inger Andersen, Executive Director of the UN Environment Programme (UNEP), which provided financial, technical and communication support to the report: *“Since 2009 we have lost more coral, worldwide, than all the living coral in Australia. We are running out of time: we can reverse losses, but we have to act now. At the upcoming climate conference in Glasgow and biodiversity conference in Kunming, decision-makers have an opportunity to show leadership and save our reefs, but only if they are willing to take bold steps. We must not leave future generations to inherit a world without coral.”*

Key findings:

- Large scale coral bleaching events are the greatest disturbance to the world’s coral reefs. The 1998 event alone killed eight per cent of the world’s coral, which is the equivalent of about 6,500 square kilometres of coral. The greatest impacts of this mass bleaching event were seen in the Indian Ocean, Japan, and the Caribbean, with smaller impacts observed in the Red Sea, The Gulf, the northern Pacific in Hawaii and the Caroline Islands, and the southern Pacific in Samoa and New Caledonia.

¹ Australia, Caribbean, Brazil, East Asian Seas, Eastern Tropical Pacific, Pacific, South Asia, Western Indian Ocean, Red Sea and Gulf of Aden, and the ROPME Sea Area.

- Between 2009 and 2018, the world lost about 14 per cent of the coral on its coral reefs, which equates to around 11,700 square kilometres of coral, more than all the living coral in Australia.
- Reef algae, which grows during periods of stress, has increased by 20 per cent over the past decade.
- Prior to this, on average there was twice as much coral on the world's reefs as algae.
- Coral reefs in East Asia's Coral Triangle, which is the centre of coral reef biodiversity and accounts for more than 30 per cent of the world's reefs, have been less impacted by rising sea surface temperatures. Despite some declines in hard coral during the last decade, on average, these reefs have more coral today than in 1983 when the first data from this region were collected.
- Almost invariably, sharp declines in coral cover corresponded with rapid increases in sea surface temperatures, indicating their vulnerability to spikes, which is a phenomenon that is likely to happen more frequently as the planet continues to warm.

[Launch event 5th October - https://www.icriforum.org/events/gcrmn-2020-report-launch/](https://www.icriforum.org/events/gcrmn-2020-report-launch/)

ENDS

Notes to editors

1. UNEP has created a [dynamic data visualization](#) that distils the report findings for non-scientists in all UN languages, plus Portuguese, Bahasa Indonesia and Swahili with an aim to: generating increased media coverage in regions; getting coverage in more mainstream media outlets; and wider interest from public.
2. The report examines the status and trends in the world's coral reefs since 1978 and pays special attention to increasingly frequent mass global coral bleaching events, the first of which occurred in 1998. It draws on a global dataset made up of almost 2 million observations from more than 12,000 collection sites in 73 countries across the 10 GCRMN regions: Australia, Caribbean, Brazil, East Asian Seas, Eastern Tropical Pacific, Pacific, South Asia, Western Indian Ocean, Red Sea and Gulf of Aden, and the ROPME² Sea Area which includes The Gulf and the Gulf of Oman.
3. The cover of live hard coral and algae were the two indicators of reef health used by the researchers. Both are widely accepted metrics of ecological degradation and standardized protocols allowed for a quantitative global analysis.
4. Confidence in estimates of the global average cover of hard coral is much greater after 1998 when monitoring effort and the availability of data increased.
5. The report was not able to assess changes in the species composition of coral and fish communities on the world's coral reefs caused by large-scale disturbances because of the variation in the way in which coral reef monitoring programs around the world collect these data.
6. The latest IPCC report has warned that temperatures will continue rising without large-scale and immediate action and that existing ocean warming will persist for centuries to millennia.
7. The Global Coral Reef Monitoring Network (GCRMN) is an operational network of the International Coral Reef Initiative that aims to provide the best available scientific information on the status and

² The Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area is situated to the northeast of the Arabian plate and is made up of the Gulf, the Sea of Oman extending to the Pakistan border, and the Oman portion of the western Arabian Sea.

The GCRMN region known as the ROPME Sea Area is bordered by the eight member nations of ROPME (Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) and Yemen.

trends of coral reef ecosystems for their conservation and management. The GCRMN is a global network of scientists, managers and organisations that monitor the condition of coral reefs throughout the world. The GCRMN operates through 10 regional nodes, each coordinated by a Regional Coordinator or coordinating organisation.

Regional findings

1. Since 2010, almost all regions experienced coral loss with the ROPME Sea Area (around the Arabian Peninsula), South Asia, Australia and the Pacific showing the greatest declines. Statistical probabilities of decline exceeded 75 per cent in these regions, as well as in East Asia and the Western Indian Ocean—together comprising almost 50 percent of the world's coral reefs.
2. ROPME Sea Area, Eastern Tropical Pacific, Red Sea and Gulf of Aden, Caribbean, Australia and Brazil all exhibited an increase in the cover of algae.
3. In areas where there is high confidence of the data, long-term losses of coral ranged from 5 percent in East Asia to 95 per cent in the Eastern Tropical Pacific. In Australia, the Caribbean, Eastern Tropical Pacific, and South Asia, greater than 75 per cent of areas that been repeatedly monitored for more than 15 years and had suffered a significant disturbance failed to recover fully to pre-disturbance condition.
4. A major break from this pattern was observed in East Asia's Coral Triangle region, which contains almost 30 per cent of the world's coral reefs, where they less impacted by thermal disturbances and in some cases recovery. Hard coral cover increased progressively from 32.8 per cent in 1983 to 40.8 percent in 2009. More recent data shows fluctuations, but coral cover remained higher in 2019 than in 1983, when the data was first collected. Resilience shown by these coral reefs may speak to advantageous traits found in the region's diverse corals, potentially offering insights for how to protect other species and recovery in the face of warming temperatures.

Partner Information

ICRI

The International Coral Reef Initiative (ICRI) is a proactive partnership between Nations and organisations which strives to preserve coral reefs and related ecosystems around the world. Founded in 1994 by eight governments, the initiative emerged from the recognition that coral reefs and related ecosystems were facing serious degradation. The initiative now hosts over 90 members and its actions are pivotal in continuing to highlight the importance of coral reefs and related ecosystems to environmental suitability, food security and cultural wellbeing.

ICRI is currently co-chaired by Australia, Indonesia and Monaco, enacting the objectives adopted under the 2018-2021 Plan of Action. These actions are supported by three ad-hoc committees that focus on coral reef restoration, resilience-based management and the Convention on Biological Diversity Post-2020 Global Biodiversity Framework. On October 5th 2021, the current co-chairmanship will hand over the ICRI Secretariat to the United States of America, a founding member, who will host the secretariat for the third time www.icriforum.org

GCRMN

The Global Coral Reef Monitoring Network (GCRMN), founded as a network under the International Coral Reef Initiative (ICRI) in 1998, is an operational network of the International Coral Reef Initiative that aims to provide the best available scientific information on the status and trends of coral reef ecosystems for their conservation and management. The GCRMN is a global network of scientists, managers and organisations that monitor the condition of coral reefs throughout the world. The GCRMN operates through 10 regional nodes, each coordinated by a Regional Coordinator or coordinating organisation. The network is driven by

the need to strengthen scientific understanding of the status and trends of coral reef ecosystems while making global and regional coral reef monitoring data available to the public and building capacity amongst stakeholders.

The flagship product of the GCRMN is the Status of Coral Reefs of the World report that describes the status and trends of coral reefs worldwide.

AIMS

The Australian Institute of Marine Science (AIMS) is Australia's tropical marine research agency. In existence for almost half a century, it plays a pivotal role in providing large-scale, long-term and world-class research that helps governments, industry and the wider community to make informed decisions about the management of Australia's marine estate. AIMS science leads to healthier marine ecosystems; economic, social and environmental benefits for all Australians; and protection of coral reefs from climate change. AIMS is the hosting institution for the GCRMN. More here: www.aims.gov.au

UNEP

The United Nations Environment Programme (UNEP) provided financial and technical support to the report, facilitated regional and global workshops to collate and analyse the evidence, and provided review. UNEP promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment.

www.unep.org