QUICK LOOK

AIMS' ANNUAL SUMMARY REPORT OF CORAL REEF CONDITION 2021/2022 FOR THE GREAT BARRIER REEF

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For 36 years, the Australian Institute of Marine Science has surveyed the condition of numerous reefs across the Great Barrier Reef (the Reef). This program, called the Long-Term Monitoring Program (LTMP), is an essential resource for governments and agencies involved in the management and protection of the Reef.

Results are published annually. The latest edition for 2021/22 is now available.

Researchers use hard coral cover as an indicator of the condition of each reef. The LTMP also estimates crown-of-thorns starfish populations, coral bleaching levels and fish numbers.

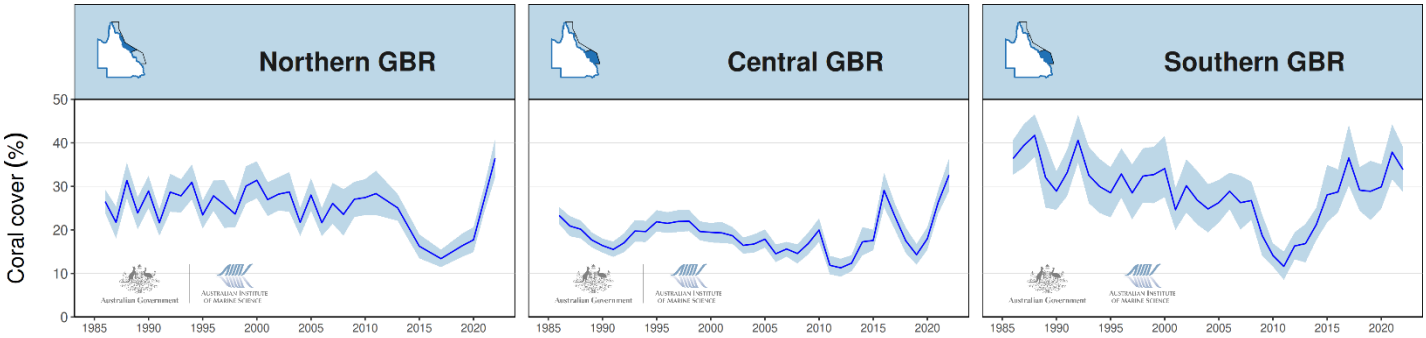
For this report, the perimeters of 87 reefs were surveyed between August 2021 and May 2022. Survey reefs are primarily on the mid to outer shelf of the Reef.

Overall findings

Reef recovery continues, with highest coral cover in central and northern Reef in 36 years.

Ongoing, widespread recovery has led to the highest coral cover recorded for the northern and central regions of the Great Barrier Reef in 36 years of monitoring. This recovery continues to be driven by fast-growing branching and table corals (*Acropora* species).

Hard coral cover in the southern region decreased from 2021, due to predation by crown-of-thorns starfish. However, the average coral cover in this region remains comparable to the northern and central regions.



Trends in the percentage of hard coral cover on the Northern, Central and Southern Great Barrier Reef (GBR) from underwater surveys from the AIMS Long-Term Monitoring Program up to the 2021/22 survey year.

The fourth mass coral bleaching event since 2016 developed over the late summer of 2022; the first to occur in a La Niña year. Heat stress across the Reef reached levels where widespread bleaching was expected. This was confirmed by aerial and in-water bleaching surveys. However, the heat stress did not reach levels where extensive mortality is expected.

Percentage of hard coral cover was variable across the Reef:

- 1 reef had 0-10% coral cover
- 39 reefs had 10-30% coral cover
- 28 reefs had 30-50% coral cover
- 17 reefs had 50-75% coral cover
- 2 reefs had more than 75% coral cover

The 2022 mass bleaching event

In the summer of 2022, the Great Barrier Reef experienced a widespread marine heatwave across the Marine Park. Aerial surveys at the peak of the event in March recorded widespread coral bleaching, with reefs in the central region most severely affected. Bleaching was observed by the LTMP between January and March. Due to the Program's set survey schedule, few reefs were surveyed at the peak of the bleaching event.

Heat stress across the reef was not uniform. Of the 87 LTMP reefs, 59 experienced levels of heat stress where bleaching is expected, but mortality is unlikely. Only one surveyed reef experienced a level of heat stress where mortality is expected.

This was the fourth mass bleaching event on the Great Barrier Reef since 2016 and the first to occur in a La Niña year. However, the number of reefs severely affected by heat stress was lower in 2020 and 2022 than in 2016 and 2017.

The effects of the 2022 mass bleaching event are still unfolding, and its impact will only be known over the coming months.

What do our findings mean for the Great Barrier Reef?

The survey results show the Reef retains resilience, with continued recovery across most of the Great Barrier Reef. Coral cover is at the highest levels in the 36-year history of the monitoring program in the northern and central region. This recovery is primarily driven by fast-growing branching and plate corals (*Acropora* species), as has been seen previously. These fast-growing corals provide good habitat for fish and other reef animals, but are vulnerable to disturbances such marine heatwaves, cyclones and crown-of-thorns starfish predation. These gains can be lost quickly with another large-scale disturbance that causes extensive mortality.

Coral cover decreased in the southern region, primarily due to crown-of thorns starfish in the Swain reefs. The ongoing disturbance in this region is an example of the dynamic nature of the Reef - where some areas gain, others lose, and increases can quickly be negated.

The recovery seen this year occurred despite widespread bleaching in 2020 and again in 2022, showing bleaching events do not always lead to widespread mortality. The 2022 bleaching event was less intense than the 2016, 2017 and even the 2020 events, and mortality is expected to be lower. However, the non-lethal effects of frequent bleaching events will take time to be fully understood. While bleached corals can survive, they may suffer reduced growth, reduced reproductive output and fewer young.

The increased frequency and extent of bleaching events remains concerning. Each year, the Reef is at increased risk of widespread coral bleaching due to climate change, which means time for recovery is becoming shorter.

Large-scale, long-term monitoring continues to provide the most reliable information on the current condition and trends and help understand its future under climate change.

Northern Great Barrier Reef – from Cape York to Cooktown

- The survey covered 26 reefs.
- Average hard coral cover was estimated at 36%, a record high for the LTMP in this region. The previous historical high for coral cover in this region was 32%, recorded in 1988. The region has experienced continual coral cover increases from the most recent low point of 13%, recorded in 2017.

Coral cover varied among reefs. All but three reefs had increased in coral cover, showing continued recovery of the region from a period of significant disturbances between 2014 and 2020. Much of this recovery was in the Cape Grenville and Princess Charlotte Bay sectors, both severely impacted by the 2016 mass coral bleaching event.

A summary of recent disturbances and changes in coral cover is available in the report.

Overall, crown-of-thorns starfish numbers were low.

No bleaching was recorded during the LTMP in-water surveys of the northern region, as they were conducted before peak temperatures and the mass bleaching event. Aerial surveys during the height of the bleaching event recorded bleaching at eight LTMP survey reefs. Most had between 30-60% of colonies bleached, and three had 10-30% of colonies bleached.

Central Great Barrier Reef – from Cooktown to Proserpine

- The survey covered 33 reefs.
- Average hard coral cover was estimated at 33%, a record high for the LTMP in this region. The previous highest regional average was 29%, recorded in 2016. The most recent average low coral cover was 14% in 2019.

Coral cover varied among reefs. This year, all but four reefs surveyed within two years had increased in coral cover, indicating continued recovery in the region.

A summary of recent disturbances and changes in coral cover is available in the report.

Aerial bleaching surveys at the height of the event recorded severe bleaching at 22 LTMP reefs, and moderate or major bleaching at seven reefs.

Despite crown-of-thorns starfish outbreaks occurring in this region in previous years, there were no outbreaks recorded this year. This is likely a result of active starfish culling by the Crown-of-thorns Starfish Control Program.

Southern Great Barrier Reef – from Proserpine to Gladstone

- The survey covered 28 reefs.
- Average hard coral cover was estimated at 34%, a decrease from the 2021 estimate of 38%.

Coral cover was highly varied among reefs. The southern region was the only region to decrease in coral cover in 2022, driven primarily by crown-of-thorns starfish predation. Six out of 24 reefs surveyed in the past two years decreased in coral cover due to outbreaks in the Swains reefs. There has been starfish culling activity by the Crown-of-thorns Starfish Control Program in the area.

Widespread but low levels of bleaching was recorded during the January 2022 surveys in the region. Aerial surveys at the peak of the bleaching event saw varied bleaching across the region. Of the 15 LTMP reefs also surveyed by the aerial survey team, two reefs escaped bleaching, 11 reefs had low and minor bleaching and three had major levels of bleaching.

Over the past 36 years, the southern region has been the most dynamic of the three Great Barrier Reef regions. A summary of recent disturbances and changes in coral cover is available in the report.

More information

- Read the full *Annual Summary Report of Coral Reef Condition 2021/2022.*
- Learn more about the AIMS Long-Term Monitoring Program.
- AIMS' Long-term Monitoring Program contributes to the Reef 2050 Integrated Monitoring and Reporting Program.
- Access individual reef survey and sector reports on the AIMS website.

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