

## Great Barrier Reef corals in modest rebound, then hit by mass bleaching

For over 30 years, the Australian Institute of Marine Science (AIMS) has surveyed the health of selected reefs across the Great Barrier Reef (GBR). Called the Long-Term Monitoring Program (LTMP), it comprises an essential resource for governments and everyone involved in its management and protection.

Results are published annually. The 2019/20 edition, *Long-Term Monitoring Program - Annual Summary Report on coral reef condition for 2019/20*, has just been released.

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

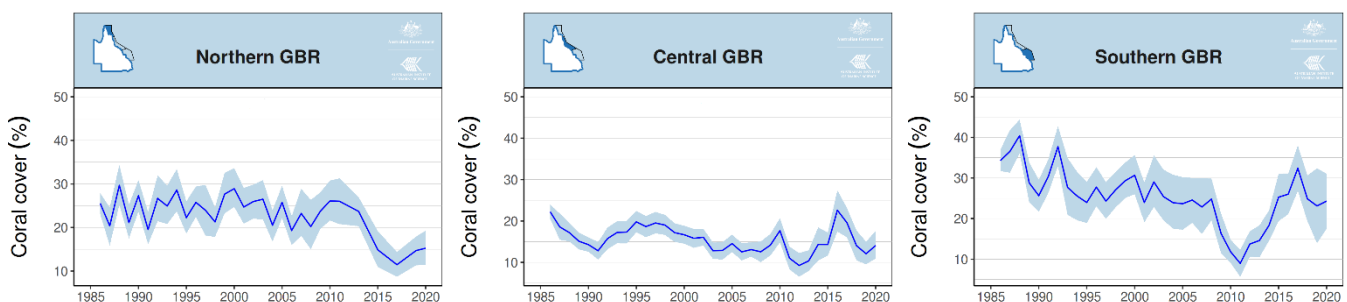
For this report, the perimeters of 86 reefs were surveyed between September 2019 and June 2020.

### Overall findings

Coral cover on the GBR increased slightly last year, but these gains may have been lost to a mass bleaching event, the impact of which will not be known for months.

Despite some improvement, coral cover in the Northern and Central regions still sits at close to the lowest levels recorded since the program began in 1985. Coral cover in the Southern region increased to 24%, up a single per cent from the previous year but still markedly below the highest level in recent years – 32% in 2017.

Coral trout numbers are growing in no-take marine reserves, or 'Green Zones'.



Trends in the percentage of hard coral cover on the Northern, Central and Southern Great Barrier Reef from underwater surveys from the AIMS Long-term Monitoring Program.

Percentage coral cover was variable across the Marine Park. Of the reefs surveyed:

- 26 had low (0 to 10%) coral cover
- 32 had moderate (10-30%) coral cover
- 23 had high (30-50%) coral cover
- 5 had very high (50-75%) coral cover

Most of those with low or moderate cover were in the Northern and Central regions.

The number of reefs with crown-of-thorns starfish outbreaks declined in the Central region but remained stable in the Southern. There were no severe cyclones over this survey period.

## What have we learned?

The long-term data confirm the reefs of the GBR have the ability to recover after disturbances. However, such resilience has limits, and the 2020 bleaching event is likely another setback.

The predicted consequences of climate change, including more frequent and intense bleaching events, are now reality. Reefs may take up to decades to recover from severe coral loss, but the more frequent onset of these events is reducing the time for recovery.

Chronic stressors such as high turbidity, increasing ocean temperatures and changing ocean chemistry can affect rates of recovery, while more frequent acute disturbances mean recovery intervals are shrinking. These will inevitably lead to less living coral on the Reef.

## The Northern region – from Cape York to Hinchinbrook Island

- The survey covered 26 reefs.
- Average hard coral cover was estimated at 15%, stable from the previous year. It has increased from the lowest-ever level of 12% in 2017, but still well below the 1988 peak of 30%.

There was substantial variation between reefs in the region, with several having less than 10% cover, and a few coming in between 50 and 75%. The reefs had also been surveyed in 2018 and 2019. All but two recorded increases in hard coral cover between 1 and 6% each year.

There was little evidence of crown-of-thorn activity or coral disease.

Many of the reefs showed widespread low-level bleaching before the main mass bleaching event of late summer 2020.

## The Central region – from Hinchinbrook Island to Mackay

- The survey covered 33 reefs.
- Average hard coral cover was 14% – up from 12% the previous year.

Long-term results show that hard coral cover on these reefs is generally less than that on those in Northern and Southern regions.

Cover hit the lowest level recorded by LTMP in 2012 – just 9% – due to the impact of Tropical Cyclone Yasi in 2011. In 2016 it hit another milestone, rising to the highest ever recorded level, at 23%. Mass bleaching events in 2016 and 2017, plus crown-of-thorns activity, reversed the trend, with cover reducing each year – until its modest uptick in the current survey.

14 reefs had less than 10% hard cover coral, and none had more than 50%.

There were no active crown-of-thorns outbreaks. However, low to moderate bleaching was widespread.

## The Southern region – from Mackay to Gladstone.

- The survey covered 27 reefs.
- Average hard coral cover was 24% – up from 23% the previous year.

In general, the Southern region has the highest hard coral cover, but is also the most dynamic. After record lows of 9% in 2011 due to Tropical Cyclone Hamish in 2009, there was a strong increase in coral cover to 32% in 2017. Crown-of-thorns starfish outbreaks have reduced coral cover in recent years. Currently, the area has active outbreaks on four reefs, with early signs of an outbreak appearing at a fifth.

The region escaped the extreme sea surface temperatures that led to the 2016 and 2017 Central and Northern region mass bleaching events. However, warmer-than-usual ocean temperatures were recorded during the summer of 2020.

LTMP results found low levels of bleaching on a single reef. Later, aerial surveys conducted by the ARC Centre of Excellence in Coral Reef studies revealed widespread severe bleaching. The next surveying season will provide more data on the impacts of this event.

## Fish stocks in “no-take” areas

The LTMP confirmed a continuing population increase for coral trout (*Plectropomus* and *Variola* species) in no-take marine reserves in which fishing is prohibited. Coral trout abundance was 91% higher and biomass – the total weight of all fish – was 122% higher on reefs inside no-take marine reserves compared to reefs open to fishing. These reserves, known as Green Zones, were expanded in 2004, and account for 33% of the park area.

Mass and numbers for other species such as snapper and emperors remain at 2012 levels.

## More information

- More about the [AIMS Long-Term Monitoring Program](#)
- Enquiries about the Program can be made to <mailto:monitoring@aims.gov.au>