Coral Health Update

Last summer saw the highest global Sea Surface Temperatures on record and waters in the Lord Howe Island Marine Park (LHIMP) followed this trend. When water temperatures are warmer than average, marine "heat stress" builds up over time. This resulted in coral bleaching in the LHIMP last summer.

Many affected corals recovered as water temperatures cooled from April. However, extreme low tides in May exposed areas of shallow coral to the air, causing the uppermost 15-20cm of some of these reefs to die. The skeletons of these recently dead corals now have a fine layer of algae growing on them.

A monitoring and response plan was implemented by LHIMP staff throughout these events in collaboration with researchers from The University of Newcastle, University of New South Wales and Southern Cross University. Actions included:

- deploying additional water temperature loggers in the lagoon
- conducting targeted drone aerial mapping to identify heat stress impacts
- performing systematic in-water visual surveys to assess heat stress impacts and recovery

A full analysis of the impact and recovery from these events is underway, and results will be shared with the community when available.

Monitoring marine heat stress and coral bleaching in the Lord Howe Island Marine Park

Outlook for 2025

The elevated sea temperatures in the LHIMP last summer were driven by both global warming and El Niño climate conditions. The tropical Pacific Ocean usually alternates between warm phases (El Niño) and cool phases (La Niña), with previous coral bleaching events in the LHIMP linked to El Niño conditions.

The National Ocean and Atmospheric Administration (NOAA) has recently declared a La Niña (cool phase) event however it is likely to be weak and short-lived. The Australian Bureau of Meteorology has not made a similar declaration.

Despite this, sea surface temperatures remain above average both globally and in the LHIMP and may cross the bleaching threshold again this summer. Local conditions such as swell, cloud cover and tidal height will also influence water temperatures and marine heat stress in the LHIMP, particularly in the sheltered lagoon.

The likelihood of bleaching also depends on the species, depth, location and local weather conditions. Deeper reefs with high water flow are less vulnerable than shallow and sheltered lagoon reefs.

Monitoring and response

LHIMP staff will continue the monitoring and response plan this summer, with teams from partner universities due to visit in the coming months. Residents and visitors to Lord Howe Island are encouraged to report any observed coral bleaching and marine heat stress impacts to the marine park office.

The resilience and recovery of marine life benefits from the marine park's management rules and conservation programs which aim to protect biodiversity and maintain ecosystem health. These include sanctuary zones, shipping and vessel pollution controls, permit conditions to limit impacts from activities, planning and development controls, anchoring restrictions, maintenance of courtesy moorings for accessing lagoon reefs, monitoring and response to aquatic biosecurity risks, fishing gear and species restrictions, limits on collection, prohibition of aquaculture and exploratory industries, ongoing research and monitoring programs, and education.

These measures support the long-term health of the LHIMP and its unique ecosystems.

Useful links

- Climate Change Institute - Climate Reanalyzer world daily sea surface temperature: https://climatereanalyzer.org/clim/sst_daily/
- Coral Reef Health explanation of coral bleaching: https://coralreefhealth.com/coral-bleaching/
- National Ocean and Atmospheric Administration - Coral Reef Watch (NOAA CRW) heat stress gauge for Lord Howe Island: https://coralreefwatch.noaa.gov/product/vs/gauges/lord_howe_island.php
- Bureau of Meteorology (BOM) sea surface temperature forecast: http://www.bom.gov.au/oceanography/forecasts/idyoc300.shtml?region=LordHowe&forecast=SSTCur#
- Statewide NSW Marine Estate Heatwave Response Plan 2023/2024: https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/1500956/DPI-Marine-Heatwave-Response-Plan.pdf
- Bureau of Meteorology (BOM) information regarding El Niño and La Niña forecast: http://www.bom.gov.au/climate/enso/?ninoIndex=nino3.4&index=nino34&period=weekly