



Information sheet

The vulnerability of reefs to environmental and human pressures make them among the most threatened ecosystems on Earth. To ensure reefs thrive now and into the future, there is a need to track how reef life responds to changing conditions. This requires ecological indicators that provide meaningful measures of change. Just as blood pressure and body temperature reflect our own health, these indicators reflect reef health. From habitat loss and sea urchin densities to fish species change and rising ocean temperatures, they distil complex relationships in the marine environment, allowing the creation of trend-lines tracking the condition of reef ecosystems over time.

What does Reef Life Explorer reveal?

CLIMATE CHANGE

WHAT'S THE THREAT?

- The vulnerability of reefs to the impacts of climate change – caused by rising sea temperatures, extreme weather events and ocean acidification – makes them among the most threatened ecosystems on Earth⁵
- According to UNESCO, if we were to continue emitting carbon (business-as-usual), the coral reefs in all 29 reef-containing World Heritage sites would cease to exist by the end of this century⁵
- Limiting temperature rise to well below 2°C (above pre-industrial levels) provides the only chance for the survival of coral reefs globally⁵
- Over half of the Great Barrier Reef's coral cover has been lost since the 1980s, with nearly 30% of shallow water corals dying from the 2016 bleaching alone¹

EXPLORER FINDINGS

Reef Life Explorer data confirms that the impacts of climate change are already being felt across the majority of reefs monitored around Australia, with even temperate reefs experiencing shifts in local fish communities over time.

Recent heatwaves in Western Australia caused rapid, unprecedented shifts in the species mix of local reef ecosystems, while declines in the local diversity of invertebrate species across most of southern Australia show local reef systems are under increased pressures associated with warming.



SPECIES & HABITAT LOSS

WHAT'S THE THREAT?

- Around 66% of the marine environment have been significantly altered by human actions ²
- More than a third of all marine mammals – and almost 33% of reef-forming corals – are now threatened ²
- Around half of all live reef coral cover has been lost since 1870s ¹
- Degrading ecosystems and biodiversity loss could undermine progress towards 35 out of 44 of the Sustainable Development Goals – relating to poverty, hunger, health, water, cities, climate, oceans and land – making it not only an environmental issue, but an economic, social and moral one as well ²

EXPLORER FINDING

Reef Life Explorer confirms The Coral Triangle to have the richest diversity of marine life in the world. But this biodiversity hotspot is also highly susceptible to exploitation without the appropriate marine protection and management practices in place.

In time, Reef Life Explorer will reveal the impacts of climate change, coastal development and exploitation on coral reef and kelp forest habitats, and the flow-on effects these pressures have on reef fish communities.

OVERFISHING

WHAT'S THE THREAT?

- Overfishing affects just over half of the world's coral reefs ³
- According to the Food and Agriculture Organization of the United Nations, a third of the world's *assessed* fisheries have already been pushed beyond their sustainable limits. ⁴

EXPLORER FINDING

Almost no reef ecosystem is free from the pressure and impact of fishing. Through time, Reef Life Explorer will reveal whether global fisheries management is successful at maintaining or rebuilding large reef fish stocks.

While Australia's abundance of large reef fish, reef sharks and rays confirms the global significance of our reef ecosystems, it also emphasises the importance of both protection and good management practises in ensuring their future health.



- (1) <https://citizensgbr.org/the-reefs-greatest-threats>
- (2) <https://www.un.org/sustainabledevelopment/blog/2019/05/nature-decline-unprecedented-report/>
- (3) <https://coral.org/coral-reefs-101/reef-threats/direct/>
- (4) <https://www.worldwildlife.org/threats/overfishing>
- (5) <https://www.iucn.org/resources/issues-briefs/coral-reefs-and-climate-change>

PARTNERS & COLLABORATORS

REEF LIFE SURVEY

Reef Life Survey (RLS) provides a new model for ecological monitoring, by training experienced recreational divers in conducting underwater visual census methods, to the level of skilled scientists. Detail produced is similar to that of programs with professional scientific teams, at low cost to allow global coverage.

RLS differs from most other citizen science initiatives in its emphasis on rigorous training and data quality rather than open participation, selectively involving the most skilled and committed members. Volunteers participate primarily because they appreciate the close relationship with scientists, other divers, and managers, and see their efforts directly contributing to improved environmental outcomes. RLS works closely with Australian management agencies, scheduling annual events at core monitoring sites Australia-wide.

Reef Life Survey (RLS) was initiated as a three-year pilot program (2007–10) supported by the Australian government through the Commonwealth Environment Research Facilities program and hosted by the University of Tasmania. The program aimed to test the capacity of a team of volunteer divers to collect standardized density data on marine life across the broadest geographic, temporal and taxonomic scales, which a single team of professional scientists is unable to cover.

INSTITUTE FOR MARINE & ANTARCTIC STUDIES

AT THE UNIVERSITY OF TASMANIA

Reef Life Survey was initiated by researchers at the University of Tasmania with seed funding provided by the Commonwealth Environment Research Facilities (CERF) Program, an Australian Government initiative supporting world class, public-good research.

REEF LIFE EXPLORER

SEE WHAT'S GOING ON
BENEATH THE SURFACE.



IMMERSE YOURSELF

Institute for Marine & Antarctic Studies (IMAS) at the University of Tasmania continues to provide extensive support to RLS, including the management of survey data produced by RLS volunteer divers.

GLIDER

GLIDER is a research and conceptual studio, working in the area of human futures, strategic innovation and transformation. From strategic and multi-modal brand and data visualisation platforms to immersive dinners and art installations, GLIDER creates imaginative forums for rich conversation aimed at exploring all the beauty and complexity of what it means to Be Human, and to be living on this planet, together.

GLIDER's partnership on Reef Life Explorer represents a shared commitment to fostering meaningful conversations on the most important human issues affecting our society, our environment and our future – so we can better understand ourselves, each other and the world we live in.

SUPPORTERS



natural resource
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Australian
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IMOS
Integrated Marine
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