



A healthy, recovering, shallow reef in Chagos with a good diversity of corals.

Resilience of Chagos' coral reefs

Chagos reefs suffered heavy mortality of hard and soft corals to depths of at least 30m following the severe coral bleaching event of 1998, related to anomalously high sea surface temperatures caused by the El Niño and global warming. Subsequent surveys showed that up to 100% of hard corals died at reef sites in all atolls studied, with shallow reefs particularly heavily impacted.

Fast growing corals, in particular *Acropora*, the most diverse and once often the most common genus on Indo-Pacific reefs, were particularly heavily impacted by the 1998 mortality, becoming a rare genus in many areas. Populations of *A. palifera* were almost entirely eliminated from shallow reef areas in Chagos. This species was formerly the dominant shallow water coral in the archipelago, commonly forming widespread dense thickets between the surface and 4m depth. The expansive monospecific structures created in shallow reef areas by this species, once the central feature of shallow reef architecture, were almost entirely lost as a result of erosion in the aftermath of the mortality, lowering the height of some shallow reef surfaces by up to 1.5m.

Research carried out eight years later, in 2006, revealed that Chagos reefs have made strong, vigorous recovery¹. They have recovered their values of benthic cover, so that, in shallow water at least, they are now similar to that of 25 years ago. There is also substantial recruitment of juvenile corals, indicating a resilient system with unusually high potential for recovery from global warming events.

The extent of this recovery, and the composition of reef benthic communities around the archipelago, varied between survey sites, depths and atolls. However this ability of Chagos reefs to 'bounce back' to rich reef communities after experiencing severe bleaching-related mortality has not been recorded in other reef environments in the Indian Ocean. It is thought that this is a direct result of the absence of the many other human impacts that affect most other reefs in the Indian Ocean.

¹ Sheppard, C. R. C., Harris, A. and Sheppard, A. L. S. (2008). Archipelago-wide coral recovery patterns since 1998 in the Chagos Archipelago, central Indian Ocean. *Marine Ecology Progress Series* 362: pp109-117.

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