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[\[Ecology\] Academia Sinica Biodiversity Researchers Discover Coral Algae Composition Differs According to Location, Findings May Contribute to Reef Conservation Efforts](#)

[Ecology] Academia Sinica Biodiversity Researchers Discover Coral Algae Composition Differs According to Location, Findings May Contribute to Reef Conservation Efforts ([Chinese Version](#))

Academia Sinica Newsletter (2012/05/03) Dr. Allen CHEN and colleagues from Academia Sinica's Biodiversity Research Center along with researchers from the Institute of Oceanography at National Taiwan University and institutions in the UK and Kenya have recently discovered that corals in the Chagos Archipelago in the Indian Ocean host different assemblages of certain single-celled algae from corals belonging to the same species in other locations in the Indian Ocean. These findings, which were published in the online scholarly journal PLoS One on May 2, 2012, may aid future efforts to conserve endangered coral reefs.

In recent decades changes in the environment such as ocean warming and water pollution, and the influence of human beings such as destructive fishing and careless tourism have threatened the destruction of coral reefs worldwide. The symbiotic relationship between scleractinian (stony) corals and single-celled algae from the genus Symbiodinium is known to contribute to the high productivity in coral reef ecosystems, and corals are known to respond to environmental changes by altering the composition of Symbiodinium. Bio-geographic studies also indicate that differences in regional environments influence this crucial algae-coral relationship. Dr. CHEN and colleagues have found that corals in the Chagos Archipelago in the Indian Ocean host different assemblages of Symbiodinium types from corals belonging to the same species in other locations in the Indian Ocean.

The Chagos Archipelago, located in the central Indian Ocean, was made a no-take marine protected area in 2010. It covers 550,000 km<sup>2</sup> and has over 60,000 km<sup>2</sup> of shallow limestone platform and reefs. Chagos is a valuable location for studying corals as it contains more than 25% of the Indian Ocean reef area in a habitat that is largely unaffected by direct, local human impact. In addition, coral diseases are extremely rare in the Chagos reefs. The role of the Chagos Archipelago in the Indian Ocean is very important for conservation of commercial fish stocks and supports densities of coral reef fishes one to two orders of magnitude greater than in other Indian Ocean locations. It also provides a scientific reference point for several aspects of Indian Ocean research and for global studies of reef condition and reef restoration.

The researchers found that stress sensitive Symbiodinium type C was most dominant in the Chagos corals, and that in some locations the corals were also associated with high light intensity adapted Symbiodinium type A. However, Symbiodinium type C is sensitive to increasing seawater temperature and this composition could therefore effect the survival of the corals in the Chagos as a result of climate change and increasing ocean temperatures. Dr. CHEN says future work will focus on the physiological aspects of corals and how they can cope with the effects of climate change.

The study was conducted in collaboration with several researchers from overseas including Dr. Charles SHEPPARD, University of Warwick a leading authority on scientific research in the Chagos Archipelago.

Earlier this year, the same researchers also co-authored a review article along with researchers from 10 countries in the journal Aquatic Conservation – Marine and Freshwater Research that discusses why the Chagos Archipelago is the world's largest no-take marine protected area. The article has become a top accessed article in aquatic conservation.

#### Related Websites:

["Diversity and distribution of Symbiodinium associated with seven common coral species in the Chagos Archipelago, central Indian Ocean" in PLoS One](#)

["Reefs and islands of the Chagos Archipelago, Indian Ocean: why it is the world's largest no-take marine protected area" in Aquatic Conservation – Marine and Freshwater Research](#)

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