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[\[BioDiversity\]\[International Cooperation\] Researchers Tabulate Disturbing Changes and Disappearance in Biodiversity in Southern Taiwan Coral Reefs over Last 26 years](#)[BioDiversity][International Cooperation] Researchers Tabulate Disturbing Changes and Disappearance in Biodiversity in Southern Taiwan Coral Reefs over Last 26 years ([Chinese Version](#))

Academia Sinica Newsletter (2012/09/11) A group of twelve researchers from Taiwan, Malaysia and Australia, including several members of Academia Sinica's Biodiversity Research Center have found that over the past 26 years the composition of the coral reefs off Kenting in South Taiwan has changed, and their biodiversity has declined. Their findings were published online in the scholarly journal PLoS One on August 30, 2012.

The researchers found that the coral reefs have been affected by six typhoons and two coral bleaching events over the past 26 years. Corals from the genera *Acropora* and *Montipora* have almost disappeared from the reefs, whereas corals belonging to genera *Favia* and *Heliopora* have maintained their presence at steady levels. Massive corals such as *Porites* have increased in abundance, whereas, hard coral species in particular have declined in abundance to less than half over the last quarter of a century, indicating that the health of the coral reefs is in jeopardy and diverse reef assemblage is declining.

The analysis of the changes in the coral communities as well as local ecological disturbances used data obtained from the Wanlitung Reef, which is located on the west coast of the Hengchun Peninsula in Kenting National Park between 1985 and 2012. Results confirmed a change in the composition of the coral communities over time from branching corals to massive corals species. Moreover the total hard coral coverage rate, which was 47.5% in 1985, had gone down to 17.7% in 2010, reducing hard coral cover in the area by 63%. In contrast, macro algae on the reefs and those corals resistant to disturbance increased from 11.3% in 2003 to 28.5% in 2010. These results show that the coral reefs in Taiwan have become less ecologically diverse may not be resilient to repeated major ecological disturbances arising from environmental changes and increased human activity.

Dr. Allen CHEN, a research fellow at the Biodiversity Research Center who led the team warned that the coral reef ecosystem provides important habitats for many highly diverse marine organisms. In addition, in 2003 the annual net income provided by coral reefs globally (net benefit per year) was estimated to be up to NT\$1 trillion (about US\$ 29.8 billion), with an approximate 500 million people worldwide (approximately 7% per cent of all mankind) estimated to live within 100 km of a coral reef. Thus, disruption to the coral reef ecosystem is a major concern to the sustainable development of human society.

Dr. CHEN believes, however, that in the face of environmental climate change, long-term ecological research on coral reefs will become increasingly important. For example, the results of the long-term analysis presented in the present study have made clear that since 1996 the reef in Kenting has been in decline as a result of multiple typhoons, particularly typhoon Morakot in 2008, and global sea-surface temperature related worldwide coral bleaching in 1998. Interestingly, a six year period between 1999 and 2005, during which there were no major disturbances, allowed coral cover to return to 1987 levels.

The study was a collaboration between researchers from the Biodiversity Research Center at Academia Sinica; the ARC Centre of Excellence for Coral Reef Studies, James Cook University, Australia; the Institute of Ocean and Earth Sciences, University of Malaya, Malaysia; the National Museum of Marine Biology and Aquarium, Pingdong, Taiwan; the Graduate Institute of Marine Biodiversity and Evolutionary Biology, National Dong Hwa University, Pingdong, Taiwan; the Institute of Fishery and Environmental Biology, National Taiwan Ocean University, Keelung, Taiwan; the Institute of Biotechnology, Tajen University, Yanpu, Pingtung, Taiwan; the Department of Marine Environment and Engineering; National Sun Yat-Sen University, Kaohsiung, Taiwan; the Institute of Oceanography, National Taiwan University; and the Institute of Life Science, Chung Hsing University, Taichung, Taiwan.

The full article entitled "Recurrent Disturbances and the Degradation of Hard Coral Communities in Taiwan" is available at the PLoS One website at:
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0044364>.

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