Zoological Studies

Damage to the Reefs of Siangjiao Bay Marine Protected Area of Kenting National Park, Southern Taiwan during Typhoon Morakot

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Typhoon Morakot was the deadliest typhoon to impact Taiwan in recorded history. It attained a peak intensity with winds of 150 km/h on Aug. 7-9, 2009, which is equivalent to a category 1 hurricane on the Saffir-Simpson Hurricane Scale. The storm produced copious amounts of rainfall, peaking at 2777 mm, surpassing the previous record of 1736 mm set by Typhoon Herb in 1996. The extreme amount of rain and strong winds of typhoon Morakot not only triggered enormous mudslides and severe flooding, but also created strong waves that damaged reefs of southern Taiwan. The mean live coral coverage at Siangjiao Bay (SJB; 21°55'432"N, 120°49'788"E), a marine protected area (MPA) in the Kenting National Park (KNP) in southern Taiwan, was reduced from 58.80% to 18.54% (based on video-transect surveys) before and after the typhoon hit these reefs. The SJB coral communities were in fair to good condition with a mean coral coverage of > 45% from 1987 to 1997 (Dai et al. 1998 1999), and peaked at 69.90% in 2003 (Kuo 2007). However, after being hit by typhoon Morakot, large colonies of *Porites lutea* were found overturned at 7-8 m in depth (Fig. 1A).

Coverage of the dominant coral species, *Montipora aequituberculata* (Fig. 1B), sharply decreased from 32.72% to 5.39%, and most areas were transformed into bare rocks covered by turf algae (Fig. 1C). Recovery of coral coverage in the SJB MPA to pre-Morakot levels might take decades or even longer, particularly with the increasing frequency and intensity of typhoons that are expected to occur under the impact of climate change (Solomon et al. 2007). http://zoolstud.sinica.edu.tw/Journals/50.1/85.pdf

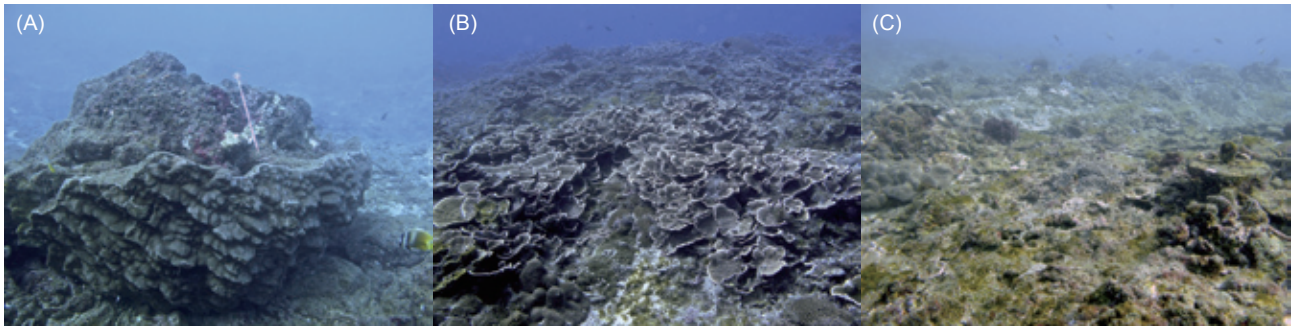

Fig. 1. Impact of typhoon Morakot on Siangjiao Bay, Kenting National Park, southern Taiwan. (A) Large *Porites* colony (2.5 m in diameter) overturned by strong waves. (B) Dense coverage of the foliaceous coral, *M. aequituberculata*, before typhoon Morakot. (C) Bare rocks covered by turf algae after typhoon Morakot.

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