Tracing Coral Reefs: A Citizen Science Approach in Mapping Coral Reefs to Enhance Marine Park Management Strategies

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Effective marine park management and protection of coral reefs can only happen if managers have adequate knowledge of reef health and area. However, obtaining such information is labor intensive and difficult with limited funding and time. Reef Check Malaysia was engaged by Department of Marine Parks Malaysia to map the coral reefs surrounding Tioman Island Marine Park and document health status and site specific threats. To achieve this, we utilized the Reef Check survey method, a simple, rapid and holistic standardized reef monitoring protocol based on scientific principles. This method is suitable where funds and time are limited. A total of 95 sites surrounding Tioman Island were surveyed with the assistance of certified Reef Check EcoDiver volunteers and representatives from local stakeholders. This citizen science approach proved successful and generated a baseline map revealing a difference in the health of coral reefs between the west and east sides of Tioman Island, where the West had <25% live coral cover as compared to >50% on the East. Combined with data on indicator fish and invertebrates, as well as human and natural impacts, the results suggest that Tioman Island should be separated into three distinctive conservation priority zones to enhance management strategies of this marine park. This is an example of an innovative way to engage and involve local stakeholders in planning conservation and management strategies.

Keywords: citizen science, marine protected area management, reef check, coral reef mapping, geographic information system

INTRODUCTION

Coral reefs around the world are facing growing threats from changes to the environment through climate change (Praveena et al., 2012; Rinkevich, 2015). Mass coral bleaching events have become more frequent, affecting reefs worldwide (Tun et al., 2010). Many scientists have called for more frequent monitoring of coral reefs in order to better manage this crisis (Tun et al., 2010). There is