学 位 論 文 内 容 の 要 旨

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学 位 論 文 題 名

Long-term trends of coral cover in the Philippines: Trajectory, spatiotemporal patterns, and the efficacy of marine protected areas

（フィリピンのサンゴ被度の長期トレンドに関する研究）

Although coral declines are reported from major reefs of the world, region-specific trends still remain unclear, particularly in areas with high diversity such as the Philippines. The Philippines, located in the tropics, has the highest diversity of reef species in the global center of marine biodiversity known as the Coral Triangle. However, this biodiversity 'hot spot' has experienced reef degradation driven by intense anthropogenic pressures. This consequently led to the establishment of marine protected areas (MPAs) as a management and conservation strategy to arrest reef degradation in the country. This study examined the long-term spatiotemporal variability, the role of marine protected areas, the trajectory and magnitude of coral cover change in the Philippines. Information on coral disturbances and percentage living hard coral cover were collated and analyzed from existing studies. Coral cover patterns were examined based on quartile category and the annual rate of change in coral cover using meta-analysis. Results based on quartile classification showed an increasing number of areas in "poor" condition (<25% coral cover) while a declining number of reefs in "excellent" condition (>75% coral cover). On the other hand, an overall increase in the annual rate of change in coral cover in the Philippines for almost three decades. Protection against fishing contributed to the overall increase in coral cover as it significantly increased within MPAs than outside. However, reserve effect such as level of protection, age and size of MPA is independent of the trends on coral cover change. Temporal patterns of coral cover were influenced by chronic anthropogenic stresses, thermal stress and the establishment of MPAs.