Declining Trend on the Mesoamerican Reef System Marine Protected Areas

M.A. García-Salgado[1], G.G. Nava-Martínez[1], M. Vasquez[2], N.D. Jacobs[2], I. Majil[3], A. Molina-Ramírez[1], B. Yañez-Rivera[1], A. Cubas[4], J.J. Dominguez-Calderon[5], W. Hadaad[5], M.A. Maldonado[6], O. Torres[7].

1) Oceanus, A.C., Ramonal 478, Residencial Chetumal. Chetumal, Quintana Roo, Mexico.
2) Institutional Development Consultant, P.O. Box 46, Belmopan City, Belize
3) Belize Fisheries Dept., Princess Margaret Drive, Belize City. Belize. P.O. Box 148
4) Fundación Cayos Cochinos, El Naranjal, Ave. Victor Hugo Calle 13 - 1175. La Ceiba, Hnd.
5) Reserva de la Biosfera Banco Chinchorro y Parque Nacional Arrecifes de Xcalak, CONANP. Av. Insurgentes, No. 445 Col. Magisterial, C.P. 77039 Chetumal, Quintana Roo, México.
6) Centro Ecológico Akumal. P.O. Box 2, Akumal, Quintana Roo. Mexico.
7) Dirección de biodiversidad/ Secretaria de Recursos Naturales y Ambiente. Honduras.

Abstract. The Mesoamerican Barrier Reef System (MBRS) comprises coral reefs in Mexico, Belize, Guatemala and Honduras. The Synoptic Monitoring Program (SMP) was developed to assess the coral reefs and associated ecosystems. This program is currently applied in most of the MPAs in the region. It includes sites selected within MPAs that represent strategic sites (Take and No take sites) for park managers on the back reef, shallow (5-12m) and deep fore reef (14-20 m). In 2004, the MBRS region had an average live coral cover of 23%; within a range that is generally considered to be healthy. The maximum coral cover was 50% on deep fore-reef sites, while 2% was the minimum cover at shallow fore-reef sites. The mean cover numbers indicated that the 3 main habitats were relatively healthy. Fish site density averages 34.7 fish per 100m^2 with ranges from 5.0 to 110.6 ind./100m^2. The coral cover had decreased from 23 to 13% in only 4 years in the MPAs, the most dramatic loss of coral was in 2005, with an average loss of 2% in each of the next 3 years. Although monitoring is not equal in all countries and each MPA had different sample sizes, the MBRS region have a generalized coral cover decrease tendency.

Key words: Mesoamerican Reef, Coral Reef, Coral Cover, Status, Monitoring.

Introduction

The Mesoamerican Barrier Reef System (MBRS) comprises coral reefs in Mexico, Belize, Guatemala and Honduras (Arrivillaga and Garcia 2004); it extends more than 1,000 km in Caribbean waters of those four countries (McField and Kramer 2007) and has been considered one of the greatest biodiversity points in the Caribbean (Roberts et al. 2002). The MBRS contributes to the stabilization and protection of the coasts, maintain coastal water quality and serve as feeding and nursery habitats for many marine organisms which have great commercial importance (Almada-Villela et al. 2003).

Major threats in the region are the destruction of natural coastal habitats by increasing coastal population and tourism developments, and increased sedimentation due to extensive and unsustainable use of watersheds and inland deforestation (Arrivillaga and Garcia 2004). The MBRS Project carried out

from 2004 to 2008 as a regional cooperation between Mexico, Belize, Guatemala and Honduras had the objective of developing actions focus on the conservation and sustainable use of the system.

The MBRS Synoptic Monitoring Program (SMP) was developed to standardize the assessment of coral reefs and associated ecosystems in marine protected areas (Almada-Villela et al. 2003). The information is targeted at natural resource managers by providing the status and trends in the marine and coastal resources. This article includes a brief summary of the baseline (2004) data for the Coral Reef Ecosystem Results of the SMP for the region and the Status for 2008.

Material and Methods

The Mesoamerican Barrier Reef System (MBRS), is one of the longest reef developments in the Western Hemisphere (Fig. 1), it extends over 1000 km from