

Conservation and management of coral reefs within the South Asian Region with special reference to Sri Lanka

A. Rajasuriya

*Marine Biological Resources Division, National Aquatic Resources Research and
Development Agency*

Coral reefs are the world's most biologically diverse ecosystems; a single reef may support 200 species of corals, 300 species of fish and thousands of species of invertebrates. About 4000 species of marine fish inhabit coral reefs, which amounts to about a quarter of all known marine fish species. About 100 000 species have already been described from coral reefs but it is thought that there may be up to 2 million species. Thirty-two of the thirty-four animal Phyla have been identified in coral reef ecosystems. Coral reefs have a very high productivity; they support several types of fisheries including edible fish, ornamental fish, spiny lobsters, sea cucumber, chanks and molluscs. Most of these are important for sustenance and livelihoods of coastal communities and support local economies.

Reefs protect the coast from sea erosion. Coral reef based tourism is one of the fastest growing sectors of coastal tourism and is the foundation of economies of some island states. Coral reefs are among the most valuable ecosystems, it has been estimated that coral reefs provide US \$ 375 billion in goods and services worldwide. The discovery of medicinally important compounds in some reef organisms may contribute to new pharmaceutical products in the future.

Major coral reef areas in South Asia are in India, Maldives and the Chagos Archipelago. In India, coral reefs are widely distributed along the mainland coast, especially in the Gulf of Mannar and the Gulf of Kutch. Other coral areas belonging to India are in Lakshadweep and Andaman and Nicobar Islands. Corals grow in the Gulf of Kutch under rapidly changing salinity and environmental conditions. Coral reefs of Lakshadweep are similar to the coral reefs of the Maldives whilst those around the high Islands of Andaman and Nicobar support species that have greater affinity to the Indo-Pacific Region. The

continental shelf around Sri Lanka support many reefs, these vary from fringing reefs along sections of the coastline to offshore coral reefs mainly in the Gulf of Mannar and along the east coast. Coral reefs in Chagos are in better condition than at other locations in the Northern Indian Ocean.

A variety of human activities threaten the health of the coral reefs in South Asia. The major impacts are due to fishing activities using destructive fishing methods and uncontrolled resource harvesting. In many instances, exploitation of reef resources surpasses their ability to recover, every time a new market is discovered for a reef species that species gets overexploited. The fate of the giant clams in South East Asia is well known, where local extinctions have occurred due to overexploitation. Along the East Coast of Sri Lanka, almost all the species of sea cucumber was overexploited for two years by scuba diving. This has resulted in a drastic reduction of this valuable resource and a rapid increase in the incidences of decompression sickness due to poor scuba diving practices.

Coral mining in the sea for lime production is a common activity in India and Sri Lanka despite the existence of laws that make it an illegal activity.

Coral reefs were devastated in much of the Indian Ocean by the coral bleaching event in 1998 due to an increase in sea surface temperatures. Recovery of damaged reefs is variable, recent studies reveal that some reefs are recovering rather rapidly whilst others are experiencing phase shifts between algal domination and invasive organisms such as corallimorpharians and tunicates.

Today there is better understanding of the status of the world's coral reefs than ever before. However they are being degraded at a pace that has never been experienced previously. In South East Asia, 56% of the coral reefs are in the high-risk category whilst 25% are at high risk in the Indian Ocean. 'Reefs at Risk', a map based indicator of the health of coral reefs has listed Sri Lanka as one of the sites with a high risk of losing its coral reefs in the near future.

The World Summit on Sustainable Development in 2002 recognised the importance of coral reefs to the health of the oceans and to coastal nations, particularly to Small Island developing states. Although there are several marine protected areas with coral reefs in

earning the name 'paper parks'. Species protection has received more attention. In India, all hard corals, gorgonians, sponges and sharks have been given protected status. In the Maldives all species of hard corals are protected whilst in Sri Lanka hard corals, soft corals, gorgonians and several species of fish and invertebrates are protected under the Fauna and Flora Protection Ordinance.

Actual protection for most of these organisms is limited to the control of exports of ornamental fish and invertebrates including spiny lobsters. Large-scale damage to reef habitats due to fishing and other activities such as coral mining and the use of destructive fishing methods are often ignored. Coral mining is one of the major causes of reef degradation in the Gulf of Mannar Biosphere Reserve. One of the offshore coral islands near Tuticorin has disappeared below the surface of the sea due to coral mining. In Sri Lanka coral mining in the sea has increased in the recent past; it is now carried out during daytime despite the government's attempt to control this illegal activity. In the past, the only building material available in the Maldives to build houses was coral blocks, which were mined from shallow fringing reefs. But the use of coral blocks as a building material has been reduced by the introduction of concrete bricks. Fishing with any type of nets is not allowed on coral reefs in the Maldives as the government is well aware of the importance of coral reefs to tourism, which is the main source of foreign exchange, and therefore it has taken appropriate steps to safeguard the resources. Generally, the better-protected coral reefs in the South Asian Region appear to be those that are far from human habitations such as in the Chagos Archipelago.

The South Asian Region receives international support in the conservation and management of coral reefs and their resources. Assistance varies from monitoring of coral reefs to special area management and pilot projects to develop alternative livelihood for coastal people who are engaged in activities that are harmful to coral reefs. The main initiatives in the region are the Global Coral Reef Monitoring Network (GCRMN) and the Coral Reef Degradation in the Indian Ocean programme (CORDIO). Donor organisations that support coral reef research and management include Swedish International Development Agency (Sida), The World Conservation Union (IUCN), UK Department for International Development (DFID), United States Agency for International Development (USAID) and the Asian Development Bank (ADB).

Conservation of coral reefs in Sri Lanka is discussed in the light of regional efforts and their effectiveness in the conservation and management of coral reefs taking into consideration the role of marine protected areas in the conservation of coral reef habitats and their biodiversity.