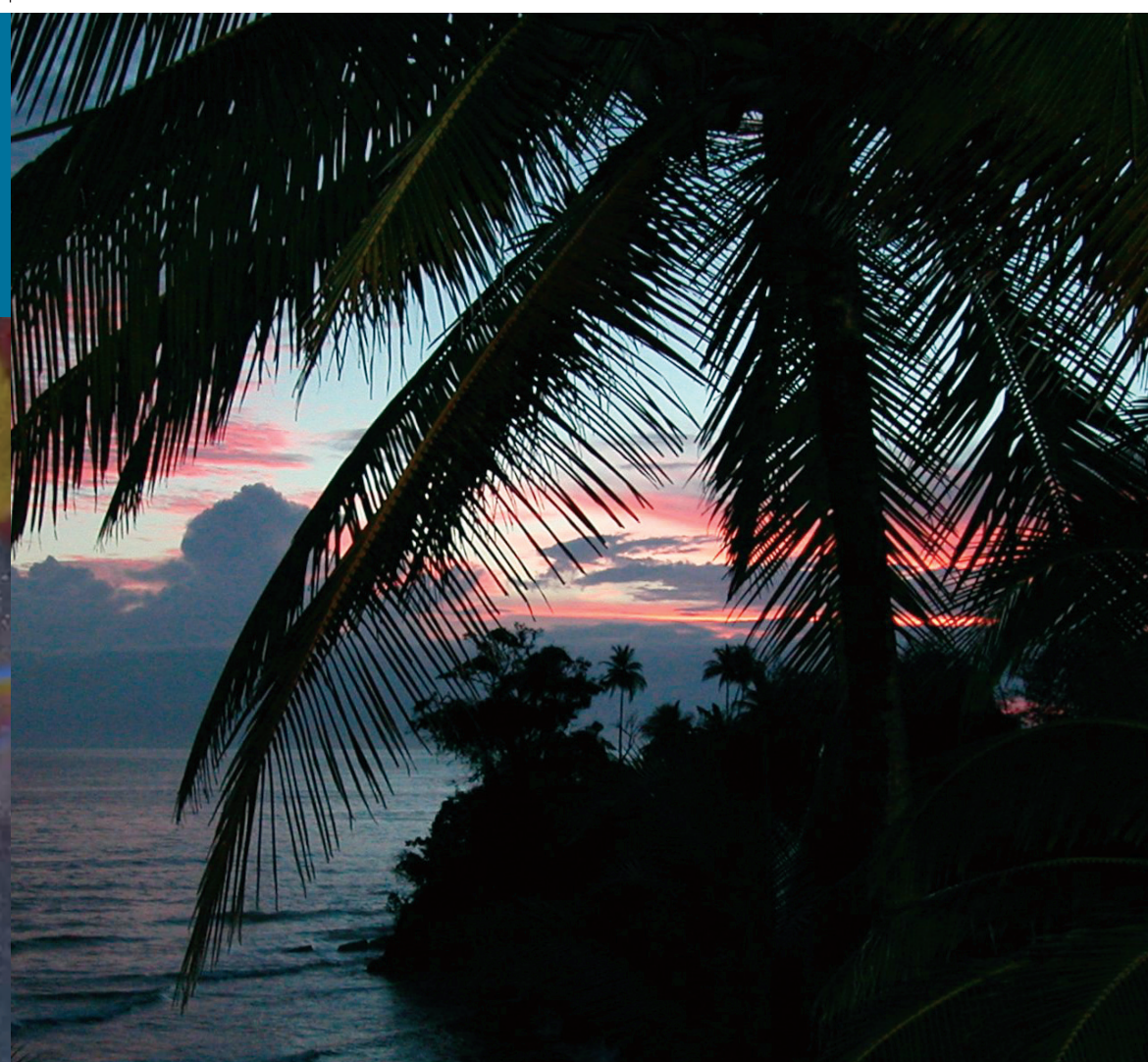


MANAGING THE CARIBBEAN SEA:

Findings of the Caribbean Sea Ecosystem Assessment



1 The Caribbean Sea touches the shores and lives of the 33 diverse countries and territories that surround it, and is a source of livelihood and sustenance for the people of the Region, contributing towards employment, food security, recreation and tourism, and foreign exchange earnings.

2 The people inhabiting this wider-Caribbean region have a common dependence on, among others, two major benefits from the marine and coastal environments – tourism and fishing.

3 Economic activity in this region is therefore based to a very great extent on the bounty and natural beauty of the Sea – which in turn require the healthy functioning of complex physical and biological processes. If that ecosystem is under threat, so are the livelihoods of millions of people and the economies of many countries.

4 A reduction in the stresses being placed on the natural functions of the Caribbean Sea will require new ways of working together amongst the disparate, national political authorities making up the region.

Caribbean Dreams are made of this

Relative to its size, the island population of the Caribbean is more dependent on income from tourism than that of any other part of the world. In 2004:

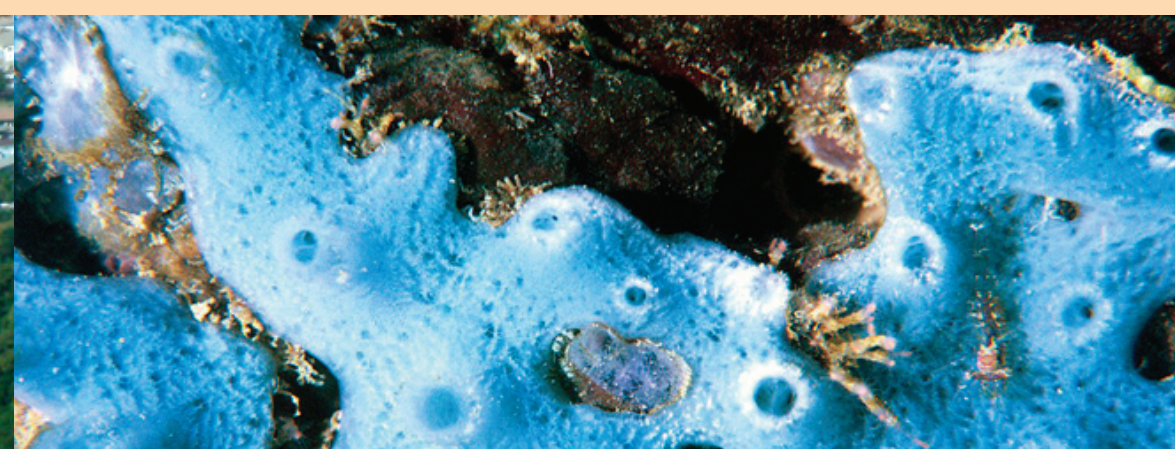
More than 2.4 million people were employed either directly or indirectly in travel and tourism, accounting for 15.5% of total employment

Tourism contributed US\$28.4bn to the Region's Gross Domestic Product, 13% of the total; and US\$19bn or 16% of exported services and merchandise

Over one-fifth (21.7%) of all capital investment was linked to tourism, well over twice the global average

Keep the Dream Alive

Anguilla; Antigua and Barbuda; Aruba; Bahamas; Barbados; Belize; British Virgin Islands; Cayman Islands; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Grenada; Guadeloupe; Guatemala; Haiti; Honduras; Jamaica; Montserrat; Martinique; Panama; Puerto Rico; Mexico; Netherland Antilles; Nicaragua; St. Kitts/Nevis; St. Lucia; St. Vincent and the Grenadines; Trinidad and Tobago; Turks and Caicos; US Virgin Islands; Venezuela.



CREDITS AND CONTACTS

The Caribbean Sea Assessment (CARSEA) was led by The University of the West Indies (UWI) and The Cropper Foundation, in collaboration with The Institute of Marine Affairs (IMA), the United Nations Environment Programme Regional Office for Latin America and the Caribbean (UNEP ROLAC), the Caribbean Conservation Association (CCA), and the Caribbean Agricultural Research and Development Institute (CARDI).

Over sixty individuals, drawn from about thirty institutions and organizations from the Wider Caribbean Region, contributed voluntarily to the Assessment. The engagement between contributors during the course of the Assessment was the first step towards establishing better collaboration and coordination for joint management of the Caribbean Sea.

A follow-up project to CARSEA, made possible through funding from The International Development Research Center of Canada (IDRC), was jointly initiated by The Cropper Foundation and The University of the West Indies in 2005, to continue work towards better management of the Caribbean Sea.

CARSEA was undertaken as part of a 5-year global project known as the Millennium Ecosystem Assessment (MA – www.maweb.org):

- for explanation of the ways in which the Caribbean Sea and its resources are being affected...
- for analysis of how the well-being of the peoples of the wider-Caribbean will be affected...
- for proposals about how the situation can be improved...

See Report of the Caribbean Sea Assessment, published as a 2007 Special Issue of the Caribbean Marine Studies Journal of the Institute of Marine Affairs, Trinidad & Tobago.

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THE CROPPER FOUNDATION



Caribbean Sea Benefits and Threats

• **The Caribbean Sea** contains varied, interconnected, and invaluable ecosystems that work together to keep the coastal and marine environments clean, healthy, and productive. Four ecosystems are particularly important to the people of the Caribbean.

• **Coral Reefs** are one of the most productive tropical marine ecosystems supporting an amazing range of life, or biodiversity. They serve as habitat and food source for a wide range of fish and sea creatures, defend against beach erosion, and contribute to beach sand formation. They are the most important ecosystem in the dive tourism industry, which is a major contributor to Caribbean tourism. But Caribbean coral reefs have lost some 80% of their living coral over the last 20 years.

• **Mangroves** are coastal trees and shrubs as well as the complex assemblage of animals, plants, and microorganisms inhabiting the same saline, coastal environment. Mangroves are an important coastal ecosystem providing both habitat and a natural filtering system to keep coastal waters clean and offshore ecosystems, such as coral reefs and seagrass beds, healthy. Mangroves are particularly important in offsetting the potential damage of inland agriculture.

• **Seagrass Beds** are colonies of small plants on the sea floor that stabilize the soil and help limit erosion and pollution of coral reefs. They also serve as a habitat, nursery, and food source for a wide range of organisms and fish. They are however vulnerable to pollution, and have been removed in a misguided attempt to improve beaches for bathers.

• **Beaches** are a beautiful and delicate ecosystem between land and sea. They depend on all the other marine ecosystems for their health. Beaches are a playground for people and a nursery for animals like the leatherback turtle. However, 70 percent of Caribbean beaches are eroding at rates of between 0.25 and 8 metres per year.

• Unfortunately, these ecosystems have been overlooked in recent years, and their health and productivity, as well as reliant industries, are starting to decline. Ill-considered development schemes due to demand for coastal development, overexploitation and the lack of awareness of the value of marine ecosystems have had a negative impact on all marine ecosystems.

• **Coastal Development** - Developments too close to the coast are a particular threat to coral reefs and beaches through pollution and erosion. Often these developments remove important ecosystems like mangroves that limit sediment erosion and run-off, increasing water pollution which in itself is exacerbated by poor waste management in this sensitive area.

• **Tourism** - Without proper consideration and management in place, the intensive use of the Caribbean's amenities by visitors results in pollution and the destruction of valuable and sensitive ecosystems. Increasing numbers of cruise ships are using the Caribbean Sea while appropriate legislation, regulations and infrastructure to manage the consequent increase in waste do not yet exist.

• **Over-fishing** - All the major commercially important fish species in the Caribbean Region are reported to be under threat from over-exploitation. Over-fishing has also affected coral reefs, where the removal of algal-grazing fish such as parrot fish, has allowed algae to overgrow corals. Pollution has further stimulated the growth of these algae. Most Caribbean reefs have experienced a shift in ecological dominance from corals to algae. Recovery has been both rare and, when present, slow.

• **Land-based sources of pollution** - Inland activities, including agriculture, deforestation, and industries, contribute to the pollution of coastal and marine waters and can have devastating effects on sensitive ecosystems like coral reefs. They also contribute to fish diseases and defects which can lead to health problems in humans.

What are we doing?

There are many programmes and ad hoc initiatives aimed at addressing particular problems afflicting the coastal and marine environments of the Caribbean. Some have had impressive results and can serve as models for future action.

However these initiatives have been set up and operated by different governments, inter-governmental groups and non-governmental organisations, with little or no co-ordination among them.

They are often directed at a specific sector or activity, and lack an overview of the ways in which programmes may conflict with one another, or produce better results with greater collaboration. This results in many gaps.

...the inter-connected nature of the ecosystem services of the Caribbean Sea, and management of the threats they face, require a much broader outlook and approach.

What more can we do?

• Arrange better

Caribbean governments should set up a region-wide technical body to advise on policies and programmes to enable them to

- overcome the fracturing of resources and efforts
- achieve more harmony in approaches
- ensure that policy formulation is informed by relevant programmes, research, and analysis
- avoid, manage or resolve conflicts
- collectively protect the Caribbean Sea and use its resources sustainably.

They should give effect to a United Nations Resolution of 2006 which calls for an integrated management approach for the Caribbean Sea.

They should carry out the provisions of related international treaties they have signed.

• Identify clear priorities

- Such as
- having a better system of managing fisheries in the region
 - recognising the value of the sea as a complete ecosystem rather than a series of interlocking national territories
 - capturing more of the value of tourism within the region
 - re-investing in measures to protect the natural beauty and health of the Caribbean marine environment without which tourism will decline.

• Organise better

- Such as
- the provision of sound and integrated scientific information
 - a system for monitoring and evaluating the Sea and its resources
 - public education in support of the policies and objectives

Figure 1.1: Map of the Caribbean Sea Large Marine Ecosystem with Hypothetical Exclusive Economic Zone (EEZ) Boundaries¹



Source: The Nature Conservancy (NC) 2005.

¹ It should be emphasised that the lines on this map are indicative only, as some boundaries are disputed.