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## Changing Tropical Diversity of Marine Systems in Panama

GABY HOEBART

*Humboldt University of Berlin, Institute of Geography, Germany*

### Abstract

Marine and coastal biodiversity is one of the programmes of the Convention on Biological Diversity (CBD). Corals are endangered world-wide, estimations end of 2000 were that approximately 27% of coral-reefs are destroyed already. This poster demonstrates the situation of the coral reefs at the archipelago of Bocas del Toro in the tropical climate of the Caribbean coast of northwest Panama. In April 2000 three different research spots of healthy and dying patch reefs were examined closely in their richness of species and grade of destruction by sedimentation and the growth of seaweed. The reefs showed the signs of severe degradation.

The factors endangering the coral reefs are extensive banana plantations wide-spread in the region being the cause for loads of sediments and pesticides which are washed down the rivers into the sea and damage the corals in their biological processes. After harvesting, the banana industry is shipping the fruits for the export overseas conserving them with chemicals. Contamination by oil originating from the ships and also by diesel from the numerous small boats being the only mean of transport between the islands and the mainland endanger the sea water. With the beginning of tourism since about 1997 an uncontrolled infrastructure development began. Construction activities and deforestation on the islands lead to additional sedimentation deteriorating the light conditions. Poison from inadequately detoxified waste and nutrient entries with the waste water disturb the ecological balance of the sea. The consequences of a heavy earthquake in 1991 accelerate the already worsening situation of the patch reefs due to geomorphological changes on the mainland resulting in further sediment loads. Warming of the sea temperature during El Niño events in the last decade lead to coral bleaching and illnesses caused by bacteria.

The results indicate the strong need to develop a management plan for the region. A sustainable management strategy has to comprise physical measurements against soil erosion, e.g. agroforestry as an alternative land-use form, and anthropogenetic solutions like the development of ecological tourism in combination with a consequent environment policy. Only by conserving the marine resources the local population has a long-term economic and social basis to live on. More detailed information on aspects for a sustainable management plan in Bocas del Toro, Panama can be found in the university thesis of the author.