

# Efforts to Save the Marine Environment in Tanzania

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## Abstract

The Tanzanian marine environment has been under threat for quite a long time now due to human activities. With the establishment of the Marine Parks and Reserve Act in 1994, several areas have been earmarked as marine parks. This act is aimed at conserving and protecting the marine environment all along the Tanzanian coastline. Once the parks and reserves are established and these areas brought under control, there will be a reduction in the illegal operations along the coast. The measures recently introduced by the government to eradicate dynamite fishing practices along the Tanzanian coastline are highly commendable.

## Introduction

The Tanzanian coastline stretches from 5.7°S to 11°S and is 800 km in length. It is largely dominated by coral reefs. The narrow Tanzanian continental shelf supports fringing and patch reefs which lie 0.5 to 2.0 km offshore. The main functions of coral reef communities are building of islands and coastal protection. The reefs also provide calm boating and diving sites for recreation. Moreover, the coral reefs offer hiding places for fish. In addition to the coral reefs, there are thick mangrove forests, especially near the mouth of major rivers such as Rufiji, Pangani, Ruvu and Ruvuma. Mangrove forests also exist near the minor river mouth systems like the Wami, Matandu and Mbweburu. Mangrove forests form one of the most stable habitats in the marine environment. Also prevalent in the Tanzanian marine environment are sea grass beds which offer a habitat for economically important juvenile organisms.

## Importance of the Marine Environment in Tanzania

The marine resources of Tanzania support local communities, coastal residents as well as the na-

tional economy. The Tanzanian coral reefs harbor diverse fish communities. They are estimated to provide an annual catch of 4.7 t/km<sup>2</sup> in northern Tanzania and 4.8 t in southern Tanzania (Gulland 1979). Marine fisheries in Tanzania account for about 25% of the total fisheries catch by weight, the rest being from freshwater lakes, reservoirs and rivers. The fishery is concentrated mainly in inshore waters and reef habitats. All the five known species of turtles from the Indian Ocean are found in Tanzania. Artisanal fishery in inshore waters, using hooks, lines and cast nets from nonmechanized outrigger canoes, produces about 80-90% of the marine catch. The catch consists of fish, lobsters, octopus, clams, mussels and prawns.

Several of the Tanzanian reefs in Dar es Salaam, Mafia and Zanzibar are considered to be important for tourism. In addition to coral reefs, the marine environment is rich in seaweed which can be utilized both as a source of food and for chemical extraction. The common algae in use are the brown algae *Sargassum* and *Turbinaria*, the red algae *Eucheuma*, *Hypnea* and *Glacilaria*, and the green algae *Ulva* that is utilized as food and fish bait.

The mangroves of mainland Tanzania cover a total area

of 115 465 ha (Semesi and Ngoile 1995). Eight species of mangroves are found in Tanzania. They include *Rhizophora mucronata*, *Xylocarpus gymnorhiza*, *Ceriops tagal*, *Bruguiera granatum*, *Avicenia marina*, *Heritiera littoralis*, *Lumnitzera recemosa* and *Sonneratia alba*. Mangrove forests provide suitable habitats for finfish, shellfish, molluscs, crabs and other creatures, notably mammals and birds. They are important as nursery, spawning and feeding grounds for many fish species. A significant relationship has been established between mangrove forest coverage and prawn production (UNEP 1985). Mangroves are also important in preventing coastal erosion and protect coral reefs by preventing siltation.

## Threats to the Marine Environment

For some years now the beautiful Tanzanian marine environment and its resources have been under constant pressure from human activities. Probably the most deleterious practice is dynamite fishing. The use of dynamite to kill fish has been reported in Tanzania since the 1960s. Dynamite blasts not only destroy coral colonies

(which can take decades to recover) but also kill young fish, eggs, larvae, most macro invertebrates and demersal plankton upon which fish feed. A decrease in coral cover means less habitat and refuge space for fish to breed, rest and seek shelter from predators. Dynamite fishing is widespread along the Tanzanian coastline, especially in Tanga, Bagamoyo, Dar es Salaam, Mafia, Kilwa, Lindi and Mtwara. These blasts also cause beach erosion. This has been observed in areas along the coast of Dar es Salaam and Mbudya where hotels such as Bahari Beach, Kunduchi Beach, Silver Sands and Africana have been seriously affected. In addition to dynamite fishing, coral reefs are threatened by siltation due to inland deforestation.

The use of chemical fertilizers and pesticides in food production is another threat to the survival of reefs. Pollution due to heavy oil tanker traffic from the Arabian peninsula, inland storage and refineries have a deleterious effect on the live coral. Pollution from industrial and domestic effluents has also contributed to the destruction of coral reefs.

Another activity that affects coral reefs is coral mining for lime production and for building purposes. Many people along the coast use coral reef materials for building their houses as well as in the production of lime. Lime production poses a great threat to live corals due to the fact that young corals produce more lime using less fuel. Although tourism brings in a lot of foreign currency, it negatively affects coral growth because of trampling and anchorage. Collections of coral and shell souvenirs is another cause of coral reef destruction.

Since mangroves grow well in sheltered bays, beach erosion due to dynamite fishing heavily affects mangrove growth. A great deal of destruction of mangroves has been due to their clearing for hotel (recreational) construction, as observed in Bagamoyo District. Mangroves

are cut for timber and building poles as well as for fuelwood and charcoal. Mangroves are also destroyed to clear areas for salt production and aquaculture.

### **Efforts to Save the Marine Environment**

Efforts to protect Tanzania's marine environment can be traced to the colonial period. A move to conserve and protect coral reefs was initiated in the 1960s. In 1968 eight reefs were designated as marine parks. Today, only two of them are intact reefs, i.e., Latham and Mafia islands (Kimani 1995). Several coral reef areas around Dar es Salaam, Mafia Island, Maziwi and Tanga were protected in 1981 under the 1974 Wildlife Conservation Act. However, efforts to conserve these areas have been very weak, presumably due to a lack of funds. In recent years more serious efforts to conserve the marine environment have been observed in several areas.

In the Tanga region, the Coastal Zone Conservation and Development Program established in July 1994 is an example of an appropriate way to conserve the marine environment in the region. This program was initiated following the observed deterioration of marine resources and the need to arrest the trend. Under this program, the local communities are the key groups in conserving the environment. Since it is not easy for a few people to monitor the whole area, the responsibility of the local communities, as the beneficiaries of the resources, is to conserve, protect, manage and use the resources sustainably for their own benefit and that of future generations. About 20% of the Tanzanian coastline lies in the Tanga region. Once the local people take on the responsibility, they are encouraged to work on their own to find the illegal operators and penalize them in

accordance with the existing regulations.

Plans to conserve mangrove forests were also introduced in the colonial period. The colonial governments were already aware of uncontrolled utilization of mangrove forests and set laws and regulations to protect the mangroves. The legislation governing Mangrove Forest Reserves is included under the Forest Ordinance of 1957, published in 1958, Forests Chapter 389 of the Laws Supplement 57, Part V. A ban on cutting of all mangroves, effective 2 September 1987, was also declared by the Director of Forestry and Beekeeping. This ban was not effectively implemented due to lack of funds, infrastructure and skilled personnel to enforce it. In 1989, the Directorate of Forest and Beekeeping divided the mangrove forests along the Tanzanian coastline into management zones with staff posted to work on each of the zones. This move was also meant to conserve and protect the mangroves. The Forest Ordinance Cap 389 was amended in July 1997 to include severe penalties for mangrove destruction.

In its effort to conserve the marine environment, the National Assembly passed the Marine Parks and Reserves Act 29 in 1994. The Act provides for the establishment, management and monitoring of marine parks and reserves. The first marine park in Tanzania was established in July 1995. The Mafia Island Marine Park, which covers an area of about 400 km<sup>2</sup> and incorporates ten villages, has an estimated population of over 15 000 people (one-third of the Mafia island population). This marine park was set up to protect the few remaining pristine coral reef ecosystems in the country's coastal waters. The park also attempts to conserve important marine resources while ensuring sustainable economic development at the local and national levels. In order to involve the local communities in the conservation and protection of the

park resources, awareness programs on the benefits of conservation and roles and responsibilities of the communities were carried out.

The establishment of the Mafia Island Marine Park has to a great extent reduced dynamite fishing and other illegal practices, especially in areas around the park and the buffer zones. This is attributed to the fact that people in villages near the park are aware of the importance of the establishment of the park. They are also aware of their roles and responsibilities as far as park conservation and protection is concerned.

Illegal practices reported from the villages to the park head office were among the first problems encountered in the conservation effort. In order to have smooth communication between the park head office and the villages within the park area, radio communication systems were installed. Local communities are now in a position to immediately report any illegal practices within their areas.

A speedboat (Boston Whaler) was acquired to chase illegal operators in the park area. This has reduced illegal operations in the area to some extent. In addition to fighting against illegal practices in the park, the Mafia Island Marine Park authorities support income generating activities initiated by the com-

munities in the park area. The main idea behind this support is to improve the standard of living of the communities and reduce the need to depend on illegal operations.

Research is also being carried out to reduce pressure on the environment. They are looking for alternative building materials to replace corals and investigating what type of fishing gear would be most appropriate for use in the park area. Local communities have also been involved in the conservation of the existing ecosystems in the Menia Bay Conservation Area. The area, which lies in Uguja island (Zanzibar), was established in 1994.

The Ministry of Natural Resources and Tourism recently started a new initiative in collaboration with the Ministry of Defense. The navy and the staff from the Ministry of Natural Resources and Tourism are involved in a campaign to eradicate illegal practices along the coast, especially dynamite fishing, coral destruction and mangrove destruction. The measure has been successful. The boats which were once famous in collection of dynamited fish are no longer seen in Mafia nor are such fish seen in the markets.

Fines levied under the Marine Parks and Reserves Act Number 29 (1994) are currently very small compared to the destruction caused by illegal practices. In order to en-

sure that stricter measures are enforced against people destroying the marine environment, efforts are underway to review the penalties under this Act.

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