



A Guide to
Marine Conservation Areas
in Zanzibar



Revolutionary Government of Zanzibar
Ministry of Agriculture, Livestock and Environment
Department of Fisheries and Marine Resources

Foreword

For many centuries referred to as the 'spice islands', the Zanzibar archipelago consists of two main islands, namely Unguja and Pemba. Of the two, Unguja Island is the better known to the outside world. Hundred of Thousands of people come to visit every year and one of the main attractions of Zanzibar is the beauty of our coast – the white sandy beaches, the coral reefs and of course the rich cultural heritage of the Swahili coast. Pemba, also known as the 'Green Island' is slowly opening its doors to tourism, its intact culture and traditions a rare commodity in a fast-changing world.

The strong interrelationship of Zanzibar with the sea is something that makes Zanzibar very special – the dhows, the trade winds, the fresh sea food, and of course the friendly and warm Swahili people.

The people of Zanzibar have lived close to and in perfect balance with the marine environment for centuries, but with increased pressure from both tourists and local communities the marine and coastal ecosystems are starting to show signs of degradation. If not curbed, the consequences can be severe for a nation whose future is so closely tied to the welfare of its coastal and marine resources. The time has come to put systems in place to ensure that ancient traditions and present day livelihoods can continue into the future, keeping the essential

characteristics of our islands in place.

The Ministry of Agriculture, Livestock and Environment as part of the Revolutionary Government of Zanzibar and the Marine and Coastal Environment Management Project (MACEMP) have responded to this urgent challenge by introducing Marine Conservation Areas along the coast of both Unguja and Pemba. These areas will function as multiple use areas, where fishing and other uses are allowed, but with rules and regulations aimed at achieving a more sustainable resource use. Tourists who visit these rich environments will pay a visitors' fee that goes towards maintaining the MCAs and developing alternative livelihoods in the local villages that hopefully will relieve some of the pressure on the marine resources. The villages and fishers that depend on these resources are organised in conservation units and fishing committees. These organisations aim to ensure that the need of the local people is incorporated into the management of these areas while resources are protected at the same time.

Following the tradition of many ages it is hoped that the future of the people in Zanzibar will move hand in hand with sustainable resource use in the Marine Conservation Areas. Visitors are welcomed to come and enjoy our seafaring traditions and the rich biodiversity of our coastal and marine environments.





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About this Guide

Why a guide to the protection of our marine environment?

Why this Guide

Zanzibar's marine life is too precious to be left unprotected. The people of Zanzibar have for generations relied on the sea for food and transport. Artisanal fisheries remain as one of the main economic pillars for the islanders, while tourism based on the islands' rich biodiversity and cultural attractions is growing rapidly.

Unguja Island, or simply Zanzibar as most call it, is well known for its beaches and coral gardens, the spices, the Red Colobus monkeys, the World Heritage Site of Stone Town, and the warmth of the Swahili people. It is one of the two main islands that make up the archipelago of Zanzibar, off the east coast of Africa, in the Western Indian Ocean. The other island, Pemba, lies further north.



This Guide is about Zanzibar Island and its Marine Conservation Areas (MCAs). It describes the natural environment of Zanzibar and its importance for the people in the island. This is a Guide to the wise use and protection of our marine resources as a livelihood basis for ourselves and our children. As the Swahili proverb goes, "Mlimbua nchi ni mwana nchi" or "He who enjoys the fruits of a country is a son of that country".

What this Guide is about...

- the different coastal and marine habitats in Zanzibar and ways to take good care of them
- the emerging network of Marine Conservation Areas that line the coastal areas of Unguja island and what is in them
- why the Marine Conservation Areas are important in the face of existing pressures on the marine environment and the needs of the communities
- guidance for fishers, tourism operators, visitors and for all of us who want to protect Zanzibar

This Guide is for...

- the people of Zanzibar so they can learn more about their environment and teach others in their villages
- fishers, seaweed farmers, tourist operators, and other users of Zanzibar's marine resources who want their activities to become more sustainable
- governmental departments whose activities focus on, or have an impact on coastal and marine resources
- non governmental organisations and community-based associations who want to have a positive impact on the island's environment and peoples
- tourists and visitors to the island so they can better appreciate and protect our natural environment



The History of Zanzibar



An introduction to the culture and history of the Spice Islands

Unguja and Pemba Islands form Zanzibar, an archipelago that is part of the United Republic of Tanzania. Around one million people inhabit the islands. Located in the Western Indian Ocean, Zanzibar is separated from the mainland by less than 50 km.

Sailing and fishing in the waters of the Indian Ocean occupies a central position in the history of the Swahili people of Zanzibar. The islands of Zanzibar have for many centuries been at the centre of the intensive trade network that developed in the region. Consequently, Zanzibar has been a melting pot for many different cultures. Arabic, Indian and African influences have remained strong in the islands and are part of the rich cultural identity of the Zanzibaris.

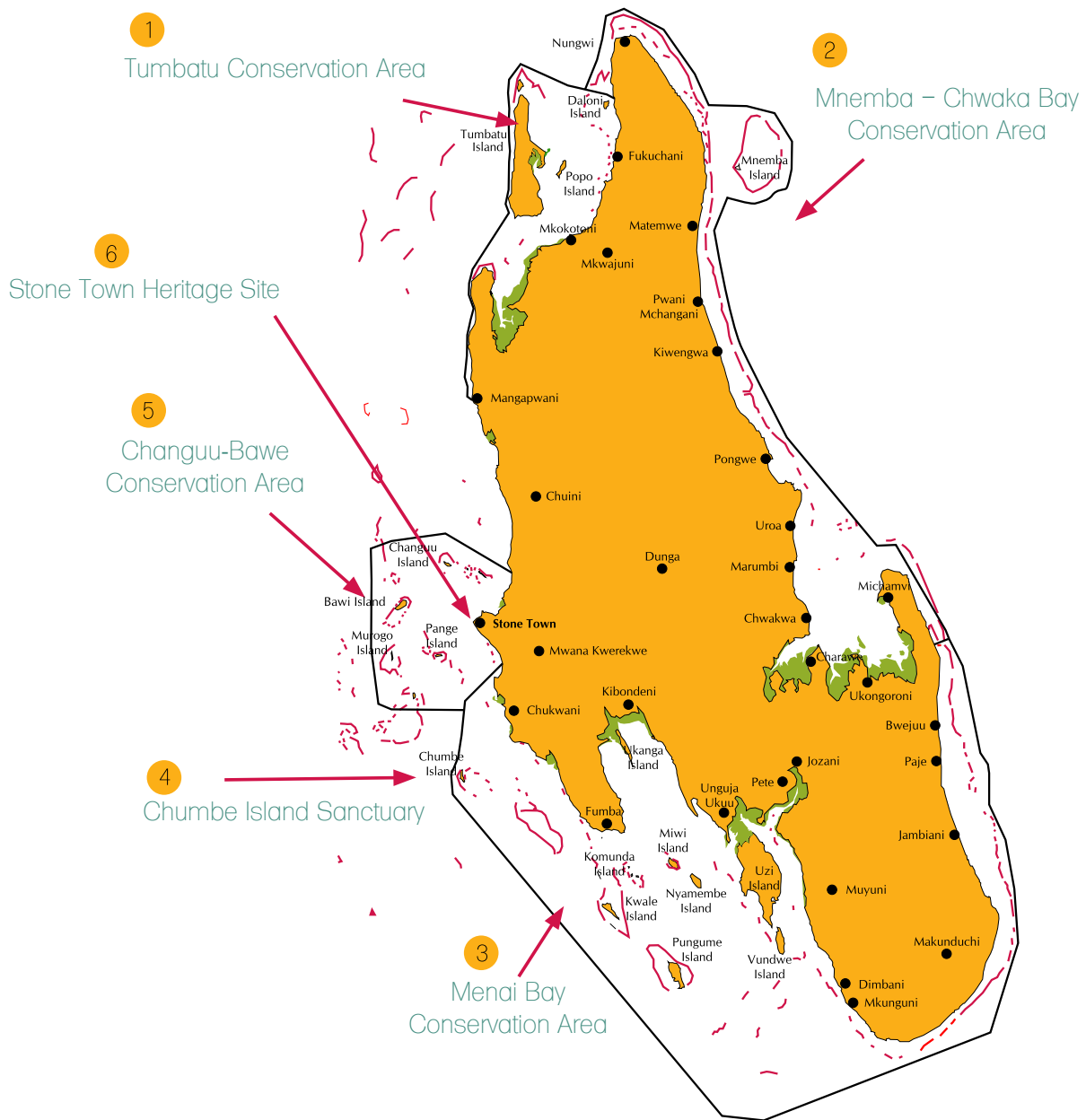
The best way to describe Zanzibar is “a place where cultures meet”. Throughout centuries, peoples from the west and the east met in Zanzibar and left a strong influence that remains to this day. It is believed that Zanzibar was first settled by people from Africa three to four thousand years ago. The islands of Zanzibar later became part of the vast Arab empire that stretched from the horn of Africa to Mozambique and the Northern tip of Madagascar and beyond the great lakes. Arab and Persian emigrants settled in Zanzibar from the 7th century onwards and this prosperity period continued until the arrival of the Europeans in the late 15th century. After two centuries of Portuguese rule of Zanzibar, the Omanis took over. Cloves were introduced to the isles of Zanzibar in 1818 and Zanzibar became world famous for the trade with spices and slaves and the wealth of the islands grew steadily. Some figures say that in the 19th century as many as 50,000 slaves passed through Zanzibar every year.

Zanzibar was a British Protectorate from 1890 until 1963, when it achieved constitutional independence. The Revolution took place in 1964 and soon after Zanzibar united with what was then Tanganyika to form the United Republic of Tanzania. Until today Zanzibar remains semi-autonomous, and welcomes visitors to enjoy its natural beauty and cultural diversity.



A bird's eye view of Zanzibar's coast

The island's conservation areas and sites of interest



		Coral	Source: Based on map by the Institute of Marine Science (IMS), Zanzibar.
		Mangrove Settlement	

1 Tumbatu Island Marine Conservation Area



Tumbatu is an island with a long history, mythical rumours and relatively untouched reefs. This MCA has a very wide variety of development with Nungwi and Kendwa in the North, being some of the most developed areas in Zanzibar, and Tumbatu on the other hand being extremely traditional.

2 Mnemba – Chwaka Bay Marine Conservation Area



This long conservation area links Mnemba Island in the north to Chwaka Bay further south, along a barrier reef that separates Zanzibar's east coast from the open sea and provides foraging habitats for artisanal fishers.



The Mnemba Atoll has been a source of fish for the local population since time immemorial. Surrounding villages, the government, and the private lodge

operator on Mnemba have joined hands to protect the atoll from unsustainable fishing and tourism.



Chwaka Bay boasts the largest area of mangrove forest in Zanzibar. The bay's habitats teem with life, supporting fishing and seaweed farming activities in the bay and beyond. The mangroves on the western side of Chwaka Bay are part of the Jozani-Chwaka Bay National Park. Jozani Forest is the largest area of near natural vegetation in Zanzibar Island, and hosts the emblematic Red Colobus Monkey and endemic bird species. Jozani is part of a larger biodiversity hotspot, the Eastern Arc Mountains and Coastal Forests.

3 Menai Bay Conservation Area



The coastal waters of Menai Bay have been used for many years by fishers. The Menai Bay Conservation Area (MBCA) was created to protect its diverse marine habitats from overfishing and the use of destructive gears.

Today, this conservation area supports nearly two thousand fishers and their families, and has also become a major tourist attraction. The mangrove forests of Menai Bay are crucial to maintaining the bay's biodiversity and the stands in the northern part have important ecological links to Jozani Forest.

4 Chumbe Island Sanctuary



Chumbe Island Coral Park, including a reef sanctuary and a forest reserve, was Zanzibar's first MCA, initiated by a private company that still manages the park. This small island, with an almost pristine coral reef ecosystem, is one encouraging sign that shows that genuine conservation efforts really can work.

5 Changuu-Bawe Marine Conservation Area



The archipelago of islands, reefs and sandbanks in front of Stone Town are part of a MCA since 2009. This is an area full of cultural heritage with wrecks, ruins and ancient dhow culture

all around. The sand banks provide excellent picnic places for tourists leaving the intense Stone Town scene for a few hours during the day.

6 Stone Town Heritage Site



The Stone Town of Zanzibar is a fine example of the Swahili coastal trading towns of East Africa. Its urban fabric and townscape remain virtually intact. Many buildings reflect the mix of the cultures of Africa, the Arab region, India, and Europe that were brought together over more than a millennium. Stone Town was inscribed in 2000 on the World Heritage List.

A closer look into the Coastal Environment


The different habitats from the shore to the open sea

Mangrove forests

Mangroves form rich forests, with high biodiversity of plant, invertebrate and bird species. Occurring half-way between dry land and the sea, mangroves are unique salt-tolerant trees. Zanzibar has 10 different mangrove species occupying extensive areas, especially in the sheltered Chwaka Bay on the east coast and Menai Bay in the south.

Why are they so important?

- ideal feeding, breeding, nursery and shelter areas for fish and other species
- protect the shoreline from erosion caused by waves and storms
- help improve water quality and recycle nutrients
- provide important bird nesting grounds



Mangrove forests are crucial for local fisheries not only because they produce large biomass and contain and export high levels of nutrients, but also because they provide shelter against the open sea. People in Zanzibar have traditionally harvested mangroves for boat building, construction poles, lime and charcoal production, yet this use needs to be kept at sustainable levels. Mangrove habitats are fascinating to observe for the rich life they host, and are thus ideal sites for ecotourism and environmental education.

Seagrass beds

Further from the coast, seagrass beds cover the sandy bottoms of coastal lagoons. Seagrasses are flowering marine plants. Out of 60 species of seagrass worldwide, 10 are present in Tanzania.



Seagrass beds play an important role in the food web, helping to maintain marine biodiversity and thereby contributing to local fisheries. They also help reduce coastal erosion by stabilising the sand.

Why are they so important?

- provide food and habitat for species of fish and shellfish, turtles, filter-feeding organisms and other forms of sea life such as sea urchins and sea cucumbers
- filter the water of sediments, release oxygen and stabilise the bottom
- help to stabilise beach sand through washed-up seagrass leaves

Coral reefs

Colourful underwater gardens, coral reefs are built over centuries to create one of the most diverse ecosystems on earth. This delicately balanced marine environment relies on the interaction of hard and soft corals, sponges, anemones, molluscs, turtles, dolphins and other sea life. Corals are composed of thin layers of calcium carbonate secreted over thousands of years by billions of polyps, tiny soft bodied animals. These polyps live in a symbiotic relationship with host algae that give the coral its color. Flanking almost the entire coast, there are some 200 different coral species in Zanzibar.



Why are they so important?

- highly productive ecosystems, providing food and shelter to fish, crabs, lobsters and clams
- natural barrier against wave action and storms

Coral reefs support the island's important fisheries by providing a protective and diverse habitat for sea life. They also help protect the island's coastline from erosion. The stunning underwater scenery attracts tourists to the island, providing an alternative source of income for local communities. Also the white sandy beaches on Zanzibar are in fact tiny pieces of dead broken coral skeleton and shells.



The Open Sea

The nutrients in the warm Western Indian Ocean provide a source of nourishment for phytoplankton, which in turn is fed upon by zooplankton. Sardines and other small pelagic fish then feed on zooplankton, forming the basis of the local fisheries.

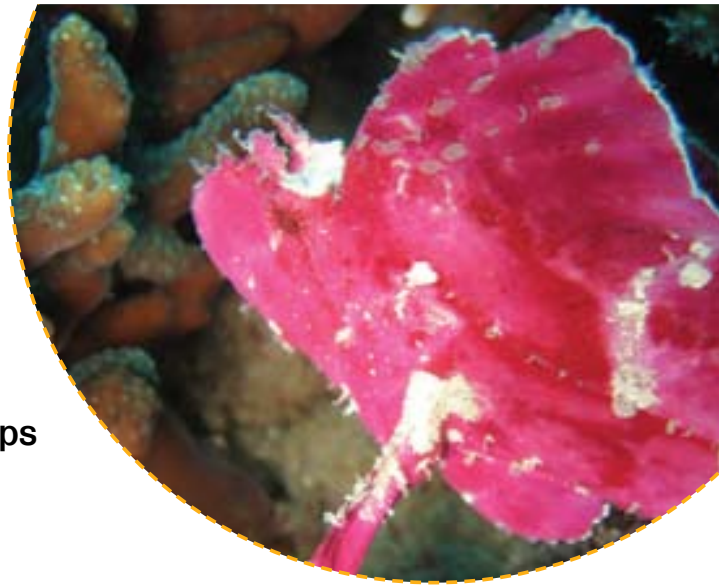
Why is it so important?

- hosts a wide diversity of reef and pelagic fish, some of which are commercially important
- provides habitat for sea turtles, endangered species that need special care, as well as marine mammal species such as whales and dolphins, several of which are threatened

The open sea forms the basis of large commercial fisheries that bring revenue to the country. The people of Zanzibar have for generations relied on fish stocks for their livelihood. As long as fishing is done in a sustainable manner and allows for regeneration, the ocean's fish can continue to support local livelihoods. Sea turtles, whales and dolphins are part of a balanced ecosystem and major tourist attractions.

Special Creatures

A closer look at adaptations and relationships between marine organisms



Clown fish and anemone, an example of a very advanced symbiosis

There are many species of clown or anemone fish, which all belong to the family of damselfish. The clownfish have developed a very advanced symbiotic relationship with certain anemones – the clownfish and the sea anemone help each other survive. They both benefit from the other, the clownfish gets left over food from the anemone and also good protection against predators, as no other fish can enter the stinging tentacles of the sea anemone. The anemone on the other hand gets a daily clean as the

clownfish eats all small particles left in the anemone and the anemone also benefits from increased water circulation because the clownfish fan their fins while swimming about.

The little clown fish can comfortably go in and out of the anemone thanks to a thin layer of slime which covers its entire body. Should the slime be removed, even the clown fish would get stung and probably even die from the stinging cells on the anemone.





The poisonous scorpion fish family

All species of fish that belong to this family are more or less poisonous. They have a special kind of venomous mucus that covers spines on their bodies and the dorsal, anal and pelvic fins all have glands that produce venom at their bases.

Some of the fish within this family are extremely well camouflaged, like the stone fish or the Indian Ocean Walkman, while others spend their life on full display like the Mauritius scorpion fish above or the beautiful lionfish with its bright colours warning off anyone who may want to try their luck.



Master of camouflage and adaptation to the environment – the seagrass ghost pipefish

Very few fish are as well adapted to their environment as the seagrass ghost pipefish. This is a tiny fish which feeds on minute forms of crustaceans that live either at the bottom or on the particular host organism where the pipefish lives. These fish truly are masters of camouflage and the same species can display a wide variety of colours, texture and patterns. This pair of robust ghost pipefish (*Solenostomus cyanopterus*) photographed on Chumbe Island have selected to mimic dead *Thalassodendron* seagrass, which is common close to the reef where they live. Note that the fish have even taken on the pattern of the white coralline algae often found on pieces of dead seagrass floating around between the coral bommies in the reef sanctuary.

People's Resources

Activities and pressures on the marine environment



A sea culture

Sailing and fishing in the waters of the Indian Ocean have traditionally played a central part in the history of the Swahili people in Zanzibar. To this day the islanders live in close association with the sea and rely on it for their livelihood. Some of the most important activities in Zanzibar are:

Fishing takes place mainly in the inshore waters and along the reefs, where traditional vessels like mtumbwi and ngalawas can reach. Fishers target Anchovies, Mackerel, Emperors, Spine Foot, Parrot Fish, King Fish and other demersal and pelagic fish species.

Octopus and shellfish collection is very common and often done by women and sometimes children in shallow waters and coastal lagoons.

Sea cucumber collection is usually done by divers with the use of a mask and snorkel. Sea cucumbers are then dried and sold to South Asian markets where they are considered a delicacy.

Seaweed farming is done by women. The pole and line farming method used in shallow waters is labour intensive and can accelerate coastal erosion, but a transition to deep water farming is being promoted. Dried seaweed is exported for agar extraction.

Mangrove harvesting is practiced by the people of Zanzibar for various purposes such as boat building, construction poles, fish traps, and charcoal and lime production.

Tourism based on marine resources is growing in the island, where the sandy beaches, coral gardens, colourful reef fish and marine mammals attract many tourists every year.

But are we taking good care of our island?

Despite generations and generations of sea-use in Zanzibar, the growing population and prevailing poverty put increased pressure on coastal and marine resources. Pollution, overfishing, destructive fishing methods, boat traffic, trawling and anchoring, removal of organisms, cutting of mangroves, and natural events can all have a negative impact on the health of our coastal and marine habitats.

In Zanzibar there are many projects acting for the conservation of these precious resources, such as mangrove replanting projects, Crown-of-Thorn starfish removal actions etc.



Zanzibar's coastal zone: what's the state of this environment?

- Tourism development is often too close to the high water mark, leading to erosion and undesirable changes to the coastline
- Many tourism developments continue to illegally dump waste and litter
- Social impacts of tourism are insufficiently monitored
- Destructive fishing techniques continue to harm coral reefs
- Overfishing caused by increasing numbers of fishers and increased demand is putting a high pressure on the ocean's fish stocks
- Sustained cutting continues to thin mangrove forests in spite of them being classified as forest reserves with only half of Zanzibar's mangroves considered undamaged
- Awareness of coastal issues in government departments is good, but there is still a lack of authority and funding to enforce regulations
- Steps are however being taken to improve the situation and one such measure is the introduction on ICM (Integrated Coastal Management) technical and steering committees.

Based on: State of the Environment Report for Zanzibar 2004/2005 with new updates



Protecting the Marine Environment

A network of conservation areas

Benefits of marine conservation areas

The preservation of Zanzibar's marine environment relies on the wise use and protection of its resources—promoting diversified livelihoods to relieve pressure from the sea, enhancing local awareness of sustainable resource use practices, and carefully assessing new developments.

Some MCAs are totally closed areas (so called sanctuaries or core zones, where no use of natural resources is allowed), while others are multiple use areas (where human activities are allowed as long as they are compatible with the conservation objectives). There is no “standard or model MCA”. The size, configuration and level of protection required vary from case to case and should be decided upon with input from all the people involved or affected.

Some of the benefits of MCAs are:

- **To conserve and enhance fishery resources** (providing refuge for spawning fish, rebuilding depleted stocks, protecting critical breeding stocks, providing insurance against events such as climate change, and improving scientific knowledge required for fisheries management)
- **To maintain diverse and healthy ecosystems** (protecting a wide range of species and ecological connections between habitats)
- **To protect critical or unique habitats** (providing nursery and feeding grounds, nesting areas, migration stopovers)
- **To protect endangered or threatened species** (such as sea turtles, dolphins)
- **To advance scientific research and monitoring** (providing a good baseline for environmental monitoring and management)
- **To minimise conflicts between resource users** (for example, tourism operators and fishers)
- **To contribute to socio-economic benefits for coastal communities** (through the creation of sustainable fisheries and enhanced recreation and tourism opportunities)

A growing network of conservation areas in Zanzibar

Everything in the marine environment is connected. The coastal and marine habitats in Zanzibar, from mangrove forests to the open ocean, are interlinked and their health relies on effective ecological connections between them. That is why a network of MCAs covering the different types of habitats in Zanzibar is so important.

With Menai Bay, Chumbe Island, Changuu-Bawe, Tumbatu and the coastal area linking Mnemba Island and Chwaka Bay most of the coastline around Zanzibar is already inside a MCA. Use of resources is allowed in most of these MCAs as long as it is sustainable. And the core zones or sanctuaries within the larger MCAs create a network of small areas of refuge where fish stocks, coral and other species can recover from the growing fishing pressure and can re-stock the areas with open access.





A Marine Conservation Area

(MCA) is a region of the ocean that is protected in law. MCAs can be created to protect biological diversity and habitats and maintain healthy marine ecosystems, and to protect the fish stocks in order to enhance local fisheries. In Zanzibar, the term MCAs, typically refer to large areas that are under management for sustainable utilisation that will also include core areas where fishing stocks can recover.

Zanzibar's first Marine Protected Area

Located between the Menai Bay and the newly designated Changuu-Bawe Marine Conservation area, Chumbe Island Coral Park (CHICOP) was Zanzibar's first MCA. This small island, with an almost pristine coral reef ecosystem, became a marine sanctuary in 1994. The park contains almost 90% of all coral species ever recorded in East Africa, as well as over 400 fish species. Restrictions on fishing, boating, anchoring and tourist and research activities are in place within the 0.4 ha no-take reef sanctuary on the western side of the island. Management of the Reef Sanctuary and Forest Reserve has been entrusted to a private limited company, which also runs an extensive environmental education programme for local schools inviting more than 3,500 students and 700 teachers to the island for practical training since 1998. All funding for park management, research and education comes from income from a small 7 room eco-lodge on the island (www.chumbeisland.com).

Some encouraging sign after more than 10 years of protection:

- Species diversity, richness and density are much higher in the protected area of the park; for example, a study found only 8 species of sea cucumber in the unprotected area compared to 28 inside the no-take zone.
- The fish are bigger inside the reef sanctuary; a study using Chumbe as a pilot site found that the total fish weight was 3.5 times higher in protected than unprotected sites.
 - The reef on Chumbe has recovered much better than other reefs after the devastating El Niño in 1998, partly thanks to the on-going

Crown-of-Thorn starfish removal programme put in place by the park management.

- In comparison to Chumbe, the unprotected reefs of Changuu have lower coral cover and a higher percentage of dead coral, algae and sea urchins, suggesting that the protection measures at Chumbe have positive impacts on the system.
- The forest reserve on Chumbe protects a small breeding population of the critically endangered Aders' Duiker mini antelope (*Cephalopholis adersi*) and the largest land living crustacean – the giant coconut crab (*Birgus latro*).
- The protected environment has also been favorable to the rare Roseate Tern (*Sterna dougallii*) which has had successful breeding colonies on Chumbe in 1994 and 2006.



Mnemba - Chwaka Bay Marine Conservation Area

Mnemba Island, a multiple-use zone

Off the north eastern coast of Zanzibar is a small island called Mnemba. The 10 hectare island is shared only by tourists, small suni antelopes, turtles nesting on the white sandy beaches, and birds resting in the trees. Yet the Mnemba Atoll supports many fishers from villages along the east coast of Zanzibar. Surrounding villages, the government, and the private lodge operator on Mnemba are striving to protect the atoll and promote sustainable fishing and tourism in the Mnemba Island Marine Conservation Area (MIMCA).



The natural environment

- Mnemba Island is surrounded by a ring of hard corals that boasts one of the highest levels of species diversity among the reefs in the northern part of Unguja, including 36 different hard coral genera.
- More than 200 fish species have been recorded in and around the atoll, including large predatory fish in the open sea such as Barracuda, Mackerel, Kingfish, Sailfish and Marlin.
- The waters around the island are regularly visited by whales (Sperm and Humpback Whales), dolphins (Spotted, Spinner and Bottlenose Dolphins), sharks (mainly White-tip Reef sharks), and occasionally even migrating rays (Manta and Devil Rays).
- Green turtles nest on the island's sandy beaches.
- Native plant species provide a diverse forest cover attracting many birds. The wading Crab Plover and shore birds such as the Whimbrel, Lesser (Mongolian) Sandplover, Curlew Sandpiper, Sanderling and Ruddy Turnstone are frequent visitors to the island.



Peoples and activities

- Communities on the east coast of Zanzibar, where fishing is the main livelihood, use the rich fishing grounds in the western part of the atoll.
- Seaweed farming is practised largely by women in some villages near Mnemba Island.
- Tourism based on natural assets, such as diving and snorkelling, is a major economic activity in the atoll area. 'And Beyond' offers luxury accommodation at the Mnemba Island Lodge, as well as underwater activities.

Officially created in 2002, the Mnemba Island Marine Conservation Area (MIMCA) includes the coastal area from the Michamwi peninsula and all the way around to Kendwa in the north. It is a multiple-use zone where only sustainable fishing methods and gears are permitted, and where tourism is encouraged that does not harm the corals and other living marine resources. The House Reef on the north-western side of the island has been declared a no-fishing zone, and has since seen a significant recovery.



What is an Atoll?

An atoll develops when a fringing reef has formed around a volcanic island that has subsequently become submerged. It is one of four types of coral reef formations, the other three being Fringing Reefs, Barrier Reefs, and Inshore Fringing and Patch Reefs. Both Unguja and Pemba have fringing reefs along almost the entire coastline.



Mnemba - Chwaka Bay Marine Conservation Area

Chwaka Bay, the largest mangrove forest in Zanzibar

A shallow bay on the east coast opening up to the north, Chwaka Bay boasts the largest area of mangrove forest in Zanzibar. The bay's habitats of coral reef, mangrove, sandy beaches, seagrass, coastal thickets and palm fringe teem with life. This life not only supports the local fishing and seaweed farming activities, but also has vast implications on the marine resources along the entire coast of Zanzibar Island and beyond.



The natural environment

- Chwaka Bay supports the largest single area of mangrove forest in Zanzibar, with 7 different species of mangroves and a wide range of associated plant and animal life associated.
- The mangroves and seagrass beds are important breeding, feeding and shelter areas for marine organisms, including open sea fish species.
- The mangrove forest along the shores and small islands in the bay provide important bird nesting grounds.
- Sea turtles nest on the sandy beaches, especially along the Michamvi Peninsula.
- Within the Eastern African Marine Ecoregion, Chwaka Bay has been accorded conservation priority for its seagrass, algae and sponge communities.
- Jozani/Chwaka Bay has been placed on Tanzania's tentative list for World Heritage Sites.



Peoples and activities

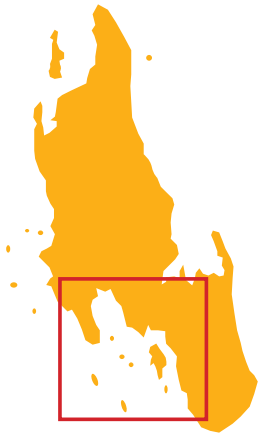
- Chwaka's mangroves have for generations been crucial sources of livelihood, providing wood for construction poles, firewood, and charcoal and lime production.
- The bay's nursery and breeding grounds for fish support the fisheries in the bay and beyond, helping to secure the livelihoods of the growing population on the east coast.
- Seaweed farming is an important economic activity in the bay, especially for women.
- The bay, with its fringing mangroves, bird breeding small islands and sandy beaches along the Michamvi Peninsula, is an attractive site for tourists.

Part of the mangrove area in Chwaka Bay that adjoins Jozani Forest was integrated in the Jozani-Chwaka Bay National Park in 2004, with positive effects on the mangrove stands that had been heavily degraded. Rangers drawn from surrounding communities patrol the conservation area on a daily basis.

Conservation activities are funded by tourism revenues and a large share is allocated to the communities. The area can offer ecotourism activities such as mangrove walks, canoe trips and bird watching.

Recently Chwaka Bay and Mnemba Island have been joined together in one single conservation area, the Mnemba-Chwaka Bay Marine Conservation Area. This stretch of marine habitats along the east coast's fringing barrier reef provides a crucial corridor ensuring a healthy ecosystem.





Menai Bay Conservation Area

Conservation rooted in traditional fisheries management

Menai Bay has been used for many years by fishers deploying traditional gears and methods such as wooden traps, hand lines and fences. Its many small islands and peninsulas, some of them inhabited, served as camping grounds to reach offshore fishing areas. However, the late 80s saw an increased use of destructive fishing methods, resulting in negative impacts on the bay. The Menai Bay Conservation Area (MBCA) was hence created to protect the habitats of the bay and the livelihoods of the people living there. Today, the bay supports nearly two thousand fishers and their families and is also a major tourist attraction located only 12 km away from Stone Town.



The natural environment

- Mangrove stands covering sheltered bays and inlets provide breeding, nursery, feeding or sheltering grounds for shrimps, crabs and commercial fish species. Menai Bay is the second largest mangrove stand on Unguja Island after Chwaka Bay.
- Plant life in these forests is incredibly diverse: at least 7 species of mangrove and 70 associated plant species of algae, seagrasses, lichens, ferns, climbers and epiphytes are found there.
- Green and Hawksbill turtles visit the waters of the bay and nest on some of the beaches in the area.
- Menai Bay is an important habitat for the resident population of Bottlenose and Humpback dolphins. Whales also visit the bay during their migrating season in July-September.
- Seabirds migrating along the coast of East Africa stop in Miwi, Pungume, Kwale and other small islands in Menai Bay.
- Just north of the conservation area lies Jozani Forest, popular for its Red Colobus Monkey population. This terrestrial habitat has key ecological links with the Pete mangroves on the northern border of the MBCA.



Peoples and activities

- Fishing is the most important economic activity in Menai Bay. The main fishery resource is finfish, both pelagic and demersal.
- Octopus collection is mainly done by women and children in the intertidal reef flats.
- Diving for sea cucumbers is also common.
- Seaweed farming is another major activity for women in Menai Bay.
- The people living near Menai Bay have historically relied on mangrove wood.
- Menai Bay is a major tourist destination, with dolphin watching, snorkelling and diving, canoe trips, mangrove walks and cultural attractions on offer.

The Menai Bay Conservation Area (MBCA) was established in 1997, prohibiting destructive fishing techniques and polluting activities. Conservation efforts in Menai Bay are rooted in the bay's traditional fisheries management including seasonal closure of fishing areas and control of fishing gear and visiting fishers.

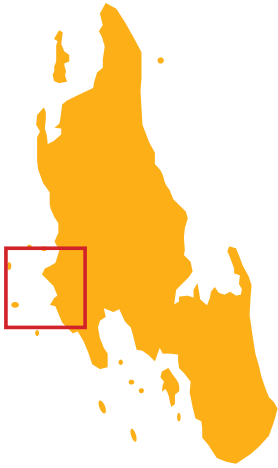
Managed by community and local government units facilitated by the DFMR of Tanzania, the MBCA has succeeded in reducing destructive fishing. A system of permits and fees for use of the area by non-residents was established and the revenue is allocated to management and community development.

What is an Important Bird Area (IBA)?

The south and the east coasts of Zanzibar are two Important Bird Areas (IBAs). In the southwest, the two adjacent bays of Kiwani and Kombeni as well as the protected Chumbe Island attract large numbers of Terek Sandpipers, Crab

Plovers and Roseate Terns. On the east, the area extending north from the village of Paje to Chwaka Bay provides feeding ground to Greater Sand Plovers, Crab Plovers and Saunder's Terns. Important Bird Areas (IBAs) are key sites for conservation—because birds are effective indicators of biodiversity, the conservation of these sites ensures the protection not only of bird fauna, but also other animals and plants.





Changuu-Bawe Marine Conservation Area

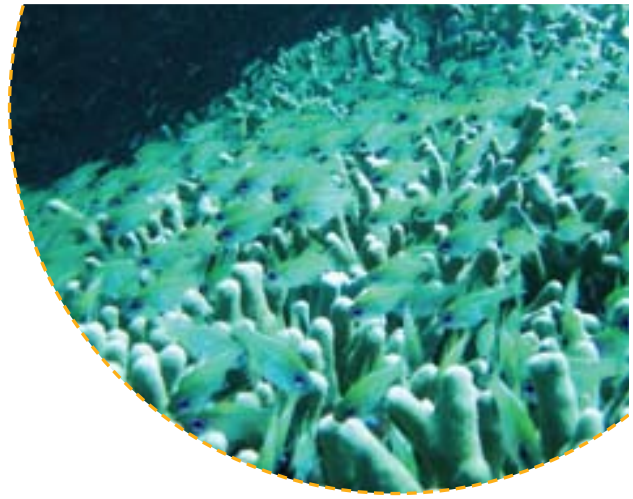
A heritage site area in many aspects

The archipelago in front of the World Heritage site of Stone Town contains four islands and a number of sandbanks and submerged reefs as well as many shipwrecks. Two of the islands – Changuu/ Prison Island and Chapwani/Grave Island played an important role in the history of Zanzibar and Stone Town and there are still some historical buildings remaining on these islands. On Changuu there is also a population of giant Aldabra tortoises, which are the descendants of 4 tortoises that were donated from the British Governor of Seychelles to General Sir Lloyd William Mathews in 1919.



The natural environment

- The reefs in the Stonetown archipelago are in a relatively good shape with high live coral cover and the reefs are very shallow and easily accessible for both tourists and fishers.
- Starting just north of the main port and stretching all the way up to the palace ruins in Maruhubi is a large and continuous stand of mangroves, which contributes significantly to the health of the entire ecosystem.
- The white sandbanks that come out of the water at low tide in this area are important resting places for marine birds and also a very attractive daytrip destination for tourists from the crowded town area.
- Both turtles and dolphins can be seen around the reefs in this area.
- There is population of around 100 individuals of Aldabra tortoises on Changuu Island.



developed with hotels established on three of the four islands, and a number of tour operators offering daily diving and snorkelling trips to the reefs.

At the same time there are many fishers from the town region that sustain their livelihood by catching fish, octopus and shellfish within this area, so the newly established Changuu-Bawe Marine Conservation Area (CBMCA) strives to achieve a more sustainable resource use and a balance between the people using these rich resources.

Peoples and Activities

- The harbour activity is the most prominent of all human activities in the area close to Stone Town – the capital of dhow traders.
- A lot of traditional fishing also takes place on the reefs near town.
- In the southern part of the proposed Changuu-Bawe Marine Conservation Area, diving for sea cucumbers is a very common activity.
- Tourism is very big in this region with a number of recreational dive centres, snorkelling operators, so-called “dhow safaris” to the sand banks and local boats doing daily transfers to and from the islands.
- Changuu and Chapwani Islands have sites of historical interest – the old prison on Changuu Island (which was never used as a prison, but as a hospital and yellow fever quarantine station during the time of the British protectorate in the early 1900’s) and the graves on Chapwani Island.

The old harbour in Stone Town has a big impact on the marine environment in this area, with large numbers of both passenger and cargo ships passing through the archipelago every day. Tourism in the archipelago is well-

Historical Wrecks in the MCA

The Archipelago near Stone Town, the historical trading capital, has always been famous for its many ships. So it is not surprising that there are a number of shipwrecks in the area. Wrecks are not only interesting from a historical perspective, but after short time on the seafloor they become artificial reefs, rich in biodiversity surrounded with an abundant marine life.

In the newly created Marine Conservation Area around Stone Town there are at least three shipwrecks, which can be explored with any of the dive centres offering daily dive excursions (www.zanzibaroneocean.com).

The three main wrecks are; The Great Northern (built in 1870) was a British steel cable laying ship which sank on New Years Eve 1902, just off one of the reefs next to Pange sandbank. There is a wreck at 30 meters depth, just next to Bawe Island, and this ship used to be the Royal Navy Lighter. Another wreck with an interesting history is The Penguin, which now rests at 40 meters depth between Pange and Murogo. This steamship was used to dredge the port in Stone Town in the 1920’s.



Tumbatu Island Marine Conservation Area

Conservation around the mythical island in the North West

Tumbatu Island on the north west of Zanzibar is the largest of all islands around Unguja. It has a relatively low population per surface area and is still considered a very remote place. Few outsiders have ever visited this island which is steeped in legends and mythical rumours. On the other hand, the Marine Conservation Area also contains one of the most developed areas in Zanzibar – the beach areas in the popular Nungwi and Kendwa. The rich marine environment around Tumbatu Island and along the north east coast of Zanzibar is a traditional fishing ground for people from the entire region. The newly established MCA also contains the third largest mangrove stand in Zanzibar.



The natural environment

- There are large mangrove stands, both on Tumbatu Island and to the south west of Mkokotoni, which provide excellent nursing and feeding grounds for fish and shellfish in the entire area.
- The coral reefs along the western shore of Tumbatu Island are high in biodiversity and support even pelagic fish species of commercial value, such as jacks, tunas and barracudas.
- Some of the reefs in this area are dream sites for underwater photographers with plenty of seahorses, ghost pipe fish, and a variety of scorpion fish among other things.
- The deep channels just off Tumbatu are commonly visited by humpback whales on their migrating routes during the season from July to September.
- There is a group of submerged offshore reefs about 4-5 kilometres west of Tumbatu, and these reefs provide important fish feeding and breeding grounds.

Peoples and activities

- Fishing is the most important economic activity in the Tumbatu region. The fishers use mainly traditional techniques and small boats, but commercial fishing with large nets has become more common in recent years.
- Shellfish and octopus collection is very common



during spring tides on the shallow intertidal flats around the northern tip of Zanzibar.

- Recreational diving tourism is a big industry in this region with more than 7 dive centres established.
- The island of Tumbatu is extremely rich in terms of cultural heritage with stories, old ruins, caves and other points of interest scattered all over the island.

The Marine Conservation Area around Tumbatu Island and the North West coast of Unguja was recently established, with the main aim of trying to reduce destructive fishing practices and find a balance between the expanding tourism industry and the local communities.

Marine Conservation Areas incorporate multiple uses – including core areas or sanctuaries for conservation of biodiversity along with fished sites and reef areas specially designated for tourism. The park entrance fees collected will be used for development in the local villages as well as for conservation efforts within the park.



Cultural Heritage on Tumbatu Island

The Watumbatu ethnic group on Tumbatu has many claims for antiquity and some of them say that the first people on Unguja settled on Tumbatu. There are indeed several interesting ruins on the island, such as a 14th century mosque ruins and some 40 stone houses of the Shiraz people, built in the 12th century.

There are also some sacred caves, an old light house and other historical sites on Tumbatu, making the island well worth a visit.

How do we manage Conservation Areas?

A joint effort to protect our island



Conservation is no longer seen as a government initiative that excludes people, but increasingly as a joint effort of government, communities and other users of resources. Marine Conservation Areas (MCAs) aim to protect the marine life on which many people rely for their livelihoods, thereby making a contribution to poverty reduction.

Management of conservation areas in Zanzibar thus needs to be a concerted effort of the Department of Fisheries and Marine Resources (DFMR), local administration, surrounding villages and users of the area—fishers, seaweed farmers, tourist operators, and tourists, for example. Other government departments (such as the Department of Environment and the Zanzibar Commission for Tourism), non governmental organisations and community-based associations, as well as visitors to the island, all have important roles to play.



Who is involved?

- **Patrollers monitor the area** to make sure that the users and visitors comply with regulations. The aim is to prevent illegal fishing, disturbance of no-take zones, use of unsustainable fishing methods and gears, damage of corals, disturbance of dolphins, sea turtles and other marine life, or littering of beaches and the sea. Monitoring, control and surveillance (MCS) covers both sea patrolling using well-equipped patrol vessels, and aerial patrolling, using hired airplanes that are linked with a radio base.
- **Fishers and other users monitor the area** and report to the MCA management any worrying signs they see in the coastal and marine habitats such as degraded or unhealthy coral reefs, declining fish stocks, and reduced mangrove cover. They can also report any damaging activities such as boats anchoring on coral reefs, fishers using illegal methods, and inappropriate tourist behaviour.
- **Marine scientists monitor the environment** by regularly examining the health of coral reefs and other habitats, and recording species diversity and abundance. Regular data collection on

the status of the environment is necessary to assess the effects of conservation measures and respond promptly to warning signs.

- **All stakeholders present their concerns and discuss** issues relating to the uses and protection of the area. In some cases a Management Committee is put in place, including representatives of the major stakeholder groups. Based on the views and concerns of these stakeholder groups, the Committee can then take informed decisions about the MCA. Often a management plan is prepared to guide actions on the ground.
- **Managers, patrollers and users of the area educate others** about the MCA, their natural resources, and how they can better look after them. There is continuous capacity building and operational training in the areas of sea fisheries, patrolling, monitoring and communication.



What local communities can do

- Look after the marine environment. Keep the sea and the beaches clean, avoid disturbing marine animals and plants, and do not remove endangered species including sea turtles.
- Look after mangrove forests. Keep these areas clean and support efforts to replant degraded areas, promote sustainable harvesting and encourage alternative energy sources to ease the pressure on mangrove wood.
- Help to build support in your community for initiatives promoting more sustainable use of natural resources, for example through existing Village Conservation Committees (VCCs) and District Conservation Committees (DCCs).
- Keep the departments of fisheries, environment and tourism informed about the status of marine life in your area, and potential threats, and present your concerns and suggestions for improvement.
- Encourage fishers and villagers in general to support the establishment of MCAs by explaining their benefits. The people of Zanzibar and their children are the main beneficiaries of conservation initiatives.
- Tell tourists about your island's heritage and how they can respect and protect it.
- Support the activities of local NGOs that aim to protect the coastal and marine environments and promote sustainable livelihoods for the islanders.
- Participate in Environmental Impact Assessment processes for proposed developments in your area, by giving your input and expressing your concerns in public consultations.

For more responsible Fishing and Tourism

Tips for fishers, tourism operators and visitors



Responsible fishing

The importance of fisheries in Zanzibar cannot be overemphasised. However, there is pressure on fishing stocks in many areas, triggered by a growing population in the islands, pressure from tourism and insufficient alternative livelihoods. Here is some guidance for more responsible fishing:

- Respect the Zanzibar laws regarding fishing methods and gears, as well as restrictions on fishing seasons and fish size.
- Observe the regulations and restrictions in the different zones of MCAs. Do not trespass no-fishing zones; they are crucial to ensure the replenishment of fish stocks elsewhere.
- When fishing, make sure your gear and vessels do not damage the coral reefs or disrupt other marine life.
- Do not remove or disturb any endangered species including sea turtles and dolphins.
- Support the establishment and management of MCAs. Ask the local authorities how you can give your ideas and participate actively.
- Participate in Frame Surveys conducted by the DFMR and collaborate with Monitoring, Control and Surveillance (MCS) efforts.
- Request information from the DFMR on credit schemes available from the Government.
- Spread the word among other fishers and raise environmental awareness in fishing villages.
- Inform the local authorities if you notice any destruction signs in the marine environment or significant reductions in fish stocks.

TIPS

For Visitors

- Waste management is a problem in Zanzibar that is being addressed and you can help by keeping the sea and the beaches clean.
- When diving or snorkelling, do not remove, touch or stand on the corals.
- When in a boat, always drop anchors in the sand away from the reefs or use mooring buoys when available.
- Do not take any endangered species from the water or the beaches including sea turtles. Do not disturb marine mammals including dolphins.
- Do not buy undersize lobster and fish, or turtle shells and other prohibited marine products as this would encourage illegal fishing.
- Tourists should observe the guidelines set for all marine tourism activities.
- Respect the Muslim traditions and customs that prevail in the islands. Women should cover their shoulders and legs as far as possible.
- Ramadan is an important time of the year for the Zanzibaris and the Muslim community, when they restrain from eating and drinking between sunrise and sunset. During this time, try to avoid drinking and eating in public. Food will be more difficult to find so you may need to make special arrangements.
- Zanzibar has always been a meeting point for different cultures and there are numerous sites on Unguja that have historical or spiritual significance to the islanders. Respect cultural and archaeological sites as well as shrines.



Sustainable tourism

Tourism is the fastest growing sector of Zanzibar's economy. Beach tourism is significant and new developments continue to spring up along the east and northern coasts of Zanzibar, often targeting mass-tourism markets. Concerns exist over increased use of water and other resources, cultural impacts, and the level of benefits for communities. Here is some guidance for tourism operators:



- Observe the regulations and restrictions in the different zones of MCAs. Use only areas where tourism activities are permitted.
- Encourage guide certification and training for environmentally and culturally responsible tourism. Tell tourists how they can protect Zanzibar's marine environment and respect the local culture.
- Participate in surveys and studies conducted by the Zanzibar Commission for Tourism.
- Support the establishment and management of MCAs. Ask the local authorities how you can give your ideas and participate actively.
- Spread the word among other tourist operators and raise environmental awareness in the villages.
- Inform the local authorities if you witness destructive tourism activities or see any signs of destruction in the marine environment.

Useful Contacts

Some key contacts for more information

DFMR The Department of Fisheries and Marine Resources (DFMR), under the Ministry of Agriculture, Livestock and Environment (MALE) is dedicated to making the fisheries sector more sustainable in Zanzibar. The DFMR Head Office in Zanzibar is located in Livingstone House, Malawi Avenue, P.O. Box 774, Zanzibar. Contact the DFMR at wwfmenai@zitec.org or mcsznm@zanlink.com or www.mcu.ortz.

MACEMP The Marine and Coastal Environment Management Project (MACEMP) is implemented by the DFMR with funding from the Global Environment Facility (GEF) through the World Bank. The project aims to better the understanding of coastal and marine resources and to promote their contribution to poverty reduction. Contact the Manager at macemp@zanlink.com. The MACEMP office, P.O. Box 774, Zanzibar, is located in the Barclay's Bank building on Malawi Avenue. Visit www.gefonline.org for more information about this project.

ZCT The Zanzibar Commission for Tourism (ZCT) was established to promote the archipelago as a tourist destination and is engaged in licensing and monitoring of tourism activities, public education, training and assistance to investment. More about the Commission as well as useful information for tourists is available on www.zanzibartourism.net.

IMS The Institute of Marine Sciences (IMS) of the University of Dar es Salaam is dedicated to research, training and consultancy services in marine issues. Visit www.ims.udsm.ac.tz for more information on IMS activities.

WIOMSA The Western Indian Ocean Marine Science Institute is a regional NGO membership organization with the aim to promote the educational, scientific and technological development of all aspects of marine sciences throughout the region. More information available on www.wiomsa.org.

Menai Bay Conservation Office A marine conservation area in the south of the island. Contact the Manager at wwfmenai@zitec.org. The address is P.O. Box 774, Zanzibar.

Mnemba – Chwaka Bay Marine Conservation Area A marine conservation area including Mnemba Island in the north and Chwaka Bay on the east coast. Contact mcsznm@zanlink.com. The address is P.O. Box 774, Zanzibar.

DAMA The Department of Archives, Museums and Antiquities (DAMA) is dedicated to preserving Zanzibar's heritage for present and future use. More information about the department can be found on www.zanzibarheritage.go.tz.

ZATI (Zanzibar Association for Tourism Investors) The Zanzibar Association of Tourism Investors (ZATI) is a non-governmental, non-religious, and non-political organization, and they are much active in trying to promote eco-tourism in Zanzibar. ZATI, P.O. Box 2578, Zanzibar, Tanzania, Tel: +255 (0) 24 2232378, Mobile: +255 (0) 755 412603, Email: info@zati.org or zati@zanlink.com. More information on www.zati.org.

CHICOP Chumbe Island Coral Park is the company that manages Chumbe Island. They participate actively in marine conservation initiative all over Zanzibar and run an extensive environmental education programme for schools in Zanzibar. More information is available on www.chumbeisland.com or from the main office at chumbe@zitec.org.

JECA The Jozani Environmental Conservation Association (JECA) is an NGO representing villagers from key communities around Jozani that carries out a number of activities in conservation education and forest protection. Contact JECA at jeca.jecajozani.community@yahoo.co.uk.



A joint initiative of the government and the people

The Department of Fisheries and Marine Resources (DFMR) works closely with the fishers in Zanzibar. Together they devise solutions that secure the livelihoods of the fishers while protecting the marine environment—which form the base for livelihoods related to marine resources. The Marine and Coastal Environment Management Project (MACEMP) aims to enhance the contribution of marine and coastal resources to economic growth and poverty reduction, and to better the understanding of those resources and major threats to them. This five-year project is implemented by the DFMR with funding from the Global Environment Facility (GEF) through the World Bank.



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