

Wonderful Water

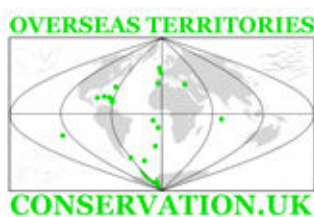
An Environmental Education Programme

A Watery World

Mangrove Ecosystems in TCI

6. Caring for Mangroves

Pupils' Text



TCI
Education Department



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This environmental education programme has been produced by the UK Overseas Territories Conservation Forum (UKOTCF) and the Turks and Caicos Department of Education.

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The project was developed from an original idea by Mr Edgar Howell, Director of Education, Turks and Caicos Islands, and these materials developed by a team co-ordinated by Ann Pienkowski, Environmental Education Co-ordinator, UKOTCF. In particular, thanks to Bryan Naqqi Manco for his input to this unit.

It is hoped that through the teaching materials developed for this project, students in TCI will gain a greater understanding of the importance of the water ecosystems in TCI, and the need to conserve these.

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Introduction

We have been learning about mangrove ecosystems, why they are important, and how they are being destroyed and damaged. In this section, we will discover some of the ways we can protect and care for our mangroves.

Objectives

You will:

- Learn some ways in which mangrove ecosystems are being protected and restored;
- Learn about some of the ways in which mangroves can be used without damaging them (used sustainably).

You will also revise:

- What plants and animals need to survive;
- That different living things are found in different places because they need different things to live;
- Why mangroves are important;
- Why mangroves are threatened.



Boardwalks and viewing platforms in mangroves can support sustainable tourism development.

What do animals and plants need to live?

We need to know what animals and plants need to survive, and how important they are to all of us, so that we can understand why we must respect and protect our natural environment, and what we need to do to achieve this.

In order to survive, animals need oxygen, water, food, and shelter (protection from predators and the environment).



Fish get oxygen from the water, through their gills.

The yellow warbler eats insects it finds amongst the mangrove trees. The trees also provide protection and shelter



The yellow warbler breathes oxygen from the air. This bird can fly to find freshwater to drink.

Plants need carbon dioxide and oxygen, water, nutrients, and light. Every organism has its own way of making sure its basic needs are met.

Plants use energy from the sun to make their own food. They also need carbon dioxide from the air. This process happens in the plant's leaves and is called photosynthesis.



All living things need oxygen for respiration. Respiration is used by plants and animals to release the energy they need from their food.

Additionally, all living things need to reproduce, for the species to survive.



Wilson's Plover chick amongst Black Mangrove snorkel roots.

Buttonwood seeds



Mangrove trees are specialised to live in the harsh coastal environment. They can survive the salt and the different water levels they experience. Other trees cannot do this, they would be killed quickly by the salt.



The Black Mangrove gets oxygen for its roots from special snorkel tubes (pneumatophores) because the soil in which it lives does not have any oxygen.



The Red Mangrove prop roots keep the leaves of the tree above the salt water. The animals, like young fish and young turtles, which live amongst the mangroves get shelter from the prop roots.

The mangrove trees provide a safe nesting or roosting place for different birds, like pelicans and herons. If the mangroves were not there, then many of the young fish, turtles and birds would not survive.

Mangroves are important

Mangroves are not the useless, smelly, bug infested places which they are often thought to be. They protect our islands against storms and hurricanes; they provide shelter and food for an amazing variety of living organisms, including the young of fish species which provide food for people; they act as filters and so protect coral reefs and seagrass beds from siltation and pollution; they help lessen the effects of climate change and they can be a great tourist attraction.



Both Coral Reefs and Seagrass Beds are protected by Mangroves

Mangroves are threatened

However, mangroves are being damaged and destroyed by human actions such as clearance for various kinds of built development, and pollution. It is estimated that worldwide up to 50% of the mangroves have already been destroyed. The destruction of mangroves in TCI has not been as great as this, although some important mangrove areas have been cleared, or are threatened, especially in Providenciales and parts of North Caicos. The two major threats to mangrove ecosystems in TCI are clearance and pollution. Clearance for built development, often in connection with the tourism industry, has been the cause of much of the mangrove loss.



Marina developments can threaten mangroves by clearance and pollution.

Looking after the mangroves

The importance of the mangroves in the Turks and Caicos Islands has been recognised, and there are several ways in which the mangroves in the TCI are protected and cared for, and the public is being made more aware of their value.

Protection by Law

In 1992, a total of 33 Protected Areas were set aside for the conservation and preservation of the Turks and Caicos Islands' natural resources. These areas are protected by TCI law - the National Parks Ordinance of 1989. In February 2011 Town and Red Salinas on Grand

Turks also were declared protected areas under the Ordinance.

The sites were chosen for their outstanding natural and cultural features. There are four types of protected areas: National Parks, Nature Reserves, Sanctuaries and Historic Sites.

All the protected areas are important for conservation, natural or historical or both. However, the four different kinds of protected areas have different purposes.

National Parks were created to protect the environment, but also to allow people to enjoy them. People can use the National Parks for leisure activities, but they cannot do whatever they like. There are rules to follow, and some activities, like fishing, can only take place in certain areas. Plants, animals, coral and sand are all protected from damage and removal. It is forbidden to dump waste products and rubbish.



The Princess Alexandra National Park, Providenciales, is very popular for snorkelling. A snorkel trail was developed many years ago, around Bight Reef (White House Reef) in front of Coral Gardens. The Turks and Caicos Reef Fund (TCRF) restored the tiles and markers, so that the trail could be enjoyed again. The trail markers consist of a ceramic tile made by local artists on Providenciales mounted to a reef ball anchored to the sea floor. Each marker describes an important fact about coral reefs and how to protect them.



Stacie J. Steensland, TCI Environmental Club, found these bleach bottles in one week on Longbay Beach. One of the other most frequent finds is discarded bottles of motor oil. Both bleach and oil are very bad for wetland ecosystems,

Nature Reserves allow some low-key recreation to take place, as for the National Parks, but there are more restrictions on activities.

People are not allowed into Sanctuaries unless they have a permit. This is because they are extremely important for wildlife, which would be damaged by disturbance.

Areas of Historic Interest, as the name says, will have old buildings or archaeology which needs protecting. However, the areas of historic interest have the same restrictions on activities as Nature Reserves. So the natural environment is also protected in these areas.

Many of these protected areas protect the important mangroves in the Turks and Caicos Islands. Some of these are described below.

Pigeon Pond and Frenchman's Creek Nature Reserve



On west Providenciales, the Pigeon Pond and Frenchman's Creek Nature Reserve is an incredibly important area. There are large expanses of mangroves along the coast, with many creeks which provide a major nursery area not only for the western side of the Turks and Caicos Islands but also for this region of the Caribbean. So the fisheries of TCI, the coral reefs, opportunities for eco-tourism, are all very dependent on this area. The young lobsters spend their first few months of life growing here, in safety amongst the mangrove prop roots.

Princess Alexandra Nature Reserve



To the east of Providenciales is the Princess Alexandra Nature Reserve. The Nature Reserve is enclosed within the Princess Alexandra National Park and includes the wetland and upland areas of Little Water Cay, Donna Cay and Mangrove Cay. Within the Nature Reserve's boundaries are many critical habitats, including mangroves. Just below the surface of the water, hundreds of mangrove snapper, juvenile barracuda, juvenile lobsters and conch find shelter among mangrove prop roots. Many birds use the mangrove trees for sheltering and nesting. Just north of Mangrove Cay, the small island of Little Water Cay boasts the third largest population of Critically Endangered TCI Rock Iguanas (*Cyclura carinata carinata*) in the country.

North, Middle, and East Caicos Nature Reserve

This site is also a designated Wetland of International Importance, also called a Ramsar Site. The Ramsar Convention is the only global environmental treaty that deals with a particular ecosystem (wetlands). The treaty was agreed in the Iranian city of Ramsar in 1971. Governments sign up to this treaty. When they do this they agree to promote the conservation and wise use of wetlands and their resources, and protect key areas.

The North, Middle and East Caicos Ramsar site is very large (210 square miles) and includes much of the wetlands of North, Middle and East Caicos, including large areas of mangroves, as well as other wetland ecosystems, caves, and tropical dry forest. It is one of the most natural, and one of the largest, Ramsar sites in all of the UK Overseas Territories



Grand Turk has two important mangroves areas, one at South Creek National Park, and the other at North Creek.

South Creek National Park



South Creek National Park contains the largest stand of Red Mangroves on the Turks Bank. These mangroves and the surrounding seagrass flats are important nursery habitat for lobster, conch and reef fish. They are also very important for many birds. The South Creek mangroves were rather battered by Hurricane Ike, but most survived, proving their worth as hurricane protection. They are now re-growing.



Red Mangroves re-growing at South Creek, Grand Turk.

The North Creek area is not, at present, one of the protected areas. Both the northern and southern ends of North Creek have large wetland habitats. These are important nursery habitats for large numbers of juvenile fish and lobsters.

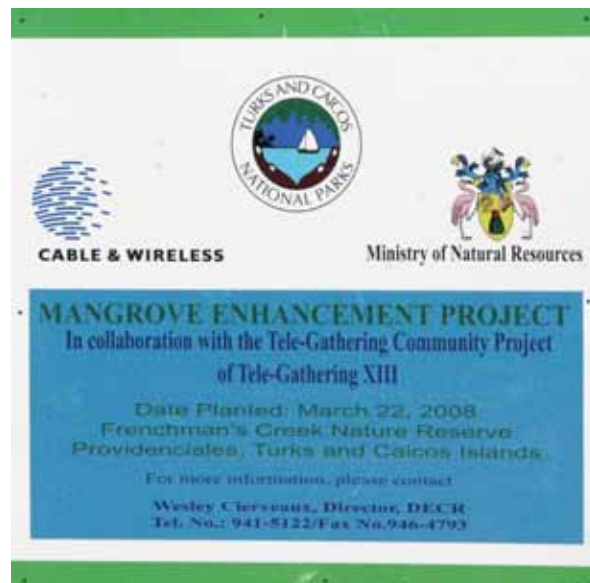


North Creek, Grand Turk, has extensive areas of mangrove, but is not yet one of the protected areas.

Through these protected areas, and other laws, the government of the Turks and Caicos Islands recognises how important mangroves are. Mangroves outside protected areas are also important in protecting our islands and people from storms, and in giving protection to growing fish and lobsters. Red mangroves are protected by TCI law from disturbance. The law says that if a development is given approval, and mangroves will be damaged by it, then mangrove planting is required. For every mangrove plant that is disturbed, then ten new plants should be planted in a suitable place.

Re-plant mangroves

The Department for Environment and Coastal Resources (DECR) grow mangrove seedlings in their native plant nursery, and volunteers often help with re-planting projects. Of course, it is better not to damage existing mangroves, as sometimes replanting is not successful, and it does take quite a long time for mangroves to grow. But where mangroves have been destroyed, then re-planting is important.



Department of Environment and Coastal Resources (DECR) mangrove re-planting scheme.

Other ways of protecting mangroves

Keep mangroves healthy

Mangroves are damaged by pollution. This can be, for example, from oil spills and marinas, chemical waste, polluted water from hotels, resorts, golf course, farms and dumping of rubbish. So a proper waste management system will help protect mangroves from pollution.



The dump on Grand Turk is near to wetland ecosystems, so it needs to be carefully managed to avoid pollution.

Eco-tourism

Many mangrove areas were destroyed for tourism development, and this is still happening. However, the mangroves themselves can be the basis of a successful and sustainable tourism business. There is a lot of tourism income from activities in the mangroves themselves, such as kayaking and bird-watching. The mangroves are also important in keeping coral reefs healthy, and for commercial fish stocks. So they are needed to support diving and snorkelling tourism, and for the locally-caught fish which tourists like to eat in the restaurants.



Kayaking in mangroves



Boardwalks at South Creek, Grand Turk were very popular. Unfortunately these were damaged by Hurricane Ike.

In Florida, where many of the mangrove areas have been destroyed for tourism, some people use the attraction of the mangroves to encourage tourists to stay in their accommodation.



Tourist accommodation near this boardwalk in Florida encourages people to stay by advertising the beauty of the mangroves. This is sustainable development.



This is Mangrove Bay golf course in Florida, which also encourages tourists to visit. Why do you think it is called Mangrove Bay? Is this sustainable development?

Education and Public Awareness

Perhaps the most important way to protect mangroves is through education and public awareness. If people know about the importance of mangroves and the valuable resource they are, then perhaps the mangroves would lose their reputation as useless, smelly, bug-infested places which need to be cleared out, and become the treasured resource which they deserve to be.

Signs like this help to tell people why mangroves are so important.

