



*The Great Barrier Reef Region is an immense and beautiful area containing about 2900 coral reefs. Strong tidal currents often flow through the network of channels that surround large reefs and lagoons.*

### What is the Great Barrier Reef?

The region known as the Great Barrier Reef is made up of coral reefs, islands and warm tropical waters. It is one of the natural wonders of the world. Extending along almost the entire coastline of Queensland, the Reef stretches northward from Lady Elliot Island to just south of the Papua New Guinea coast and is the largest coral formation in the world. The framework for protection of the Great Barrier Reef was introduced by the Commonwealth Government with the passage of the *Great Barrier Reef Marine Park Act 1975*. As areas were proclaimed to be in the Great Barrier Reef Marine Park (1979 onwards), a regime of management came to apply which controlled use and activity in those areas. The Marine Park covers an



*The shapes and colours displayed on a living reef top are both varied and beautiful.*



area of about 344 000 square kilometres (an area bigger than Victoria or Great Britain).

The Great Barrier Reef is home to an amazing variety of plants and animals. There are about 1500 kinds or species of fishes, around 400 kinds of hard and soft corals, about 4000 kinds of molluscs (clams, snails and their relatives), and countless thousands of kinds of sponges, worms, crustaceans (crabs, shrimps and their relatives), echinoderms (starfish, sea urchins, sea cucumbers, etc.) and other less familiar creatures.

The Reef is also the breeding area for a number of rare and endangered animal species. Humpback whales come from the Antarctic to give birth to their young in Reef waters. Several of the world's seven species of marine turtle breed on the Reef, and dugongs (sea cows) make their home among the sheltered seagrass beds.

Breathtaking scenery, above and below the water, makes the Great Barrier Reef popular with visitors to the area and with the local community. The Great Barrier Reef means many things to many people.

For some people the Great Barrier Reef is their livelihood. Prawns, scallops and fish live in reef waters and form the basis of an important Queensland commercial fishing industry. Tour operators and workers in the hospitality services cater for the needs of those who come to wonder at the beauty and strangeness of this natural world. The Great Barrier Reef is a great place to relax and enjoy boating, snorkelling, diving or fishing.

To scientists, the Reef is a place of never-ending fascination. They study its weather, water currents, geology, chemistry and the enormous variety of plants and animals in an attempt to discover how this immense and amazing system works.

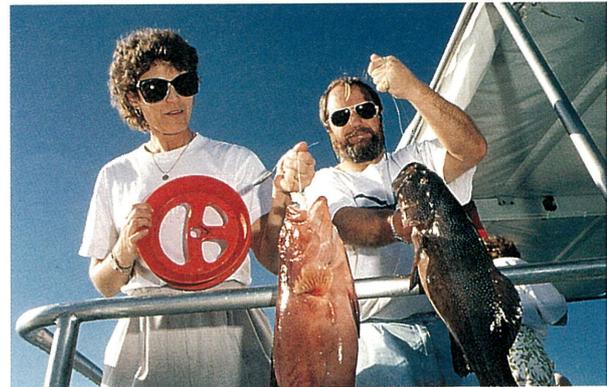
To anyone sailing a boat, the Great Barrier Reef poses real danger. The shallow waters within the outer barrier reef are studded with submerged sandbars and growing coral outcrops. It takes good navigational skill to manoeuvre around the jagged edges of coral reefs, especially when there are strong trade winds or cyclones.

## How are coral reefs made?

Reefs are built by tiny animals called coral polyps that live together in groups or colonies. Each animal has a soft, hollow body shaped like a sac with tentacles around an opening or mouth. These reef-building or stony corals secrete skeletons of limestone around themselves and, by dividing to form new polyps, create the framework of the reef. When coral polyps die their limestone skeletons and the skeletons of plants called 'coralline algae' remain cemented together to form the platform on which the next generation of coral polyps can grow.

A coral reef is, therefore, a thin surface layer of living corals growing on the cemented remains of millions of dead corals. Coral polyps need the help of single-celled plants (zooxanthellae) living within them to convert dissolved limestone from the water into hard skeletal limestone. These plant helpers need light, just as land plants do. For this reason coral reefs only develop well in warm, clear, shallow tropical seas. The shallow waters of the continental shelf off the coast of Queensland provide an ideal environment for reef development.

The many different shapes, sizes and colours of coral colonies depend on the way individual polyps build their skeletons, how they bud off new polyps, and the type of pigments and the zooxanthellae they have in their soft tissues.



A pleasant day on the Reef is crowned by a prize catch. Recreational fishing is probably the most popular activity on the Reef and about a third of all Queenslanders take part in it at least occasionally.



Commercial fishing is a major Reef industry. Scallops such as these are caught mainly in the southern part of the Reef.



The tourist industry provides catamarans, boats, pontoons and most importantly interpretive guides so that tourists can make the most of their visit to the Reef.



More and more people are enjoying the pleasures of exploring coral reefs especially with increasing interest in snorkelling and scuba diving

# The Great Barrier Reef

## Reefs and islands

The three main types of reefs found on the Great Barrier Reef are ribbon, fringing and platform reefs.

Ribbon reefs only occur in the northern part of the Great Barrier Reef and form narrow walls on the edge of the continental shelf. They create a rim-like barrier with only narrow passages between the individual reefs. Some of these passages, however, are large enough for ships to pass through.

Fringing reefs develop in the shallow waters along the mainland coast and around islands jutting up from the continental shelf.

Platform or patch reefs are scattered in the shallow waters between the mainland and the edge of the continental shelf. They are usually round or oval patches that grow up from the continental shelf.

Islands in the Great Barrier Reef are either continental islands or cays. Continental islands are parts of the continental shelf sticking up out of the water. Examples of continental islands are Magnetic Island and the Whitsunday Islands. Cays are islands made of reef rubble or sand. Heron Island, Green Island and Lady Elliot Island are examples of these. Reef rubble and sand are formed when coral is broken off a reef edge and crushed by heavy wave action or grazing animals. As well as ground-up coral, reef sand contains the remains of other tiny limestone-producing creatures such as certain species of green algae, tiny forams (single-celled animals with limestone shells) and pieces of coralline algae.

When sand is swept off a reef into a lagoon or back-reef, sand banks and cays form. These can shift, grow larger or be washed away, depending on the action of the tide and winds. If a cay is built up to the point where it is constantly above sea level, seeds may land on it and grow into sand-binding plants.

## Looking after the Great Barrier Reef

To recognise its outstanding value, the Great Barrier Reef was placed on the World Heritage List in 1981. The responsibility for management of the Great Barrier Reef Marine Park is with the Great Barrier Reef Marine Park Authority; however, the Queensland Department of Environment carries out the day-to-day management on behalf of the Authority. By developing



Continental islands such as Shute Island in the Whitsundays were originally part of the mainland and are formed in the same way. Often there are fringing reefs just below sea level surrounding the island.



Wilson Island started off as a pile of sand accumulated by wave action on the sheltered part of a reef top. In time, enough sand was built up to support plants.

This green reef alga (*Halimeda* spp.) resembles terrestrial plants and plays the same light-capturing role. Like other algae, some of which look like pink-coloured cement, *Halimeda* spp. contains limestone material which is left behind when it dies. These particles break up and help form the sand found on and around coral reefs.



and caring for the Marine Park, the Authority is guaranteeing the lasting protection, wise use, understanding and enjoyment of the Great Barrier Reef as a whole.

The Marine Park Authority uses a system of zoning to manage people's use of the Reef. It defines the areas where activities such as trawling, line fishing, tourism, diving and scientific research can take place. In this way each type of activity can continue at a level that the Reef can support. This is referred to as 'ecologically sustainable use'.

### The Great Barrier Reef and you

The Great Barrier Reef is as fragile as it is beautiful. The delicate balance of life can easily be upset. Human impacts, spills of oil and other polluting chemicals, and overharvesting of its resources, can all kill the delicate reef-forming corals and affect other creatures that are part of the community.

It is easy to understand why some activities need to be restricted, and others such as oil exploration, mining, littering, spearfishing with scuba, and the taking of large specimens of certain species of fish, are not allowed at all.

More and more people are visiting the Reef each year and it is becoming increasingly important for each one of us to take great care not to cause any damage. Finding out as much as we can about the Great Barrier Reef will help us to behave sensibly and preserve it for the enjoyment of future generations.

### Author

Janelle Hatherly is a published author with extensive experience in communication and education through teaching, writing and editing scientific resource materials.

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*These anemonefish are just one species of the 1500 species of fish that live in Reef waters. The fish are immune to the anemones' stinging tentacles and so can use the anemone as protection from predators.*

## Marine Parks



Further information may be obtained from:

Great Barrier Reef Marine Park Authority  
PO Box 1379  
Townsville Qld 4810  
Telephone (077) 500 700

Department of Environment  
PO Box 155  
Brisbane Albert Street Qld 4002  
Telephone (07) 3227 7111