

# Coral reefs— rainforests of the sea

4.1 Coral reefs are known as the 'rainforests of the sea' because of their rich biodiversity.

Coral reefs are one of the Earth's significant biomes even though they are found in less than one per cent of the world's oceans. They are one of the most productive global environments, providing homes for a wide variety of marine animals and plants. The coral reef environment is very fragile, needing special conditions to grow and survive.

## WHY ARE CORAL REEFS IMPORTANT?

Coral reefs are one of the Earth's essential ecosystems. They are important because they:

- provide habitat for one quarter of all known marine fish species
- protect the coast from wave attack and erosion
- are a food source for much of the world's population
- contain medicines and cures for disease
- provide income for many countries of the world through tourism.

4.2 Clear, warm, shallow sea waters provide the right conditions for coral growth.

## CONDITIONS FOR CORAL GROWTH

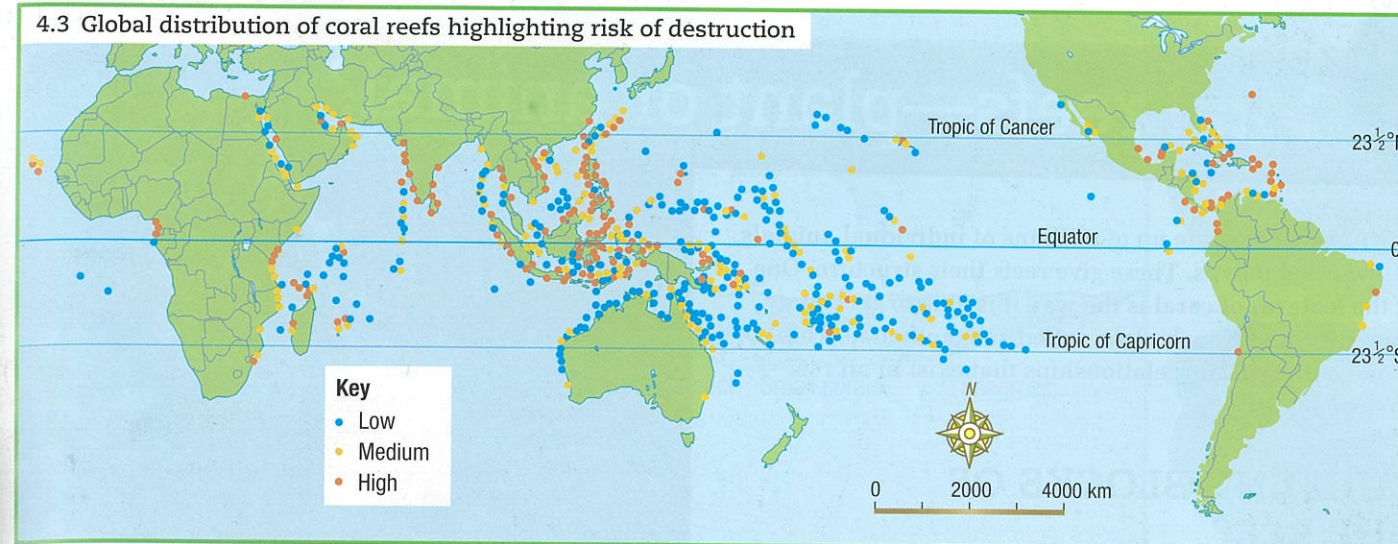
Corals are living animals that require special environmental conditions in order to grow and build into large stretches or reefs.

- **Water depth and clarity**—Corals require sunlight to grow and so are found only in shallow, clear water where sunlight can filter through to the coral. Corals are usually found to a depth of 25–30 metres. They do not grow above the mean tide level because they cannot survive long periods out of the water.
- **Water temperature**—Corals will grow where water temperature is above 18°C and below 32°C. The ideal water temperature is around 26°C. These warm water temperatures are found between latitudes 25°N and 25°S. Water temperatures above 32°C cause the coral to die.
- **Salt water**—Corals need the salt water of the open ocean in order to grow. This means that corals will not grow near river mouths along the coast because the rivers release fresh water into the ocean.

### GEOGRAPHY FOCUS

The plants and animals found on coral reefs have been used to make medicines to treat cancer, HIV, cardiovascular diseases and ulcers. Scientists are currently researching coral varieties for a vaccine against sunburn!

4.3 Global distribution of coral reefs highlighting risk of destruction



## LOCATION OF REEFS

The environmental factors required for coral growth cause reefs to be located around the edges of continents and islands within the tropics. Most of the world's coral reefs are found surrounding only 10 of the world's nations, as shown in 4.4.

4.4 Geographical location of the world's top 10 coral reefs

Rank	Country and geographical location	Reef area km <sup>2</sup>	Percentage (%) of world total
1	Indonesia	51 020	17.95
2	Australia	48 960	17.22
3	Philippines	25 060	8.81
4	France—Clipperton, Mayotte, Réunion, Guadeloupe, Martinique, New Caledonia, French Polynesia, Wallis and Futuna Islands	14 280	5.02
5	Papua New Guinea	13 840	4.87
6	Fiji	10 020	3.52
7	Maldives	8 920	3.14
8	Saudi Arabia	6 660	2.34
9	Marshall Islands	6 110	2.15
10	India	5 790	2.02

Note: the remaining 32.96% of coral reefs are found in the world's tropical waters.

## Risks associated with location

The location of coral reefs close to coasts brings threats. It is estimated that half a billion people live within 100 kilometres of a coral reef. Worldwide, 58 per cent of the coral reefs are under direct threat from human activities, including building along the coastline, polluted runoff from farming and deforestation, fishing, ocean pollution and tourism developments.

## Activities

### Knowledge

- 1 What percentage of the world's oceans are coral reefs located in?
- 2 List five reasons why coral reefs are important.
- 3 What percentage of marine fish species live in coral reefs?
- 4 Explain the three environmental factors that influence the global location of coral reefs.
- 5 Why do reefs only grow to a depth of 25–30 metres?
- 6 Explain why coral reefs do not grow above the mean tide level.
- 7 Why are reefs not found where rivers enter the ocean?
- 8 Why are coral reefs called 'rainforests of the sea'?
- 9 What percentage of the world's coral reefs are under threat from human activities? Make a list of the human activities that are placing coral reefs at risk.

### Skills

- 10 Refer to 4.3. Describe the spatial distribution of the global biome of coral reefs.
- 11 Refer to 4.4 and answer True or False:
  - a The Philippines has more coral reefs than the Marshall Islands.
  - b Papua New Guinea and Fiji have a larger combined reef area than the Philippines.
  - c Indonesia and Australia have a greater percentage of coral reefs than all other nations of the world combined.
- 12 Construct a pie graph that shows the share of reef area for countries around the world.

### Application

- 13 Use an atlas to locate the coral reefs belonging to France. Select one area and research the region in the library. Include a map of the location, a brief history and any unique features of the area.