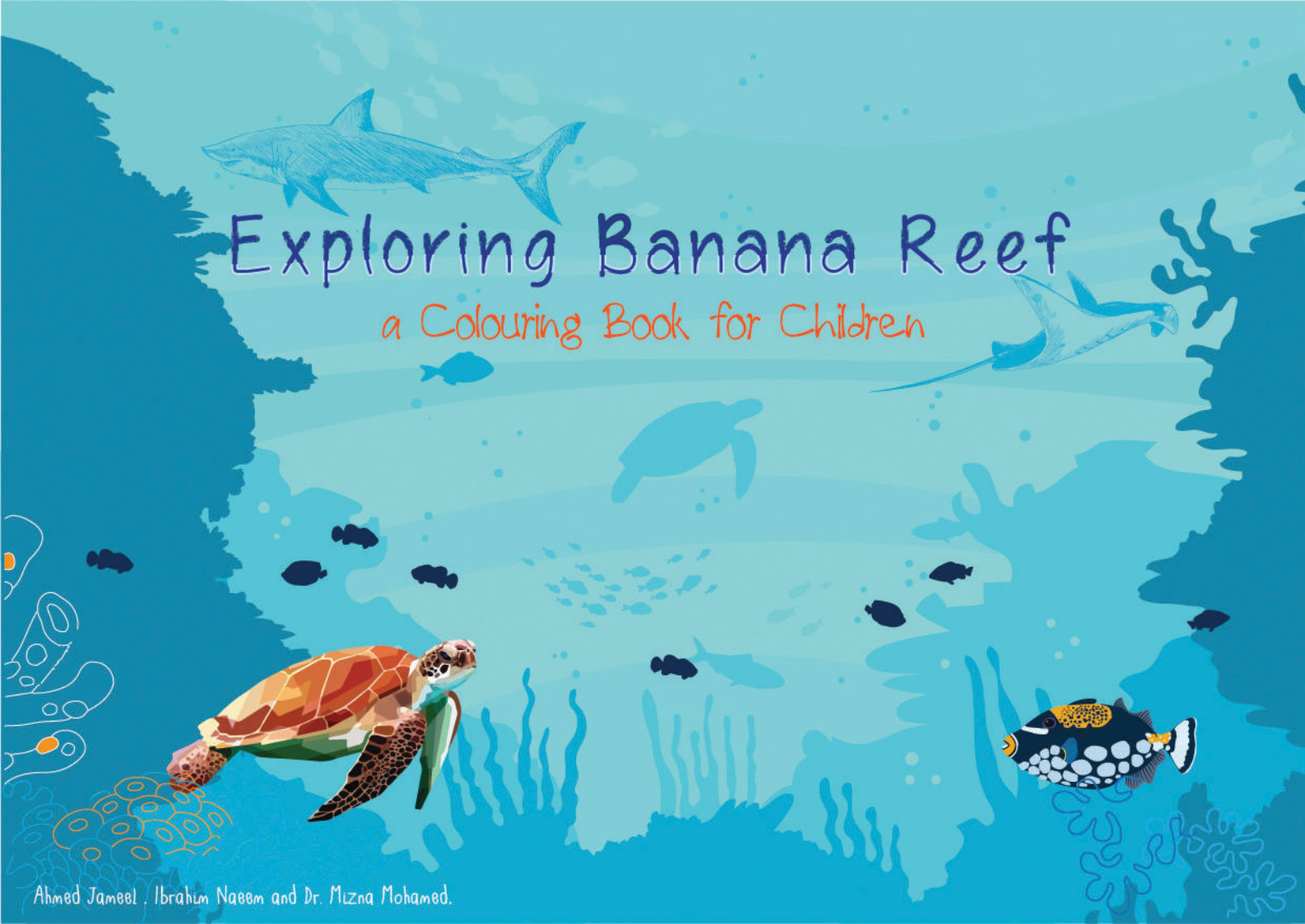
Exploring Banana Reef

a Colouring Book for Children



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Introduction

The Maldives is a country surrounded by multiple reefs and coastal environments. People fish from the reefs, collect bait and the natural beauty of our reefs environment is important for the tourism industry. It is very important to keep our reef environment healthy. A healthy island ecosystem is important for a healthy community.

The purpose of this colouring book is to create interest in Maldivian coastal environment among children at a young age. It is hoped through this book, children will grow up with a kindled interest in the coral reef and caring for the environment of the Maldives.

Coral Reefs of the Maldives

The Maldives is an archipelago of islands in a double chain of coral atolls scattered in the Indian Ocean.

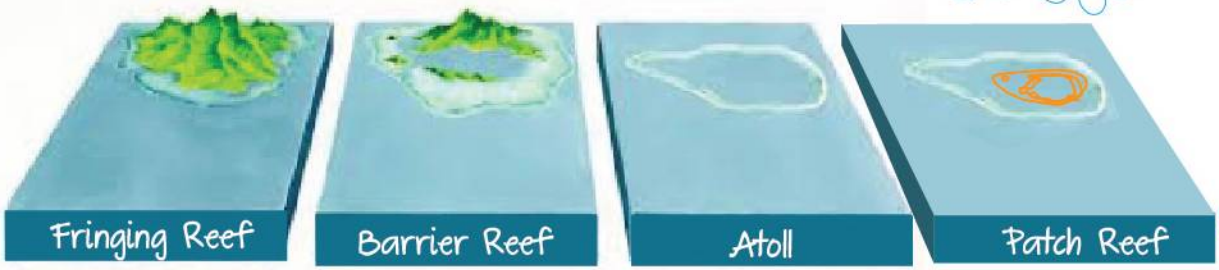
There are about 1,192 small, low-lying coral islands grouped into 26 natural coral atolls

The total reef area is 4,513 km^2 with a total of 2,041 individual reefs

The atolls are stretched over 860 km from north to south and the width varies about 80 to120 km from east to west.

It is the 7th largest reef system in the world and the largest in the Indian Ocean

Types of Coral Reef



Scientists generally divide coral reefs into four classes: fringing reefs, barrier reefs, atolls, and patch reefs.

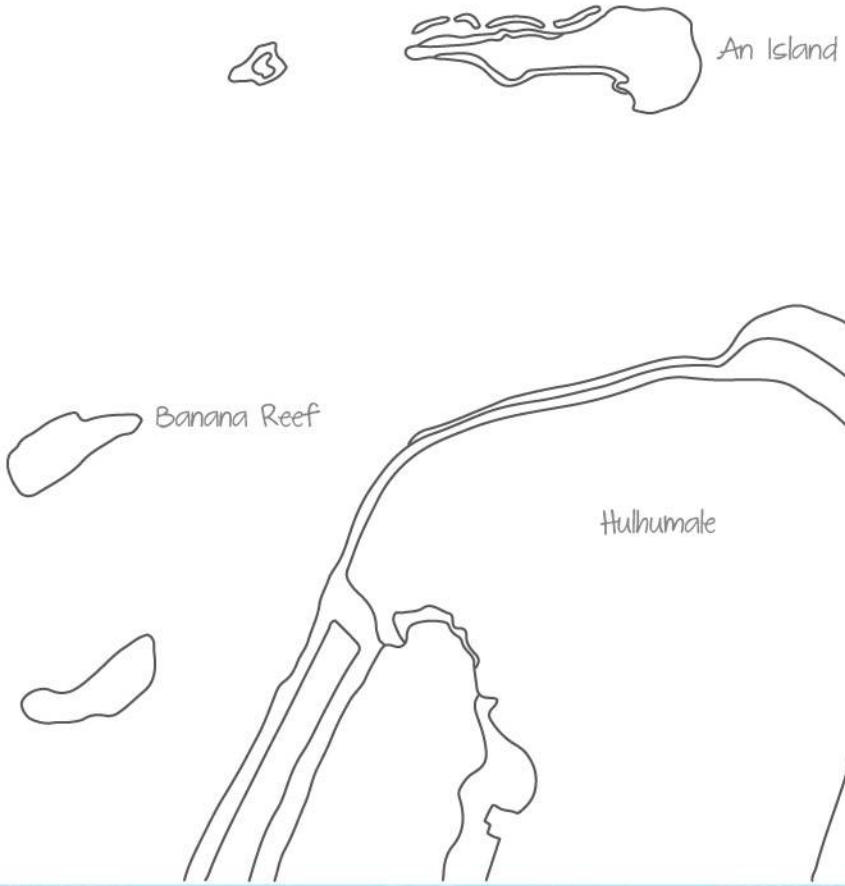
Fringing reefs are found around islands. They are separated from the shore by narrow, shallow lagoons. Fringing reefs are the most common type of reef that we see.

Barrier reefs are parallel to the beach but are separated by deeper, wider lagoons. The Great Barrier Reef in Australia is the largest and most famous barrier reef in the world.

Atolls are rings of coral that create protected lagoons and are usually located in the middle of the sea. Atolls usually form when islands surrounded by fringing reefs sink into the sea or the sea level rises around them (these islands are often on top of underwater volcanoes).

Patch reefs are small, isolated reefs that grow up from the open bottom of the island platform. Banana Reef is a patch reef found in north Male' Atoll

Banana Reef


An Island
Banana Reef
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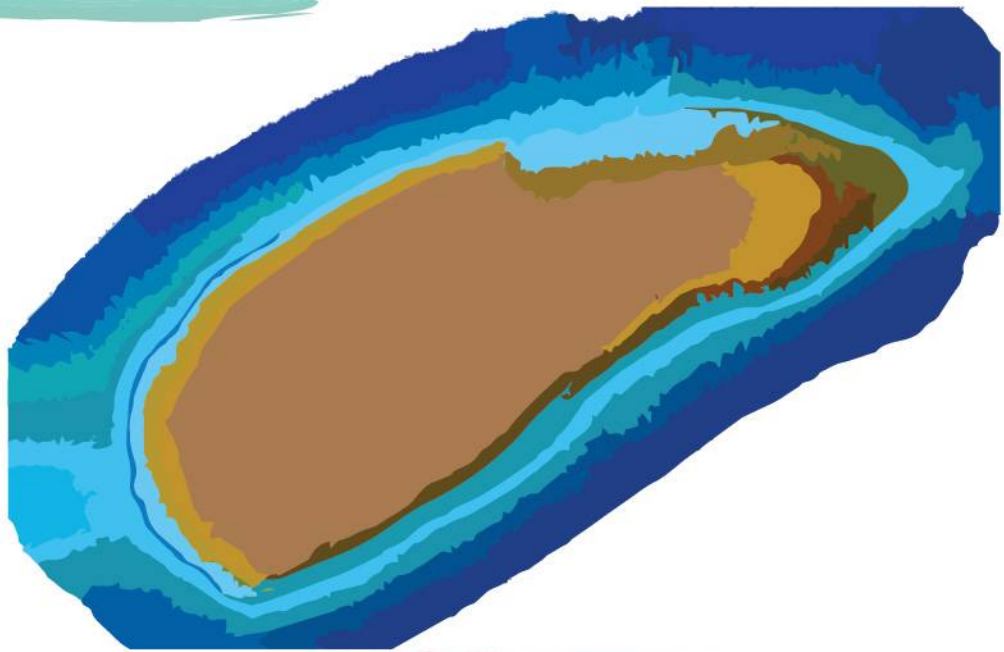
Banana Reef



Banana Reef is a popular dive site located in north Male' Atoll. It has been declared as a Marine Protected Area in 1995 by the Government of Maldives. Banana Reef is named after its shape when viewed from the air.

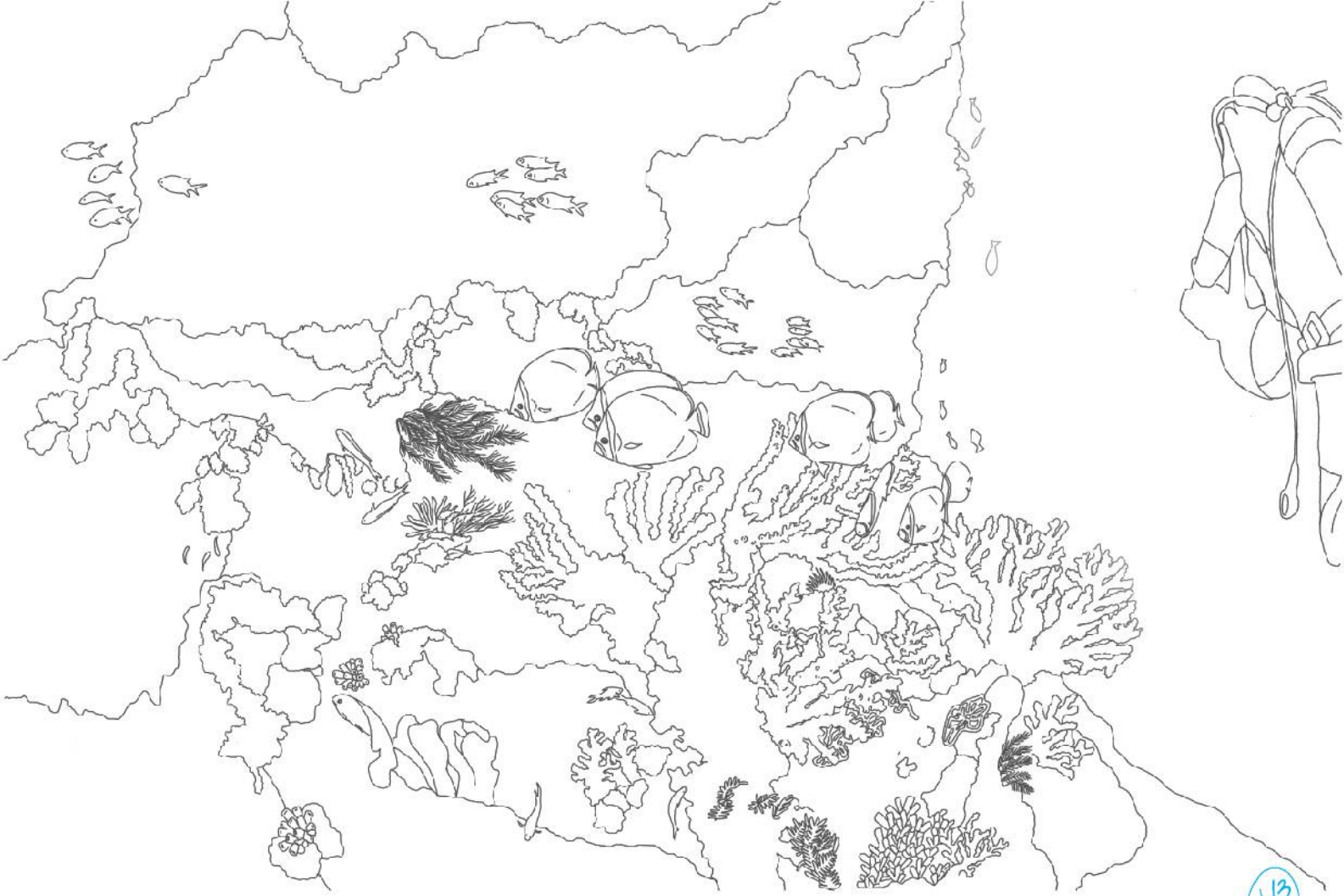
The north eastern end has spectacular rocks, caves, deep gutters and very steep overhanging.

Predatory fish like sharks, barracuda, trevallies and black snappers converge around these big rocks.

The top reef used to have table coral which has now disappeared due to the coral bleaching events and impacts from human activities around the area.

Banana Reef

Banana Reef



Banana Reef

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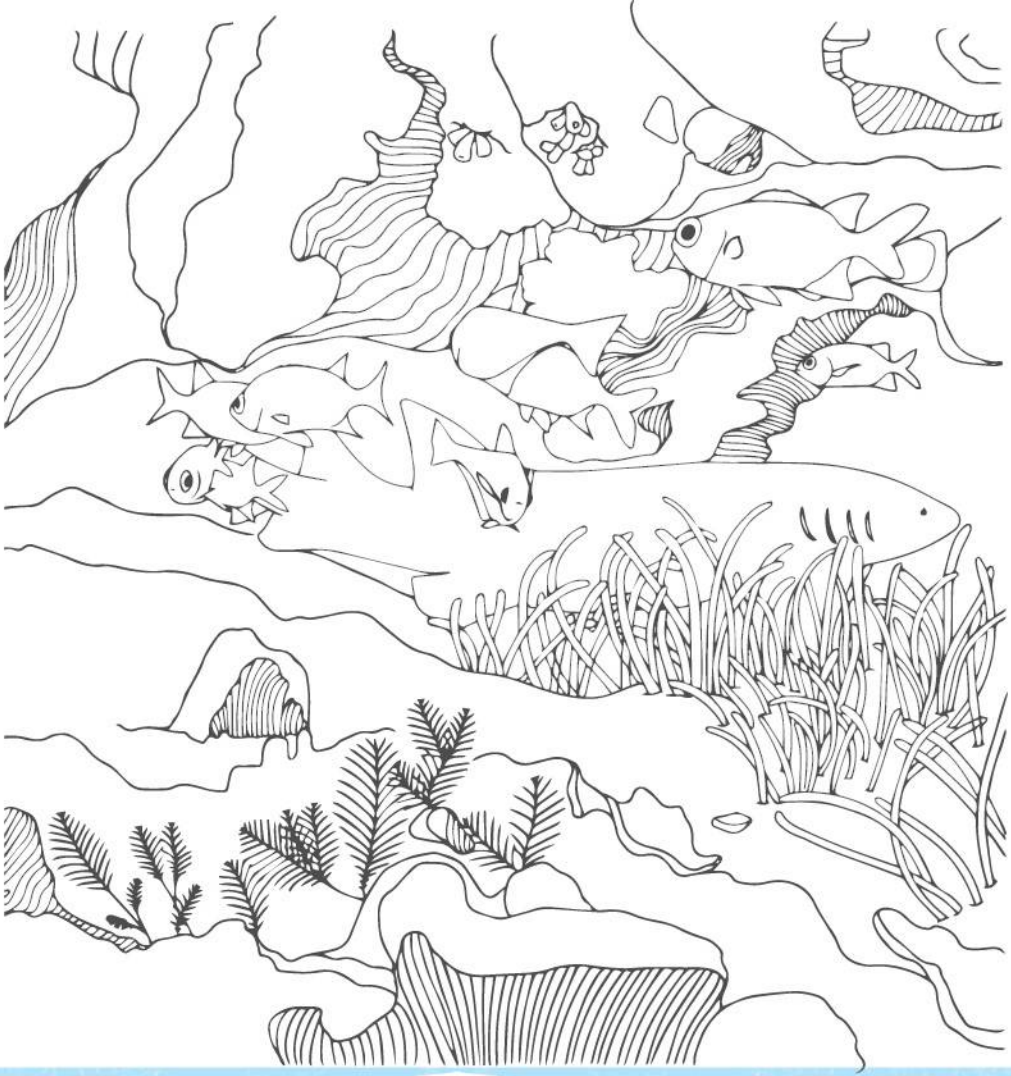

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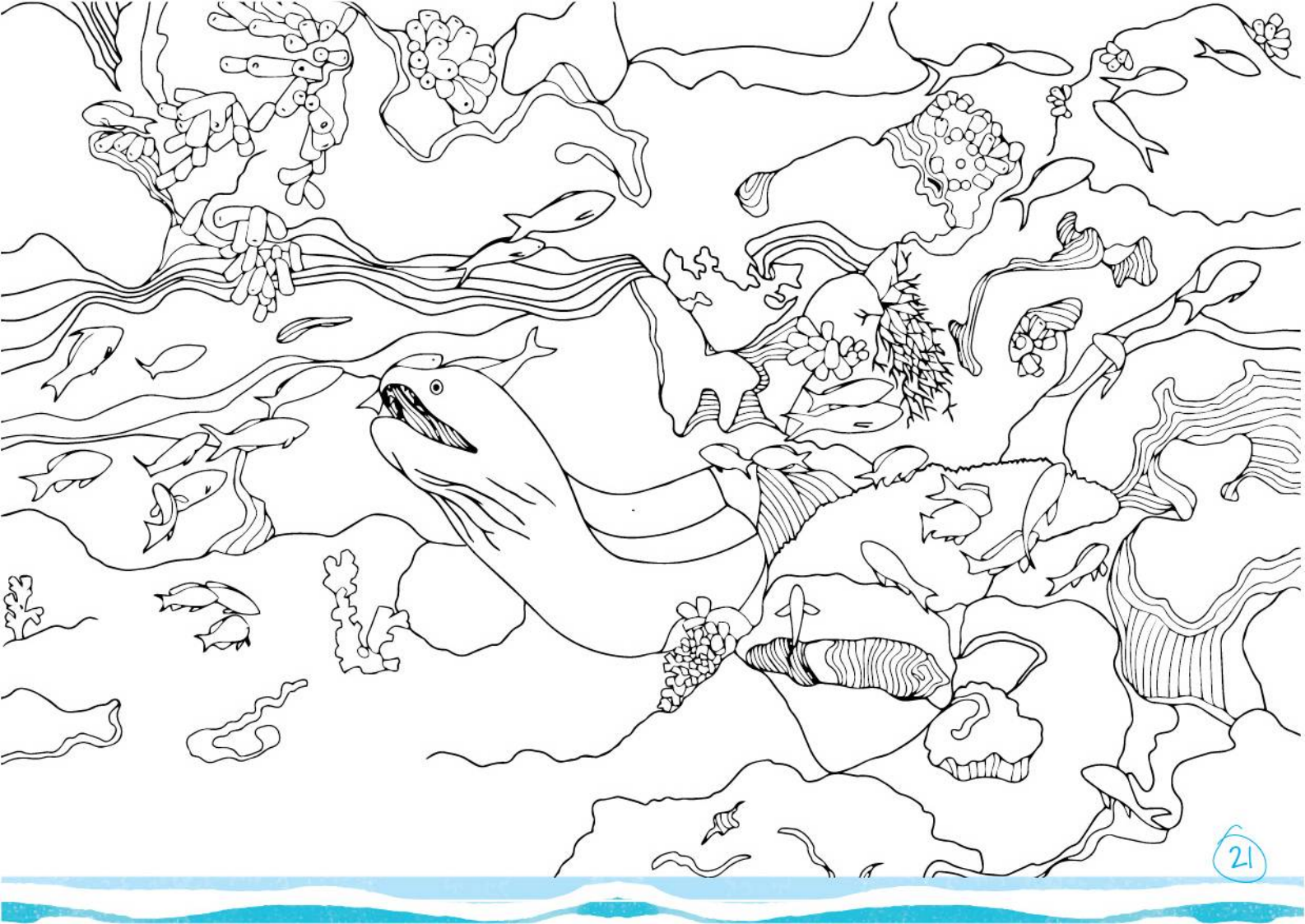

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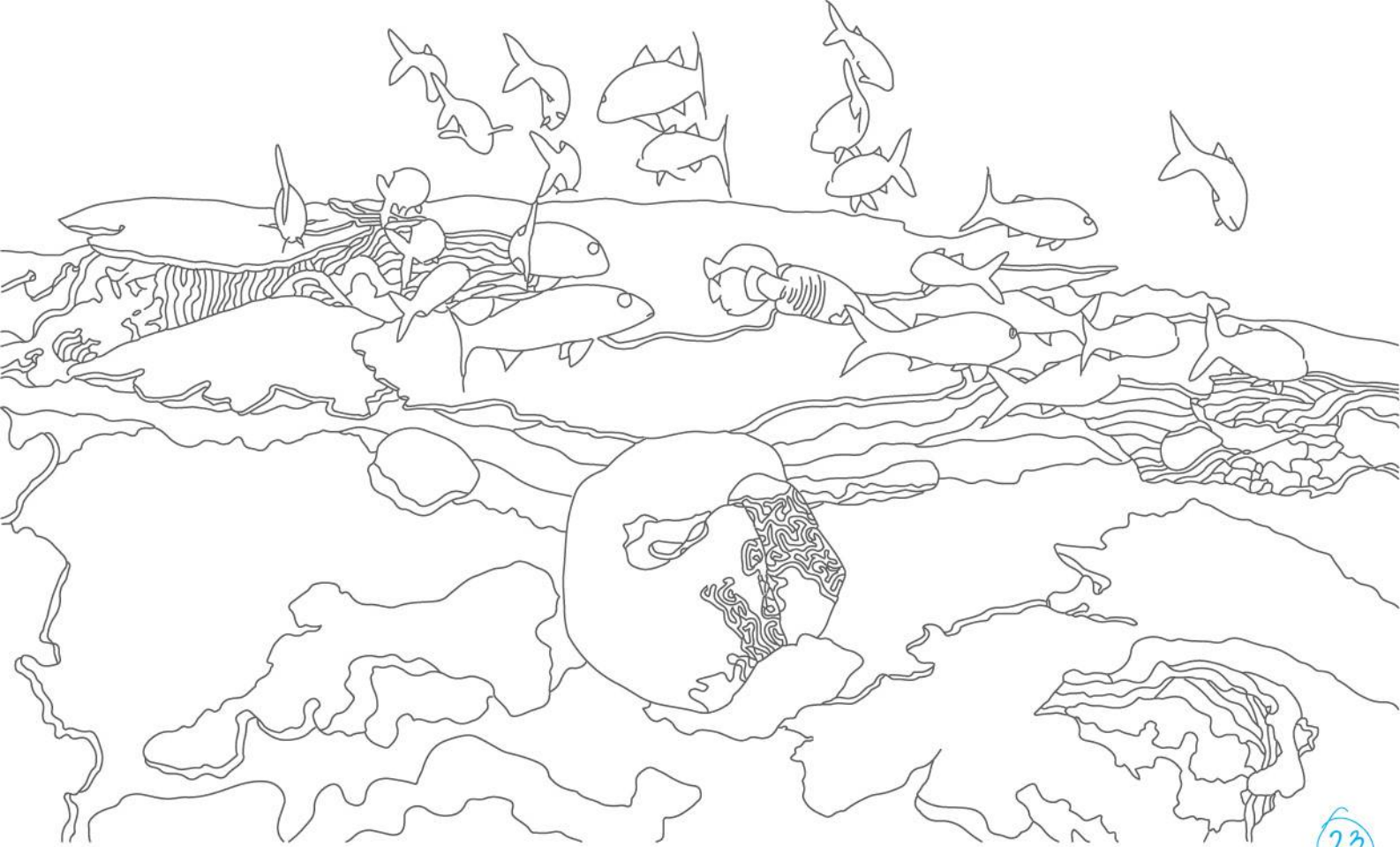

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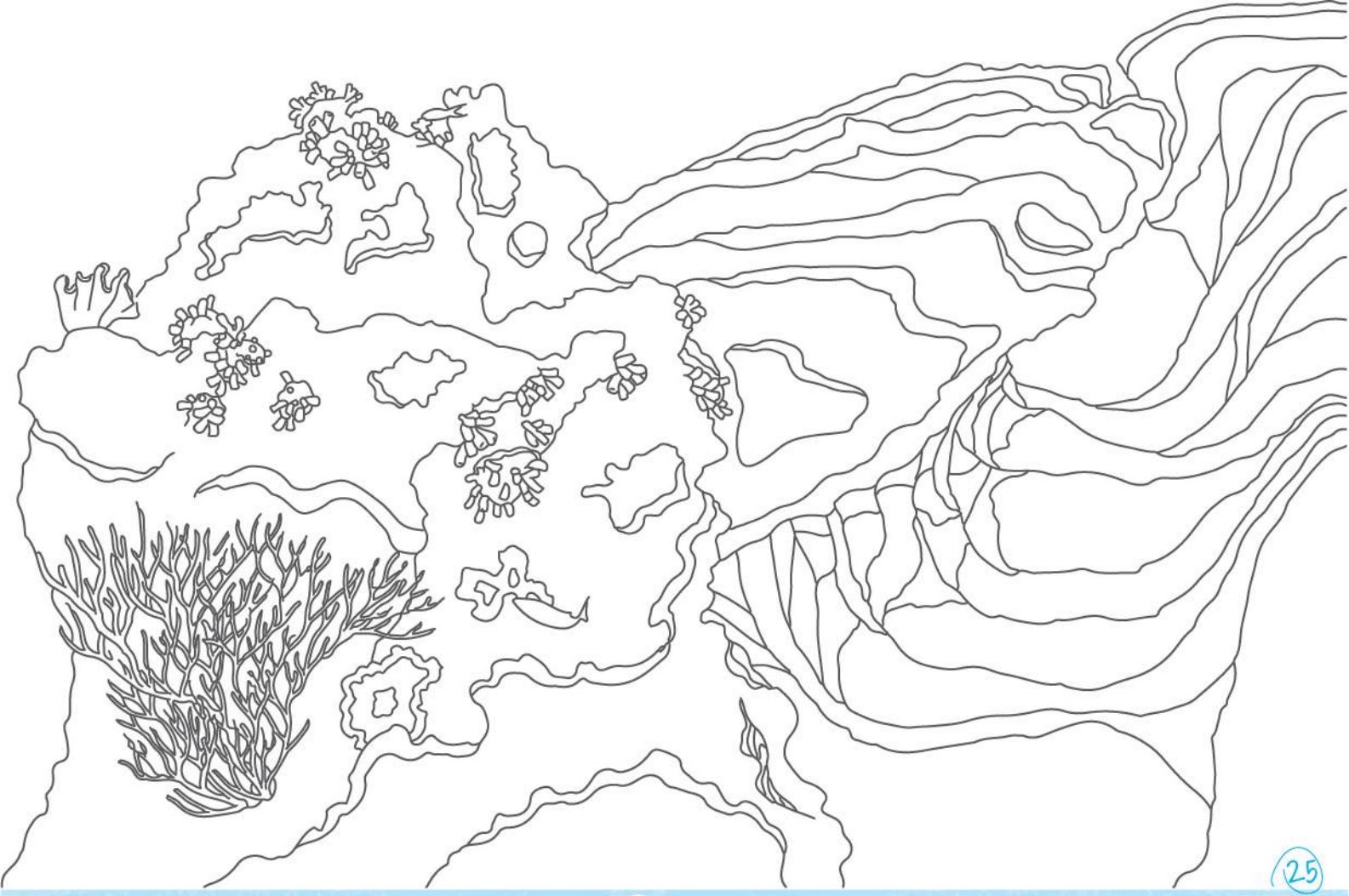

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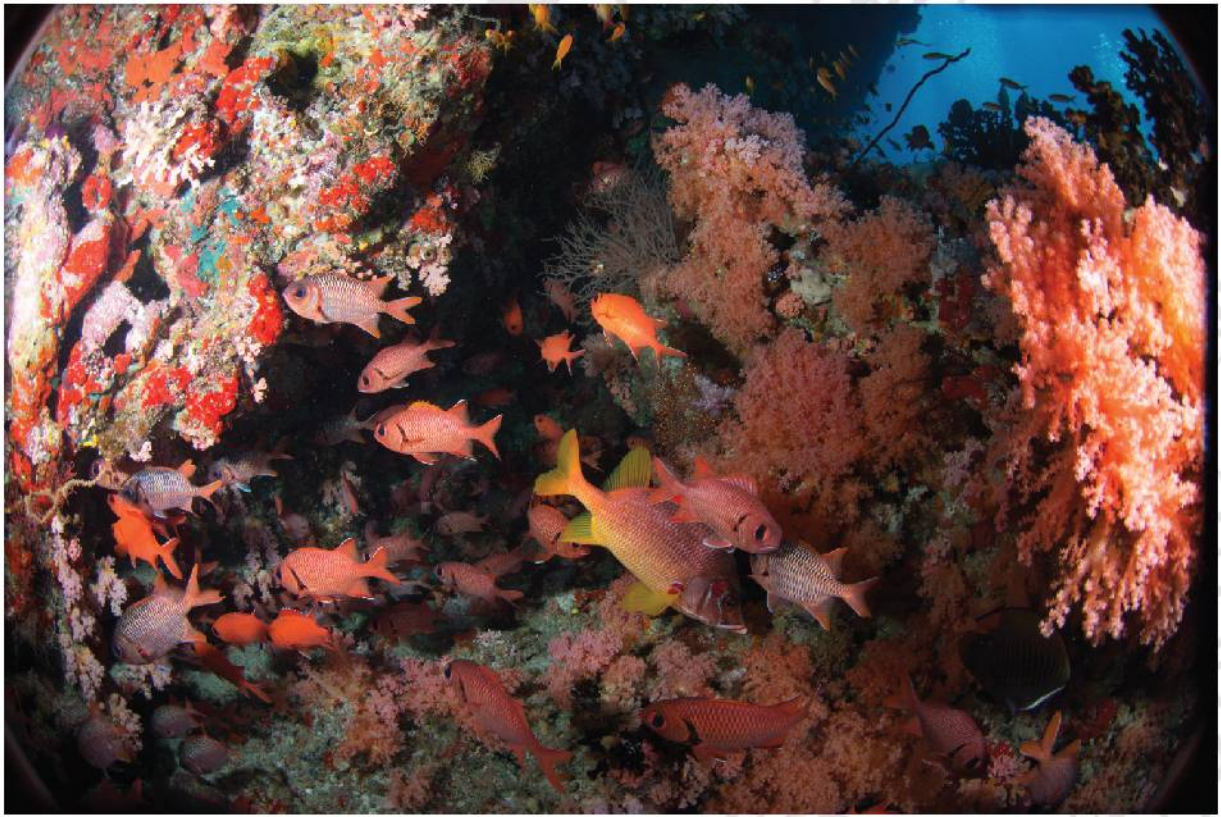

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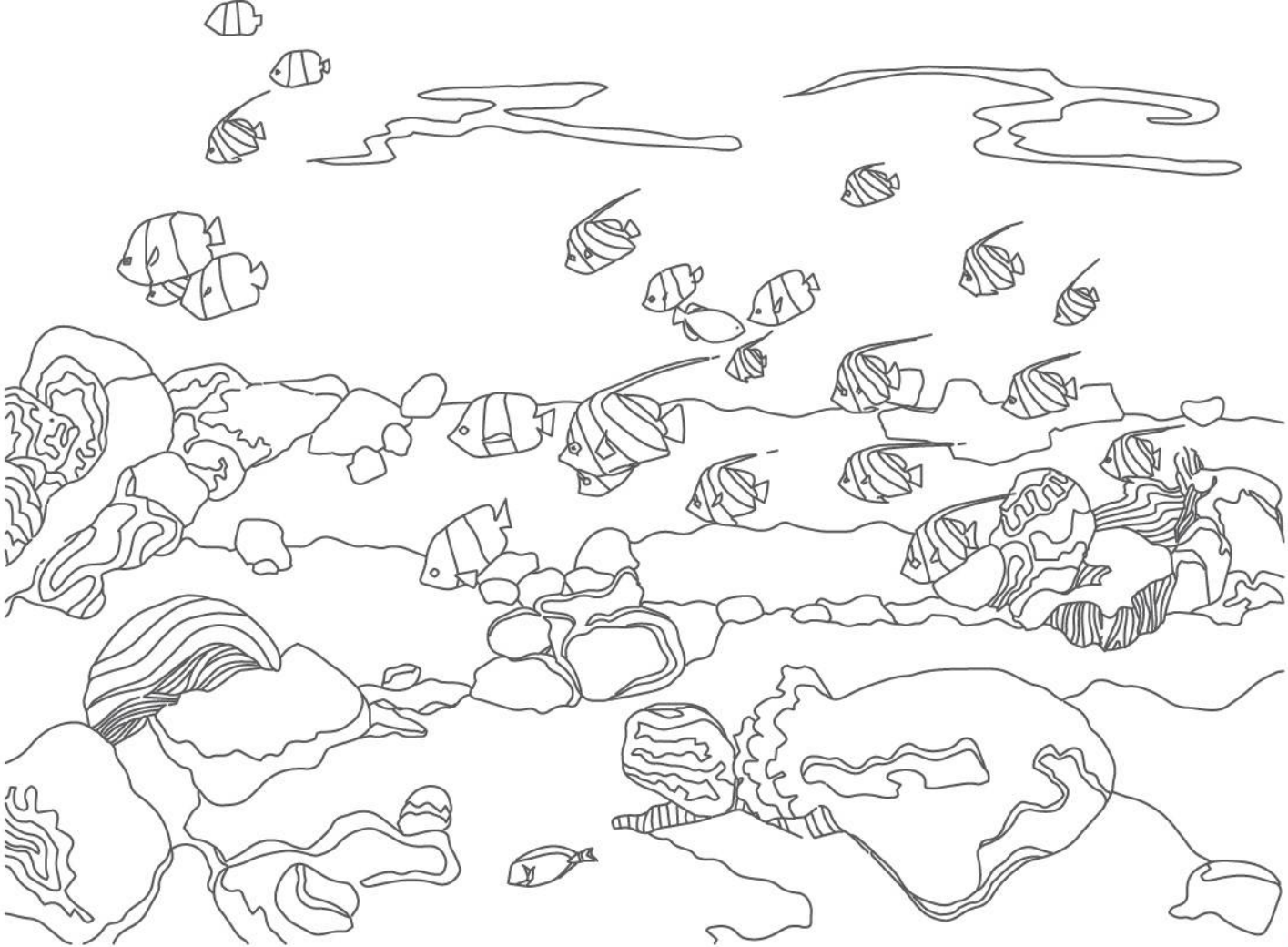


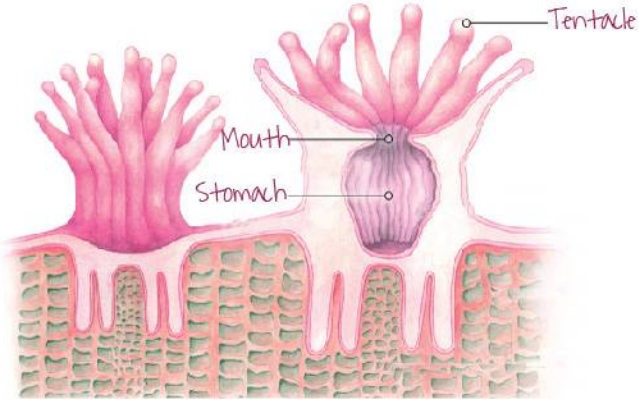
Hard Coral

Hard corals are reef-building corals and need tiny algae called zooxanthellae (pronounced zo-zan-THEL-ee) to survive. Hard corals such as brain coral create skeletons out of calcium carbonate (also known as limestone), a hard substance that eventually becomes rock.

Soft Corals

Soft corals do not have stony skeletons, but instead grow wood-like cores for support and fleshy rinds for protection. Soft corals such as sea fingers and sea whips, are soft and bendable and often resemble plants or trees. These corals are referred to as ahermatypes, or non-reef building corals. They do not always have zooxanthellae.

What is a Coral Polyp?



Coral reefs are created by many tiny animals called coral polyps.
A coral polyp is one of the simplest animals. It is round and has a mouth surrounded by many fleshy tentacles. The mouth opens into a simple stomach cavity.

It has no intestines or anus, so waste is pushed back out through the mouth. A coral polyp has no brain, nervous system or eyes. There is no heart or blood supply. The coral polyps are protected by hard skeletons that form many different shapes. These skeletons are the hard coral structures we see.

Coral reefs are skeletons!!

Coral polyps secrete limestone to form a protective outer layer (exoskeleton). The limestone cover builds over time, forming the base of the complex reef. Only hard corals build reefs.

The polyps keep laying down new layers of limestone. A colony of thousands of polyps over a few years can build large limestone structures. Different species build different shaped structures.

Very slowly they form an underwater forests of skeleton and living creatures.
Over a very long time, huge blocks of corals are formed called coral reefs.

Types of Coral

Mushroom coral

Mushroom coral is a type of solitary coral.
These corals have single large polyp.
They live by themselves.
They form rounded shapes

Branching

Folios

Massive

General fishes found in Banana Reef

Fishes are the most exciting part of a coral ecosystem. They display a range of bright colors and bold patterns that are a delight to the viewer. These colours and designs can help the survival of fish. Red colors appear black under water, helping a fish to go unseen. Stripes allow a fish to camouflage itself against the coral. Spotted patterns serve to confuse would be predators.

Clown Triggerfish

Moorish Idol

Puffer fish

Parrot fish

Surgeon fish

Grey reef shark

Stingray

Moray Eel

Caring for coral reef

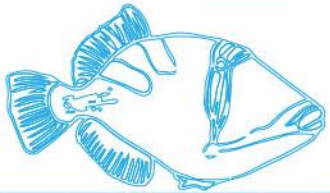
Coral reefs face numerous threats from nature as well as humans. It is our responsibility to take care of our surrounding environment.

Natural threats:

- Storms and high waves can break corals
- Natural predators can cover and kill corals. E.g. Crown of thorns starfish
- High water temperatures for a long time can cause coral to bleach

Human threats:

- Pollution from throwing waste into the sea and waste oil
- Overfishing
- Pollution from sewage from islands
- Building of jetties, harbours and buildings on reefs
- Physical damage from careless swimmers, divers.
- Poorly placed boat anchors.
- Tiny pieces of plastics can be mistaken for food and eaten by polyps.



Climate Change and Coral Reefs

Greenhouse gases cause the atmosphere to heat up. More greenhouse gases are released to the atmosphere when we burn more fossil fuels for our electricity, transport food production and other needs. Climate change is caused by increase in greenhouse gases in the atmosphere that make the atmosphere hotter.

Climate change can cause damage to coral reefs too. When air temperature increase this can cause the temperature of the sea to increase too. When the sea temperature is high for a long time, corals in the shallow waters die and get bleached.

It takes less than a two degree rise in sea temperature for less than a week to start the coral bleaching process. The reefs of Maldives in 1998, 2002 and 2016 had unusually high seawater temperatures that caused many reefs severe coral bleaching.

If temperatures continue to increase there is great concern for the health and future of coral reefs.

This colouring booking on coral reefs has been developed featuring Banana Reef, a Marine Protected Area (MPA) located at north Male' Atoll in the Maldives. The colouring book feature actual seascape and other unique features of the Banana Reef which had been mapped by the surveying team of Water Solutions Pvt Ltd and presents the flora, fauna identified by the divers of Water Solutions Pvt Ltd. Seascape. colouring book of Banana Reef is aimed at primary school children age 6 - 14 years.

The development of the colouring book on Banana Reef has been supported by an Australian Awards Alumni grant made possible through the Regional Alumni Workshop 2018: Australia Awards Alumni as Champions for the Environment and Climate Action.

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