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MEET THE MARVELLOUS CREATURES LIVING IN OUR OCEANS

CHARLOTTE MILNER

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WHAT DOES THE BOTTOM OF THE SEA LOOK LIKE?

Far from being flat, the sea floor is actually similar to the landscape we see above the waves. In the oceans, there are erupting volcanoes, deep trenches, and mountains taller than Mount Everest, the highest peak on land.

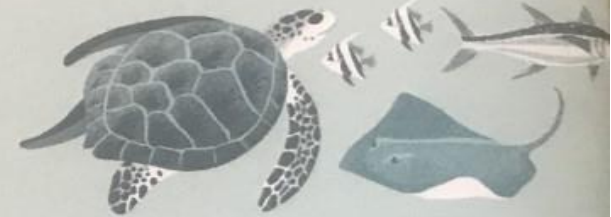
The sea is separated into four different zones:

SUNLIT ZONE – Many plants and sea creatures need warmth and light from the Sun to survive, so they live here, close to the surface.

TWILIGHT ZONE – Very little sunlight reaches down into water below 200m (650ft), so you won't find plants here. There are still plenty of animals, however, and many swim up to the sunlit zone at night to find food.

MIDNIGHT ZONE – Even though it is pitch black and cold, there are still fish and jellyfish living here, though fewer than in the zones above.

THE ABYSS – The deepest and darkest parts of the ocean are something of a mystery as few scientists have been able to explore water this deep. But some strange creatures have been found here.

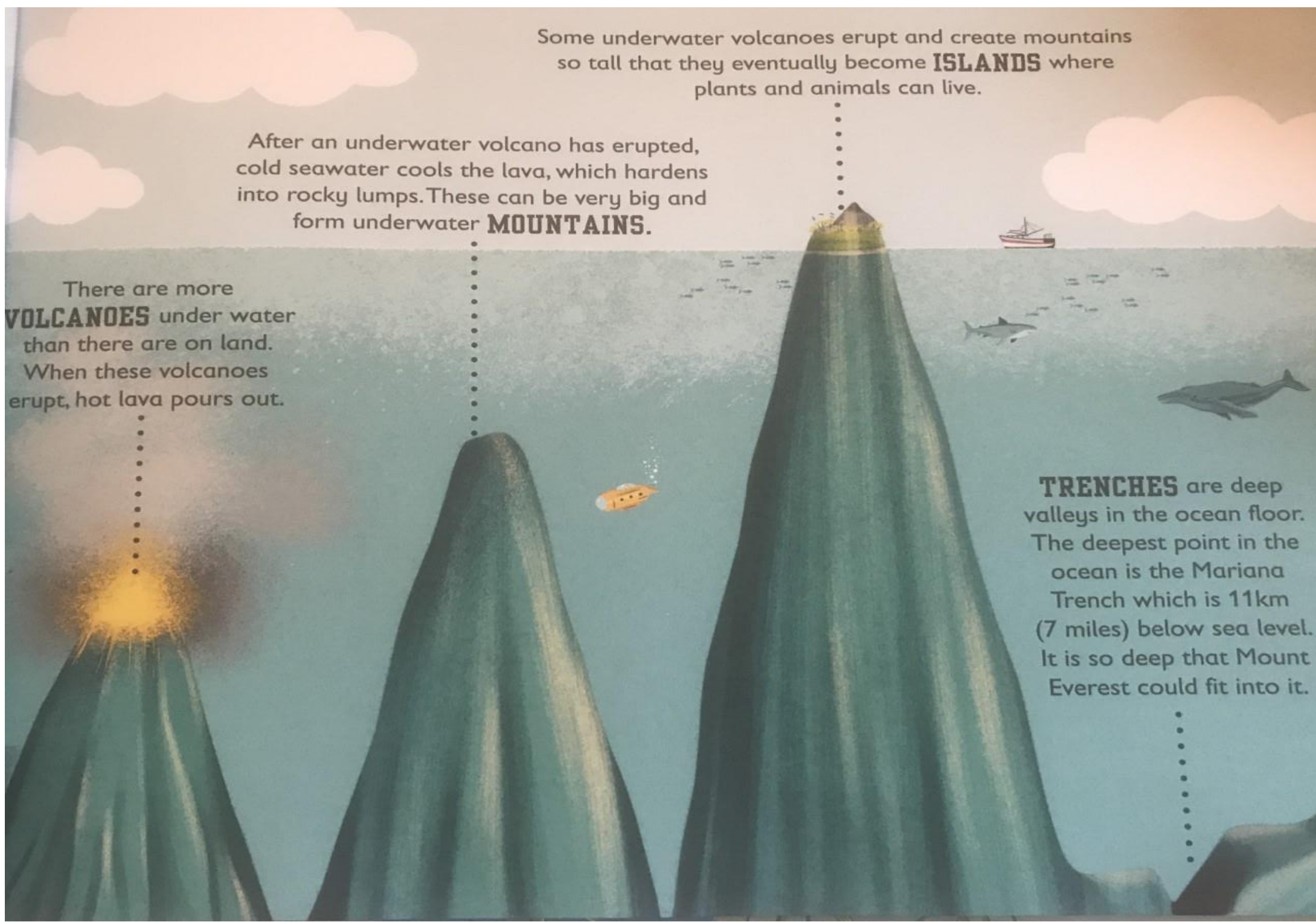


Some underwater volcanoes erupt and create mountains so tall that they eventually become **ISLANDS** where plants and animals can live.

After an underwater volcano has erupted, cold seawater cools the lava, which hardens into rocky lumps. These can be very big and form underwater **MOUNTAINS**.

There are more **VOLCANOES** under water than there are on land. When these volcanoes erupt, hot lava pours out.

TRENCHES are deep valleys in the ocean floor. The deepest point in the ocean is the Mariana Trench which is 11km (7 miles) below sea level. It is so deep that Mount Everest could fit into it.



DARK AND DEEP

Deep in the ocean is a place like no other. Here, there is no natural light, it is very cold, and the weight of the water above creates immense pressure. Like a different planet, we have barely begun to explore the deep ocean and the strange creatures that live there.

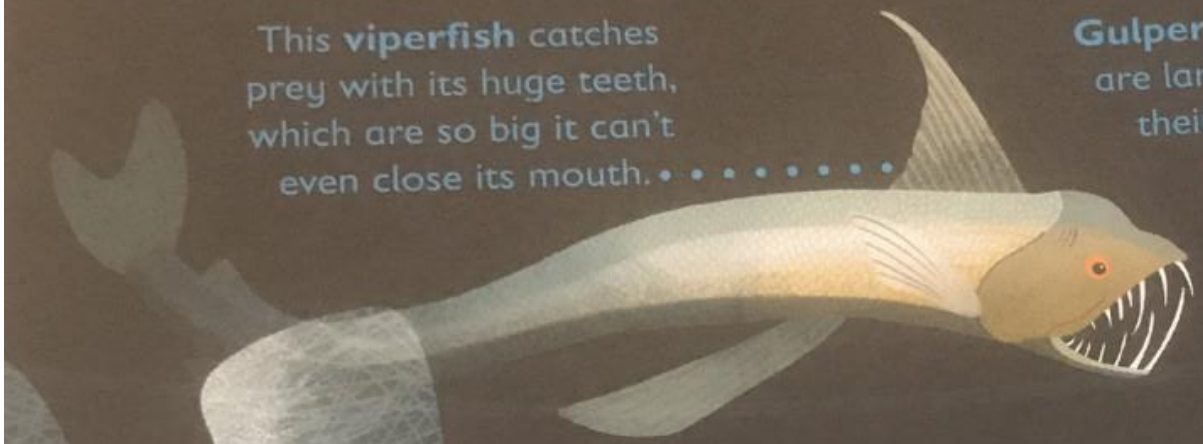
This **viperfish** catches prey with its huge teeth, which are so big it can't even close its mouth.


Gulper eels can swallow fish that are larger than themselves using their huge, flexible jaws and expanding stomach. . . .

. . . . Sponges draw in water to get the oxygen and food that they need. The **venus flower basket** is a sponge with a delicate, white skeleton made of the same material that is used to make glass.

A HOME FOR LIFE

Shrimp couples live inside the venus flower basket. The male and female enter as small shrimps and grow too big to leave the sponge's woven walls. They stay together for life, cleaning their sponge home. In return, the sponge gives them food and protection.





DOES IT SNOW UNDERWATER?

No, but the remains of marine creatures sink from waters above like a shower of snowflakes. This is called **marine snow**.

Some animals glitter and glow in the darkness. This ability to create light is called **BIOLUMINESCENCE**.



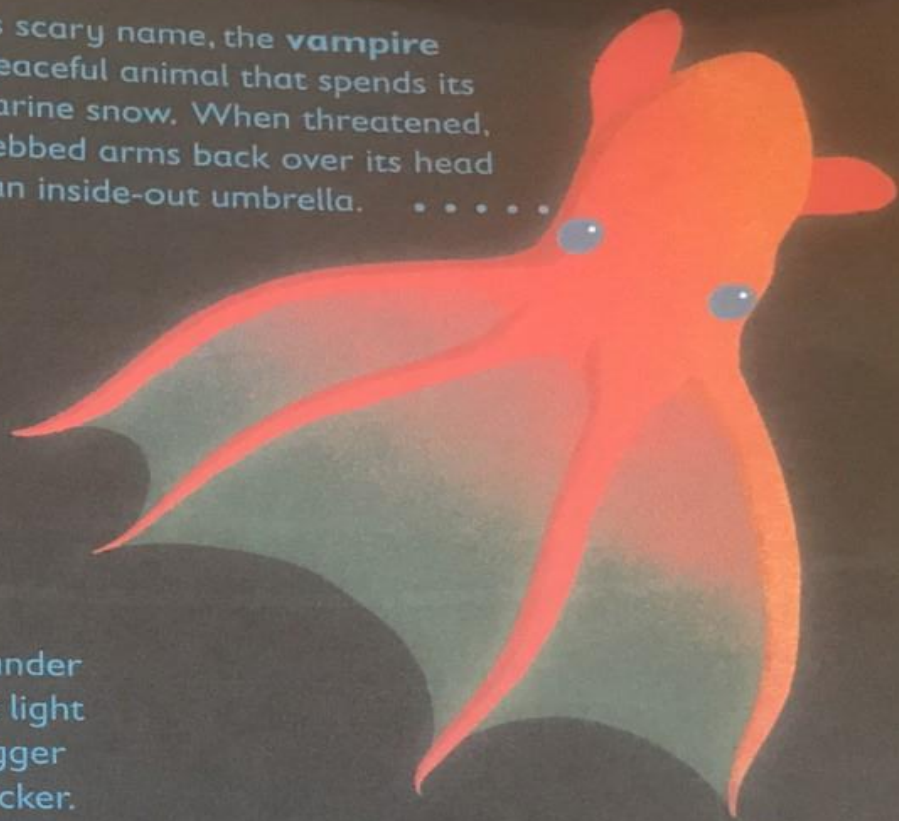
..... The **anglerfish's** fin extends over its head and acts like a fishing rod with a "glow" on the end to lure prey into its big mouth.



.....
When the **atolla jellyfish** is under attack, it puts on a magnificent light display. This attracts other, bigger animals that may eat the attacker.



Despite its scary name, the **vampire squid** is a peaceful animal that spends its life eating marine snow. When threatened, it turns its webbed arms back over its head like an inside-out umbrella.



The **venus fly trap anemone** uses its tentacles to trap marine snow and small creatures to eat.

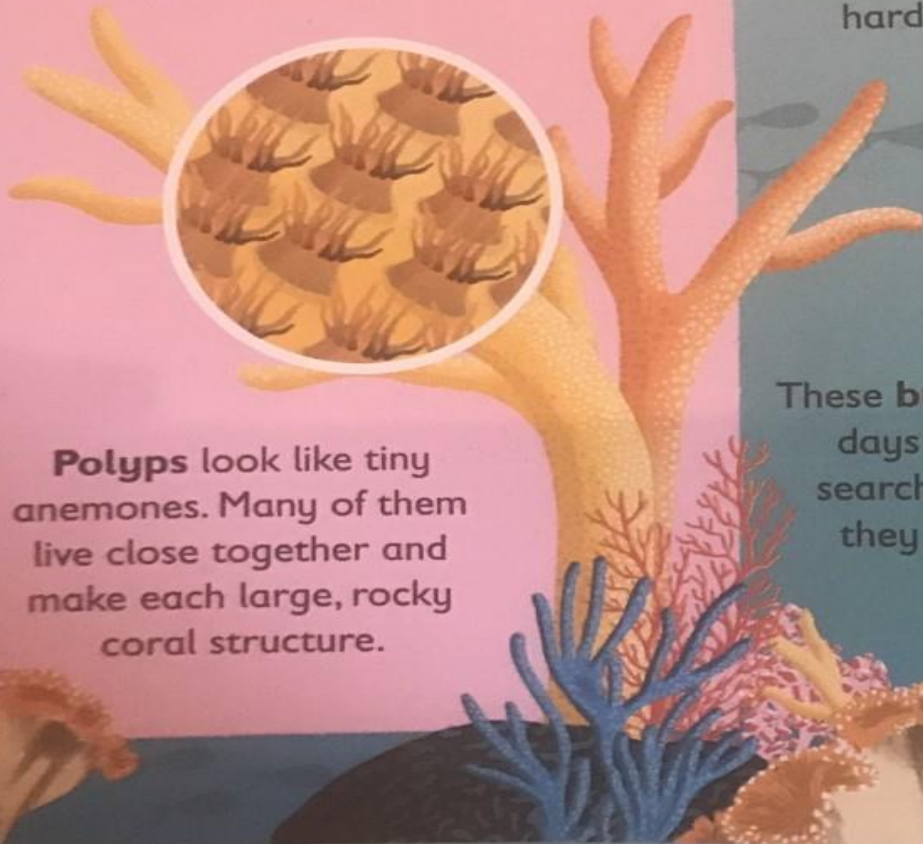


CORAL REEF CITY

Coral can be found in the tropics, where the seawater is warm, clear, and shallow. Like buildings in an underwater city, coral provides homes for thousands of marine animals. Coral reefs are bursting with so much life that scientists are discovering new species of animals there all the time.

WHAT IS CORAL?

While it might look like a plant, coral is actually made up of lots of tiny animals called polyps.

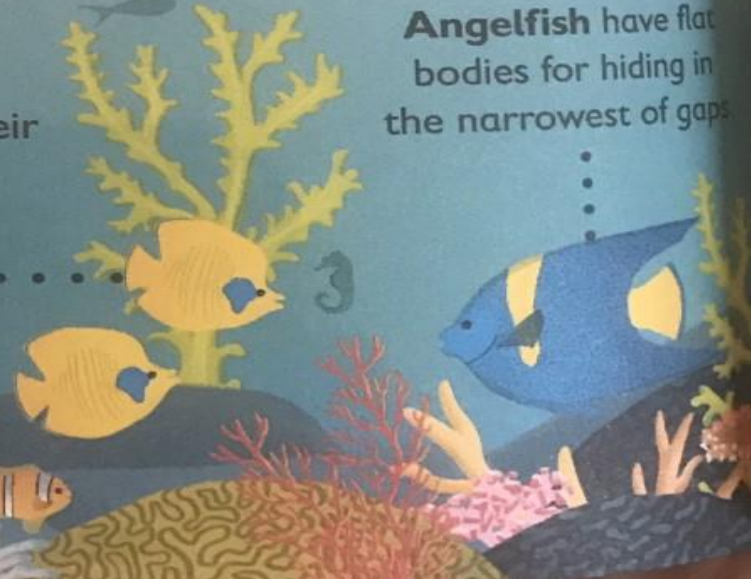


Polyps look like tiny anemones. Many of them live close together and make each large, rocky coral structure.

Some **parrotfish** feed on coral. They have strong, joined teeth like a bird's beak. Parrotfish use this "beak" to grind up the hard, rocky coral.



These **butterflyfish** spend their days nibbling at coral and searching for a partner who they will stay with for life. . . .



Angelfish have flat bodies for hiding in the narrowest of gaps.

THE DAY SHIFT

In the day, the coral reef residents are out searching for food while dodging predators. Coral provides food for many colourful fish, as well as a place for them to hide.



Male adult angelfish are territorial. Young angelfish have different colours and markings so that the male adults don't confuse them with an adult rival who they might chase away.



THE NIGHT SHIFT

Like a game of hide and seek, daytime colourful fish hide in the coral at night where they can sleep without being seen. Hungry reef sharks and other night-time predators are the "seekers". They come out at night to look for food.

Whitetip reef sharks eat fish, octopus, and crab. They have slender bodies to wriggle into narrow spaces and grab prey. . . .



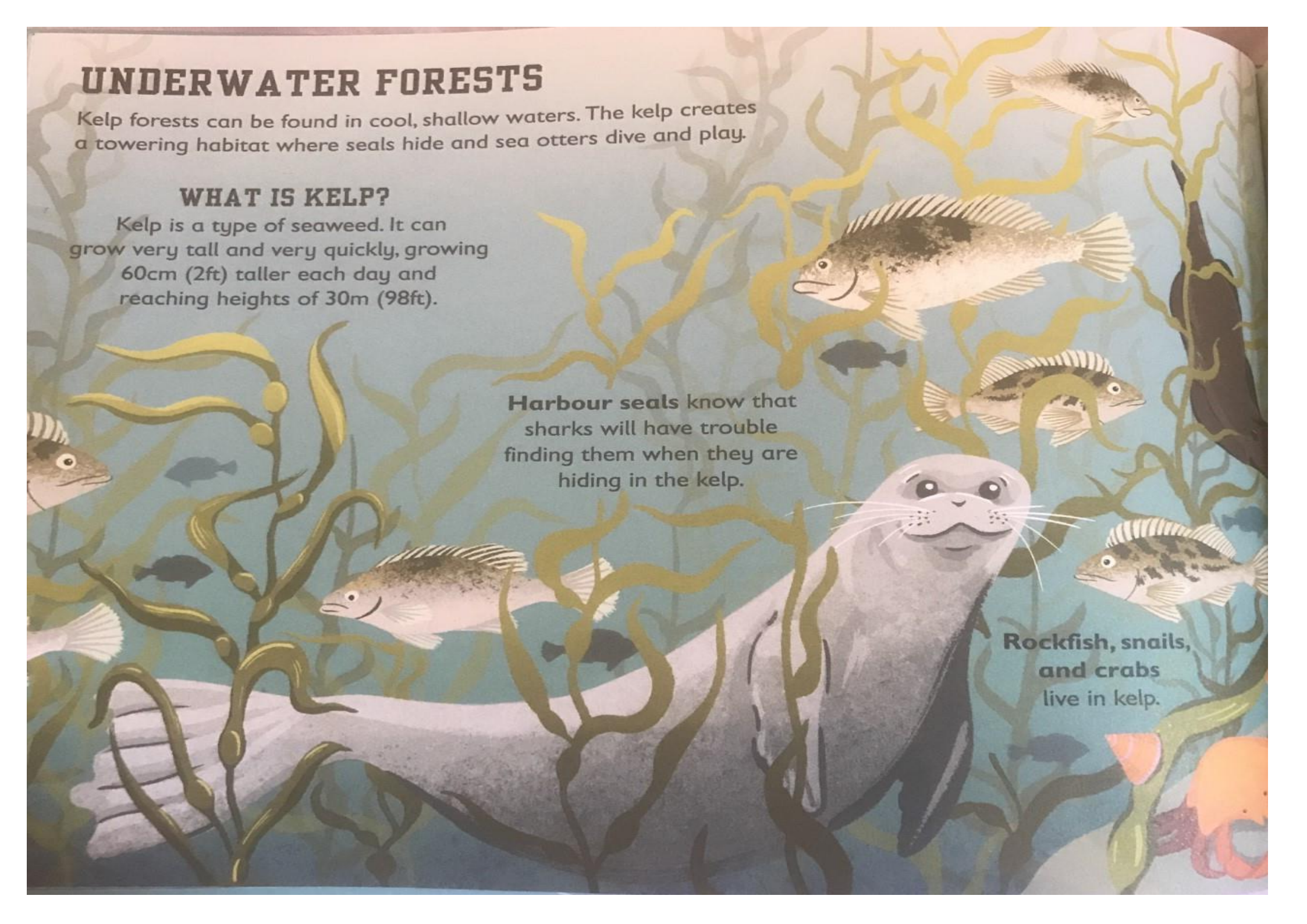
Squirrelfish come out of hiding at night. Their large eyes help them to spot prey in the dark. . . .



At night, parrotfish create slimy cocoons that they sleep in. This might help stop predators from smelling and finding them.



UNDERWATER FORESTS

An illustration of an underwater kelp forest. A large, light-colored seal is the central focus, looking towards the viewer. It is surrounded by tall, green kelp stalks with long, thin blades. Several fish, including large rockfish and smaller dark fish, are swimming around the seal. In the bottom right corner, there are colorful sea anemones and snails. The background is a soft, blue-green gradient, suggesting the water's depth and light filtering through the kelp.


Kelp forests can be found in cool, shallow waters. The kelp creates a towering habitat where seals hide and sea otters dive and play.

WHAT IS KELP?

Kelp is a type of seaweed. It can grow very tall and very quickly, growing 60cm (2ft) taller each day and reaching heights of 30m (98ft).

Harbour seals know that sharks will have trouble finding them when they are hiding in the kelp.


Rockfish, snails, and crabs live in kelp.



WITHOUT OTTERS, urchins are without their main predator, so their numbers rise. In the past, when otters have been hunted, urchins have eaten away and destroyed many kelp forests along the North American coast.

Sea otters dive down to find purple urchins – their favourite food.

Sea urchins are animals that eat lots of kelp. They have spines for protection.



WITH OTTERS around, urchins stay under control. Today, sea otters are protected on the North American coast, and their numbers are rising. This means the kelp forests are recovering too, giving shelter and food to lots of other animals.

WHAT IS THE BIGGEST FISH IN THE SEA?

Whale sharks are the biggest fish in the sea, but their favourite meal is the smallest of sea creatures – plankton. Whale sharks belong to a group of fish with a fierce reputation, but these huge **SHARKS** are gentle giants.

Whale shark

Sharks don't have hard bones in their bodies. Instead, they have **CARTILAGE**, which is much lighter for swimming. You can find cartilage in your own ears and nose.

The whale shark can grow 15m (50ft) long, maybe longer.

MEET THE SHARKS

Not all sharks look like the famous great white. There are over 500 species and they all look very different.

Great white shark

Goblin shark

Zebra shark

Wobbegong shark

Young zebra sharks are wriggly but the adults are spotty.

All sharks are meat-eaters and their super senses, especially their fantastic sense of **SMELL**, make them experts at finding prey.

Sharks have **EARS** inside their bodies, but their hearing is much better than ours.

Most sharks have five pairs of **GILLS**, but a few have six or seven. Some sharks, like the whale shark, have to keep swimming to breathe.

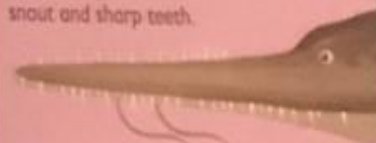
RIGHT TOOL FOR THE JOB

These sharks have some strangely shaped heads that help them to find and catch prey.

Hammerhead sharks pin down stingrays with their T-shaped heads. Their wide-set eyes give them excellent vision.

Sawsharks slash fish with their saw-like snout and sharp teeth.

Cookiecutter sharks bite chunks out of large fish and dolphins, leaving them with a cookie-shaped bite mark.



MEET THE MAMMALS

Most mammals give birth to their babies, need air to breathe, and are warm-blooded. This group of animals, which includes humans, is mostly found on land, although some mammals live in water. Aquatic mammals have **fins** and **flippers** for swimming, and thick, fatty **blubber** or special fur to keep them warm.

DUGONGS

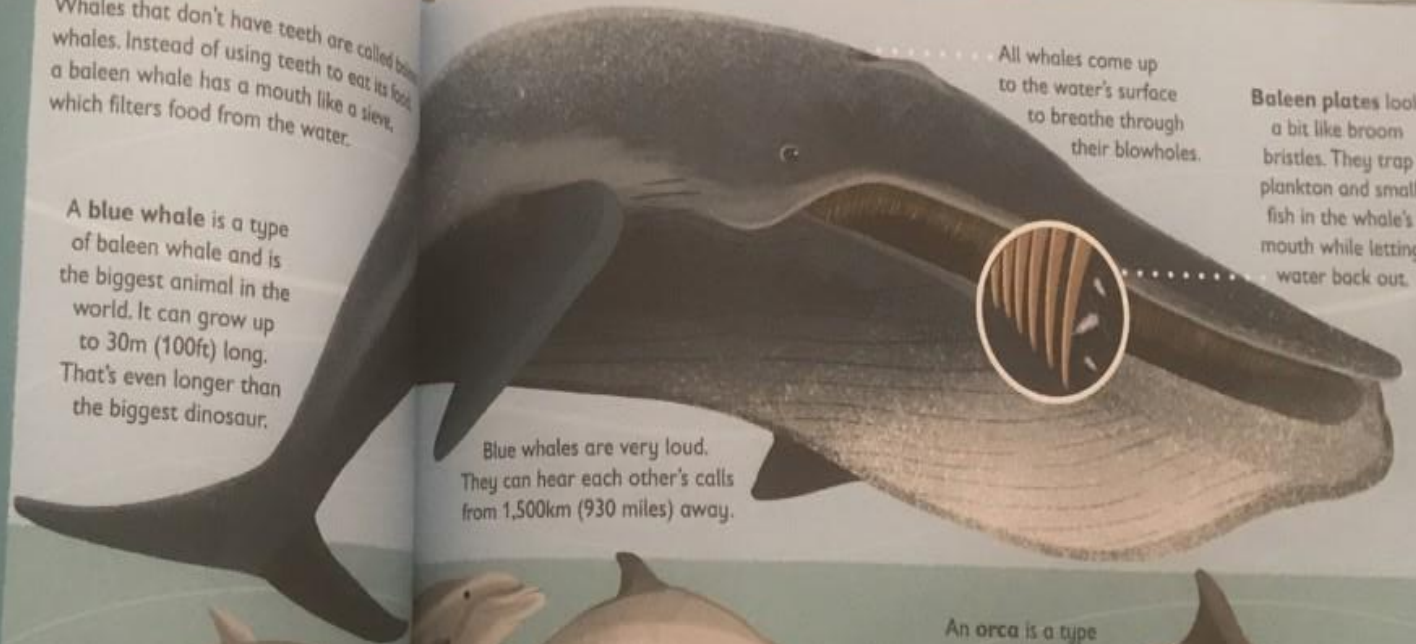
Also known as sea cows, dugongs spend their lives grazing on sea grass. These peaceful plant-eaters greet each other with kisses and keep their calves close to them for two years.



BALEEN WHALES

Whales that don't have teeth are called baleen whales. Instead of using teeth to eat its food, a baleen whale has a mouth like a sieve, which filters food from the water.

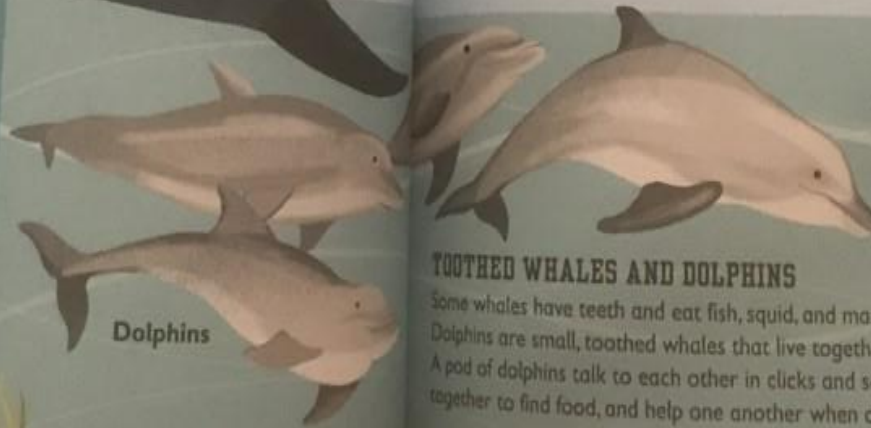
A blue whale is a type of baleen whale and is the biggest animal in the world. It can grow up to 30m (100ft) long. That's even longer than the biggest dinosaur.



All whales come up to the water's surface to breathe through their blowholes.

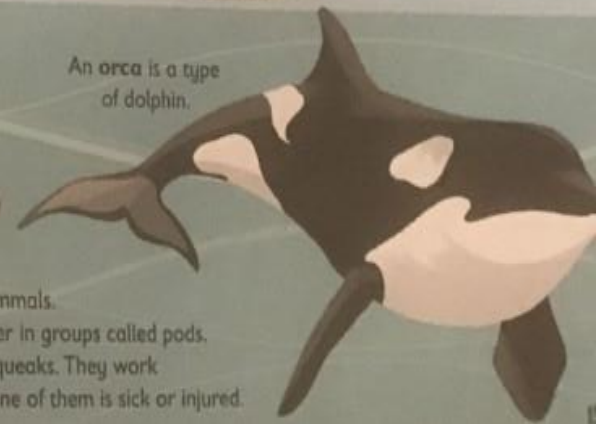
Baleen plates look a bit like broom bristles. They trap plankton and small fish in the whale's mouth while letting water back out.

Blue whales are very loud. They can hear each other's calls from 1,500km (930 miles) away.



Dolphins

An orca is a type of dolphin.



TOOTHED WHALES AND DOLPHINS

Some whales have teeth and eat fish, squid, and mammals. Dolphins are small, toothed whales that live together in groups called pods. A pod of dolphins talk to each other in clicks and squeaks. They work together to find food, and help one another when one of them is sick or injured.

A LIFE ON THE ICE

The North Pole is located in the middle of the Arctic Ocean where it is extremely cold. Here lots of seawater freezes, making floating blocks of ice called **PACK ICE**. This floating ice is home to many marine animals. The **FOOD CHAIN** below shows how Arctic animals depend on the ice and each other for food and survival.



Plankton grows in and on the under-surface of pack ice.



Krill are small, shrimp-like animals that eat plankton.



Cod and lots of other fish eat krill.



Narwhals and beluga whales are types of toothed whales.



A narwhal has a single, long tusk, which is why it has become known as the unicorn of the sea.



Ringed seals have strong claws to make breathing holes in the ice.

Baby walrus and seals are called **pups**. Their mothers look after them on the ice.



Walrus have huge tusks, which they use to pull themselves out of the water and onto the ice.



Seals and other mammals like beluga whales and narwhals eat the fish.



Polar bears are at the top of the Arctic food chain. They hunt from the ice, looking for seals to eat.



Polar bears are good swimmers with a strong sense of smell. They can sniff out food below a metre of snow.