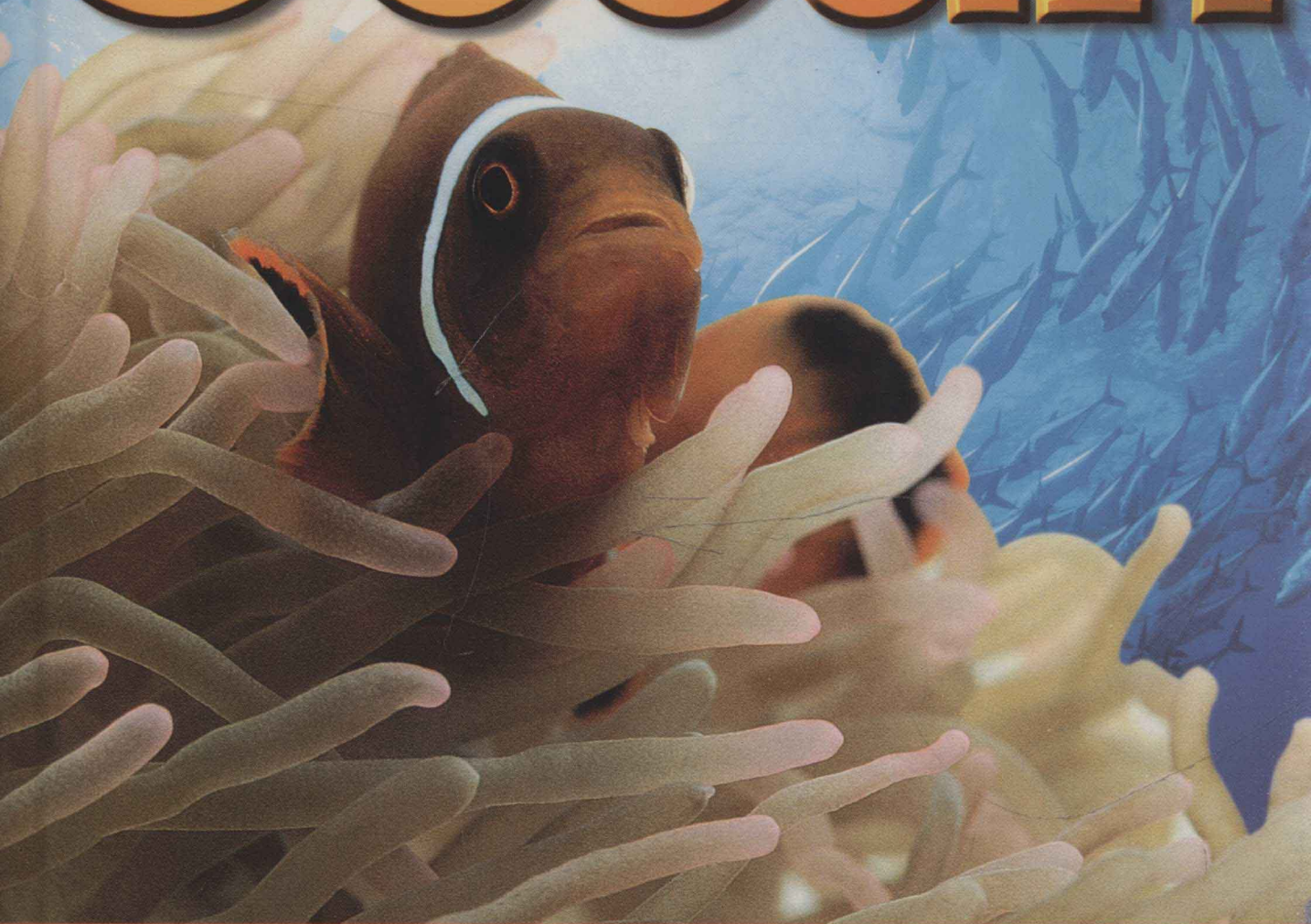


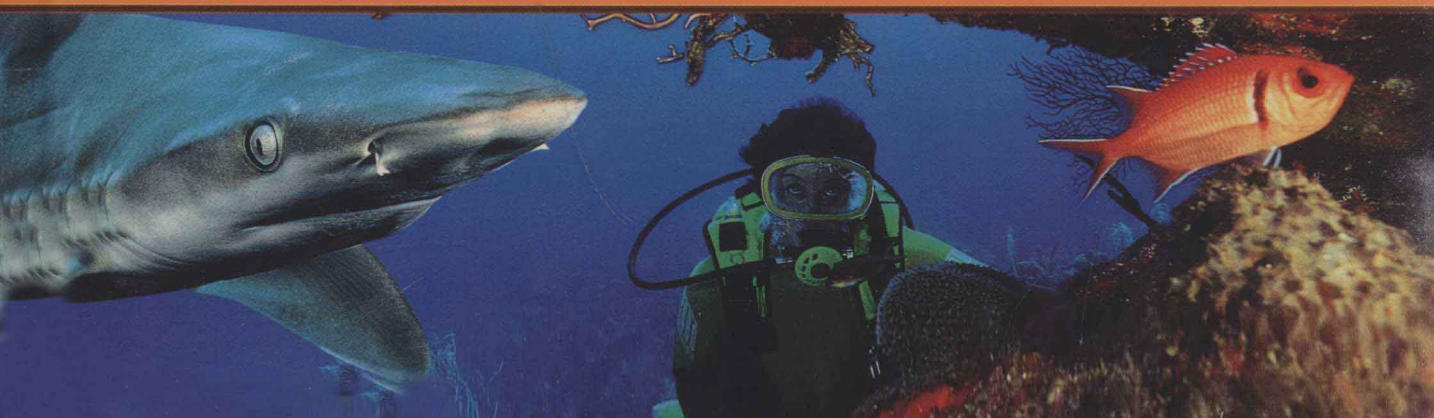


Eye Wonder

Ocean



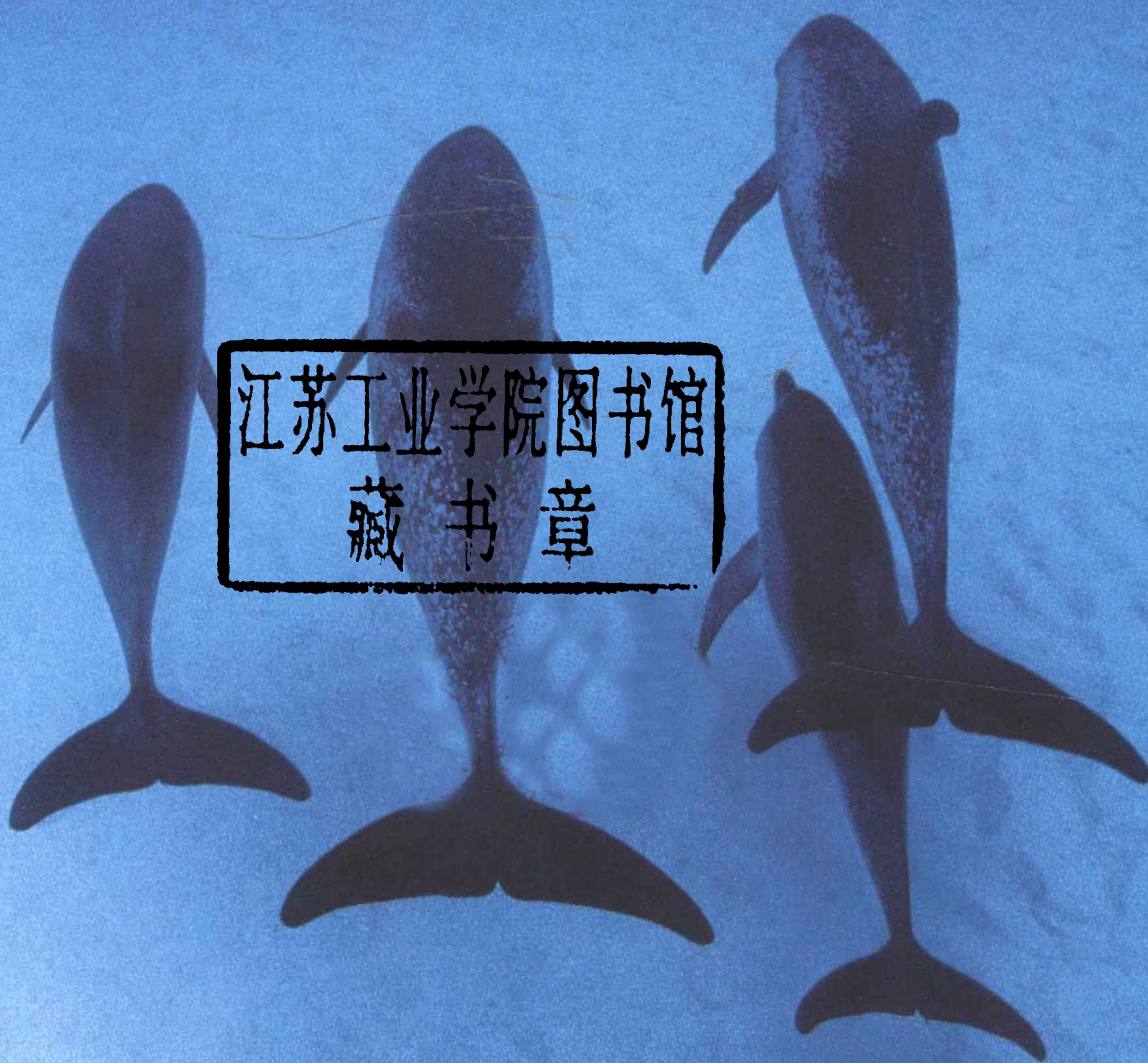
Open your eyes to a world of discovery



DK Eye Wonder

Ocean

江苏工业学院图书馆
藏书章





LONDON, NEW YORK, MUNICH,
MELBOURNE, DELHI



Written and edited by Samantha Gray

Designed by Mary Sandberg,
Janet Allis, and Cheryl Telfer

Publishing manager Mary Ling

Managing art editor Rachael Foster

Jacket design Chris Drew

Picture researcher Nicole Kaczynski

Production Kate Oliver

DTP designer Almudena Díaz

Consultant Sue Thornton

Thanks to Sarah Walker for editorial assistance

First published in Great Britain in 2001 by

Dorling Kindersley Limited

80 Strand, London WC2R 0RL

4 6 8 10 9 7 5

Copyright © 2001 Dorling Kindersley Limited, London

First paperback edition 2004

A CIP catalogue record for this book
is available from the British Library.

All rights reserved. No part of this publication may be
reproduced, stored in a retrieval system, or transmitted
in any form or by any means, electronic, mechanical,
photocopying, recording, or otherwise, without the prior
written permission of the copyright owner.

Paperback edition ISBN 1-4053-0471-5

Hardback edition ISBN 0-7513-3219-4

Colour reproduction by Colourscan, Singapore

Printed and bound in Italy by L.E.G.O.

see our complete
catalogue at

www.dk.com

Contents

4-5

Ocean zones

6-7

The blue planet

8-9

What is a fish?

10-11

Fantastic fish

12-13

Jellyfish

14-15

Spectacular sharks

16-17

Ocean giants

18-19

Playful dolphins

20-21

Gentle sea cows

22-23

Soaring seabirds

24-25

Ocean travellers

26-27

Octopuses and squid

28-29

Living together

30-31

Down in the depths

32-33

Life on the seabed

34-35

Coral reefs

36-37

Life in a coral reef

38-39

Icy waters

40-41

Penguin party

42-43

Kingdom of kelp

44-45

Exploring underwater

46

Glossary

47

Animal alphabet

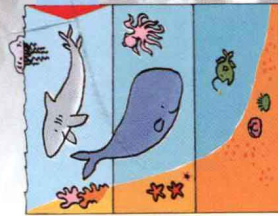
48

Index and
acknowledgements



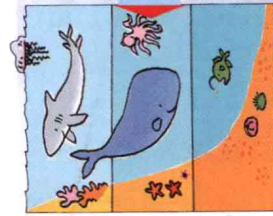
Ocean zones

Oceans may be divided into three zones according to how far down sunlight reaches. To see which zones creatures live in, look for the red arrow in the picture below.



Sunlit zone

A red arrow pointing to the top area of this picture indicates sea creatures living in the sunlit zone. Sunlight reaches down to about 150m (450ft) deep. Most sea creatures live in sunlit water. Sunlight reaches through shallow seas and the upper waters of the open ocean.



Twilight zone

A red arrow pointing to the middle area of this picture indicates sea creatures living in the twilight zone. Light becomes dim below 150m (450ft). The twilight zone reaches from here down

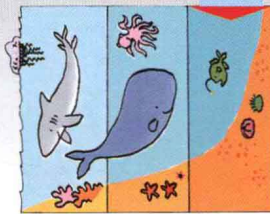
Schools of fish like these silver snappers swim in the sunlit zone.



Octopuses and squid live in all the ocean zones, including the twilight zone.

Fishy facts

- The deepest ocean is the Pacific, followed by the Atlantic, then the Indian. The Arctic is the shallowest of all the oceans.
- Many sea creatures depend on ocean plantlife for their food supply. Plants need sunlight to grow.
- Coral and kelp only grow in sunlit seas.



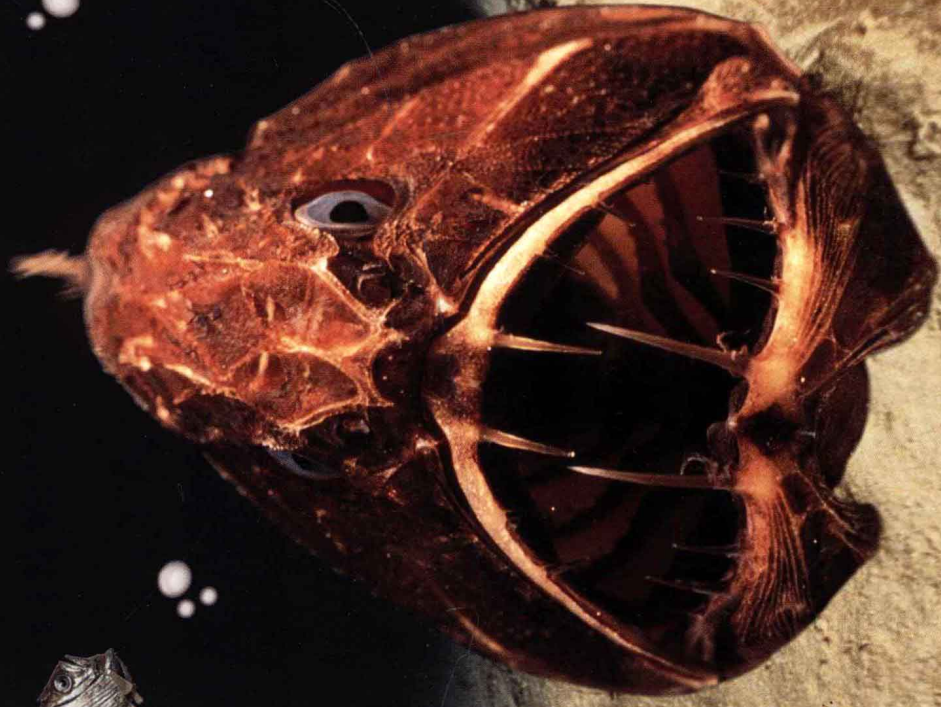
Midnight zone

A red arrow pointing to the lowest area of this picture indicates sea creatures living in the midnight zone. No sunlight reaches below 1,000m (3,300ft), so the midnight zone is pitch black and extremely cold. The deepest parts of the ocean may be more than 4,000m (13,200ft) deep. This far down is known as the abyss. There are also trenches where the ocean is deeper than 6,000m (19,800ft).

Deep-sea hatchet fish have lights along their bellies and tails that glow in the darkness.



There is little food in the midnight zone, but the fangtooth's huge mouth allows it to Hoover up anything that comes its way.



The blue planet

Oceans cover more than two thirds of Earth's surface. In this vast underwater world many sea creatures live together, often hidden beneath the waves.

The Pacific Ocean covers more than one third of Earth's surface.



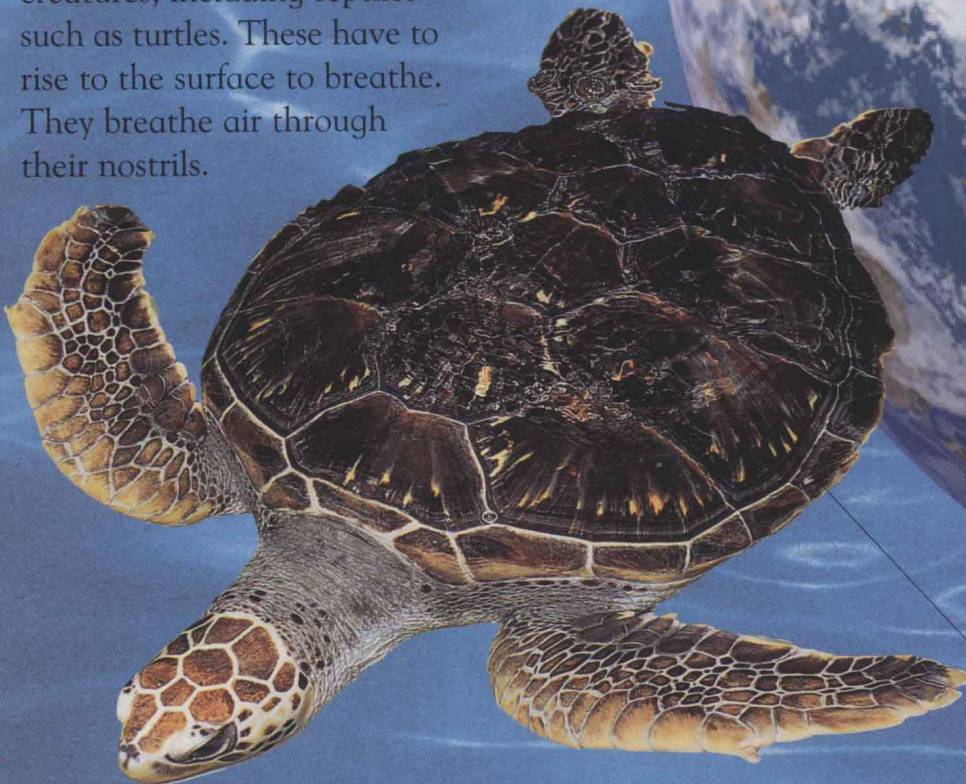
Gulls swoop down from the sky to scoop up a fishy snack.

Fishing for food

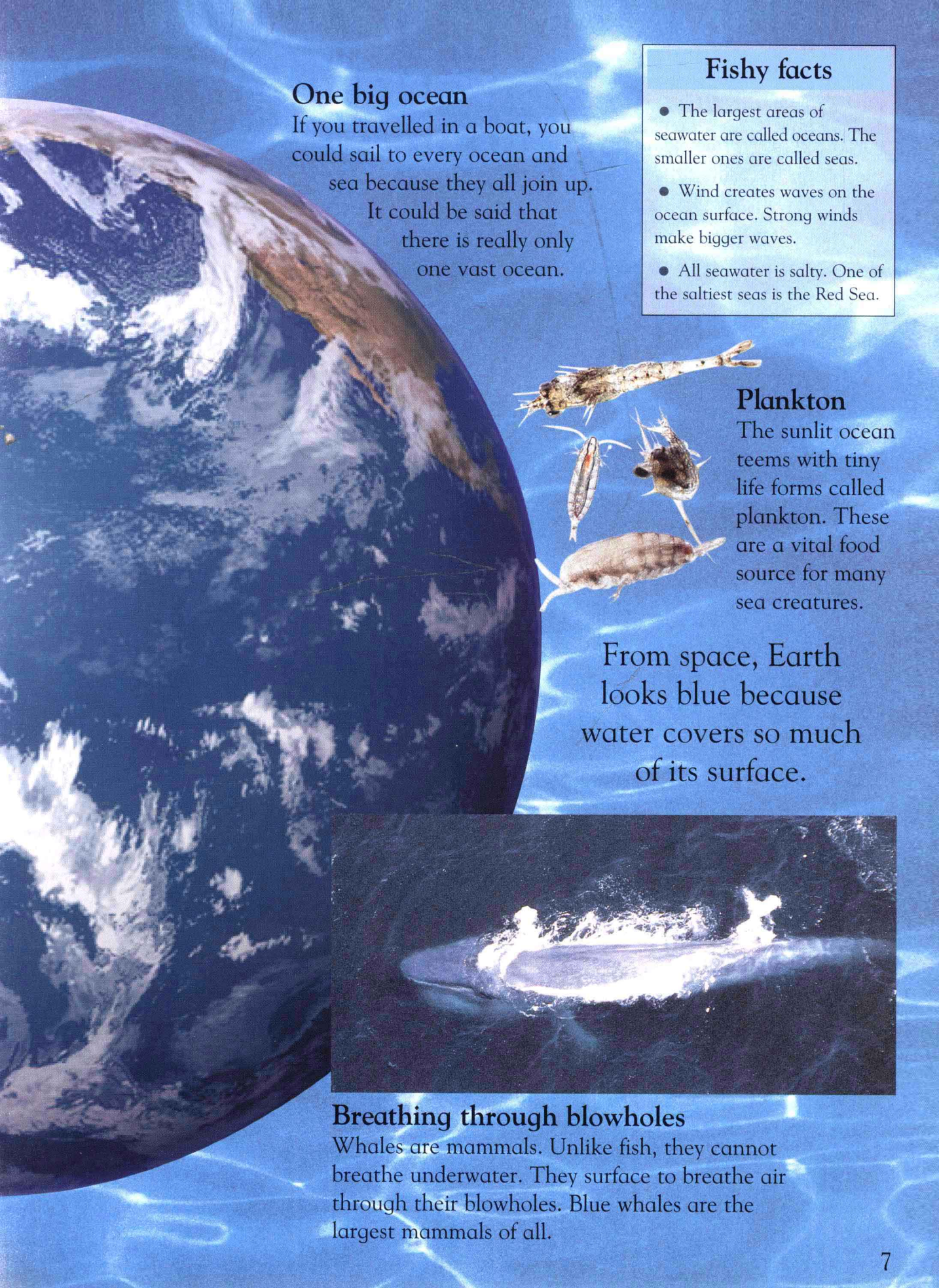
Oceans are a source of food for seabirds, who fly or swim in search of fish.

Sea turtles

There are many types of sea creatures, including reptiles such as turtles. These have to rise to the surface to breathe. They breathe air through their nostrils.



Green turtles live in warm waters in the Atlantic, Indian, and Pacific Oceans.



One big ocean

If you travelled in a boat, you could sail to every ocean and sea because they all join up.

It could be said that there is really only one vast ocean.

Fishy facts

- The largest areas of seawater are called oceans. The smaller ones are called seas.
- Wind creates waves on the ocean surface. Strong winds make bigger waves.
- All seawater is salty. One of the saltiest seas is the Red Sea.

Plankton

The sunlit ocean teems with tiny life forms called plankton. These are a vital food source for many sea creatures.

From space, Earth looks blue because water covers so much of its surface.

Breathing through blowholes

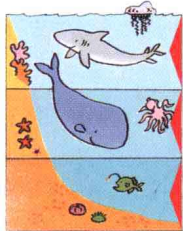
Whales are mammals. Unlike fish, they cannot breathe underwater. They surface to breathe air through their blowholes. Blue whales are the largest mammals of all.

Safety in schools

Small fish such as saupe often swim in large groups called schools or shoals. There is safety in numbers!



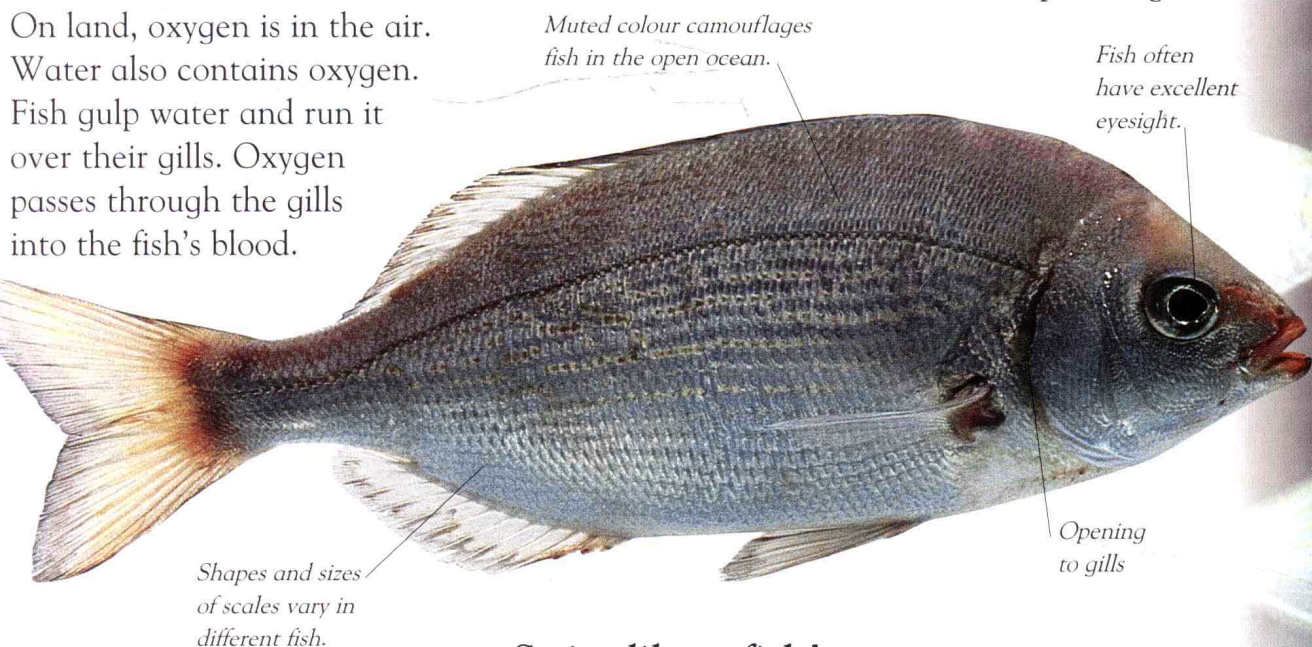
What is a fish?



All fish have fins for swimming and gills for breathing under water. Fish also have their own suits of armour! Most are covered in overlapping scales like tiles on a roof. Some just have extra-tough skin. They are slimy so they can glide swiftly through water.

How fish breathe

On land, oxygen is in the air. Water also contains oxygen. Fish gulp water and run it over their gills. Oxygen passes through the gills into the fish's blood.



Muted colour camouflages fish in the open ocean.

Fish often have excellent eyesight.

Opening to gills

Shapes and sizes of scales vary in different fish.

Swim like a fish!

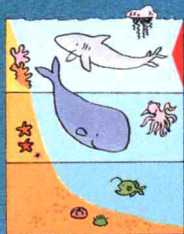
Fish swim like snakes wriggle. Their bodies form S-shaped curves. Most fish use their tails for the main push forwards. A few row themselves along with their fins.



Lesser-spotted dogfish

Dogfish wiggle from side to side.

Fantastic fish



Fish can be weird and wonderful! They vary in size from tiny sea horses to giant manta rays. Some have unusual shapes that help them to hide or scare off predators.

Manta rays flap with wide, wing-like fins and glide through the water.

Prickly beauty

Lionfish have stripy bodies to warn away other fish. Any predator that bites a lionfish will be pierced by poisonous spines.

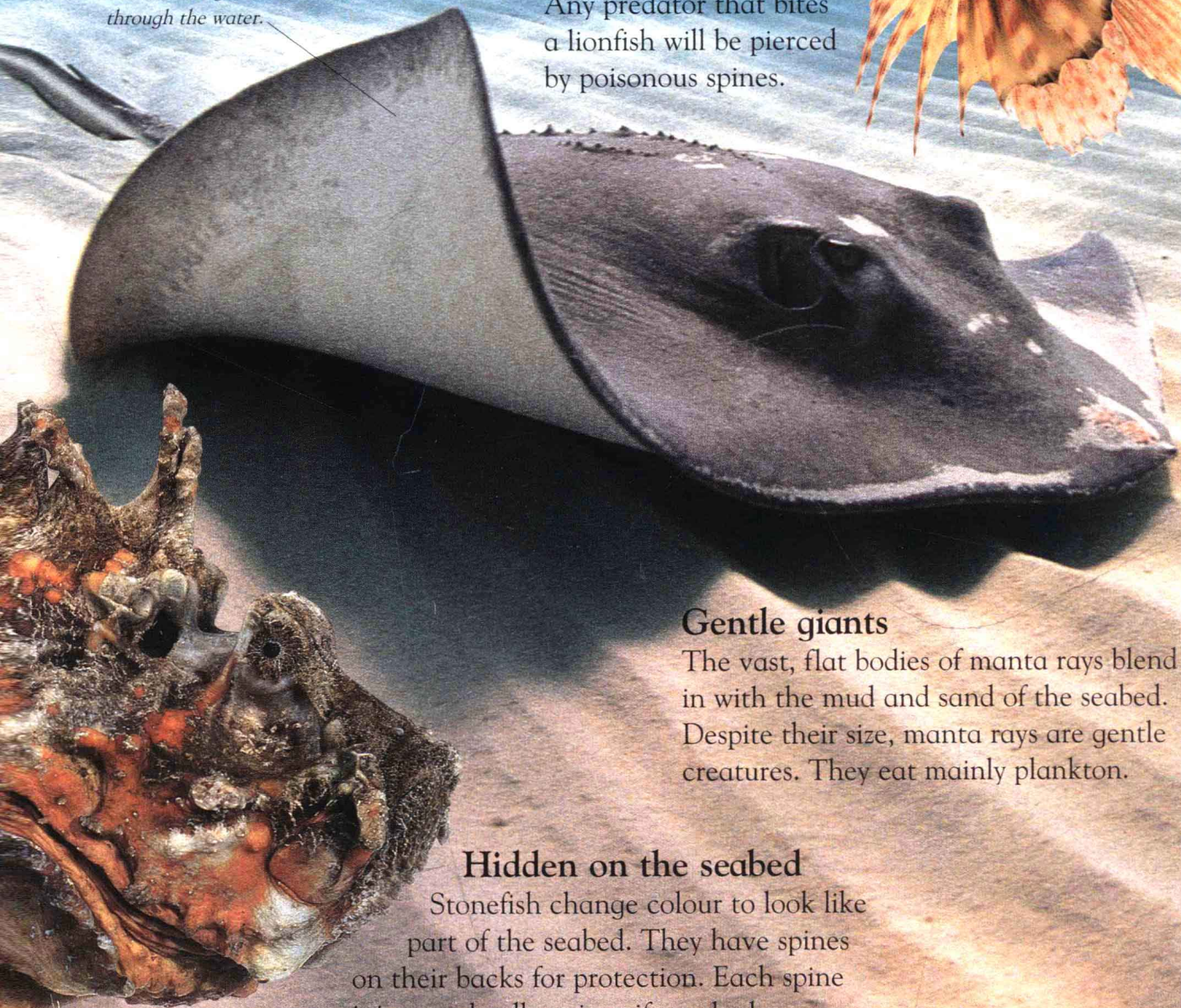


Gentle giants

The vast, flat bodies of manta rays blend in with the mud and sand of the seabed. Despite their size, manta rays are gentle creatures. They eat mainly plankton.

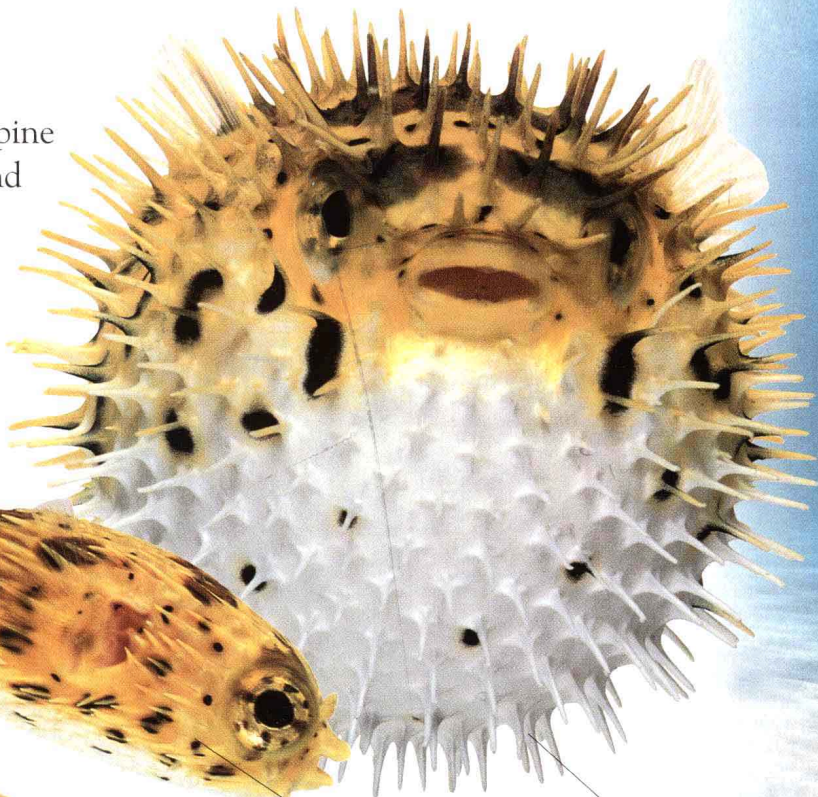
Hidden on the seabed

Stonefish change colour to look like part of the seabed. They have spines on their backs for protection. Each spine injects a deadly poison if touched.



Puffed up

When in danger, porcupine fish gulp down water and swell up like balloons. Now they are too large and prickly for most predators to swallow!



A relaxed porcupine fish with spines lying flat.

A puffed-up porcupine fish has raised spines.

Colourful ribbon

Ribbon eels can coil themselves into crevices that seem too small for their long bodies. They have sharp teeth for seizing prey.

Eels are fish but they look much more like snakes!

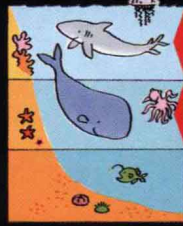
Slimy, slippery skin



Dragon of the sea

Leafy sea dragons live in shallow, seaweedy waters. Here, they avoid predators by looking like seaweed. Their other name is weedy sea dragons.

Jellyfish



Adrift in the oceans since prehistoric times, jellyfish are more than 95% water. They have no brains, bones, hearts, or eyes. Their stinging tentacles act like fishing lines to catch prey.

Dinner delivered

Long tentacles trail from the jellyfish's body. When a small animal swims into them, the tentacles spear it with poisonous stings.

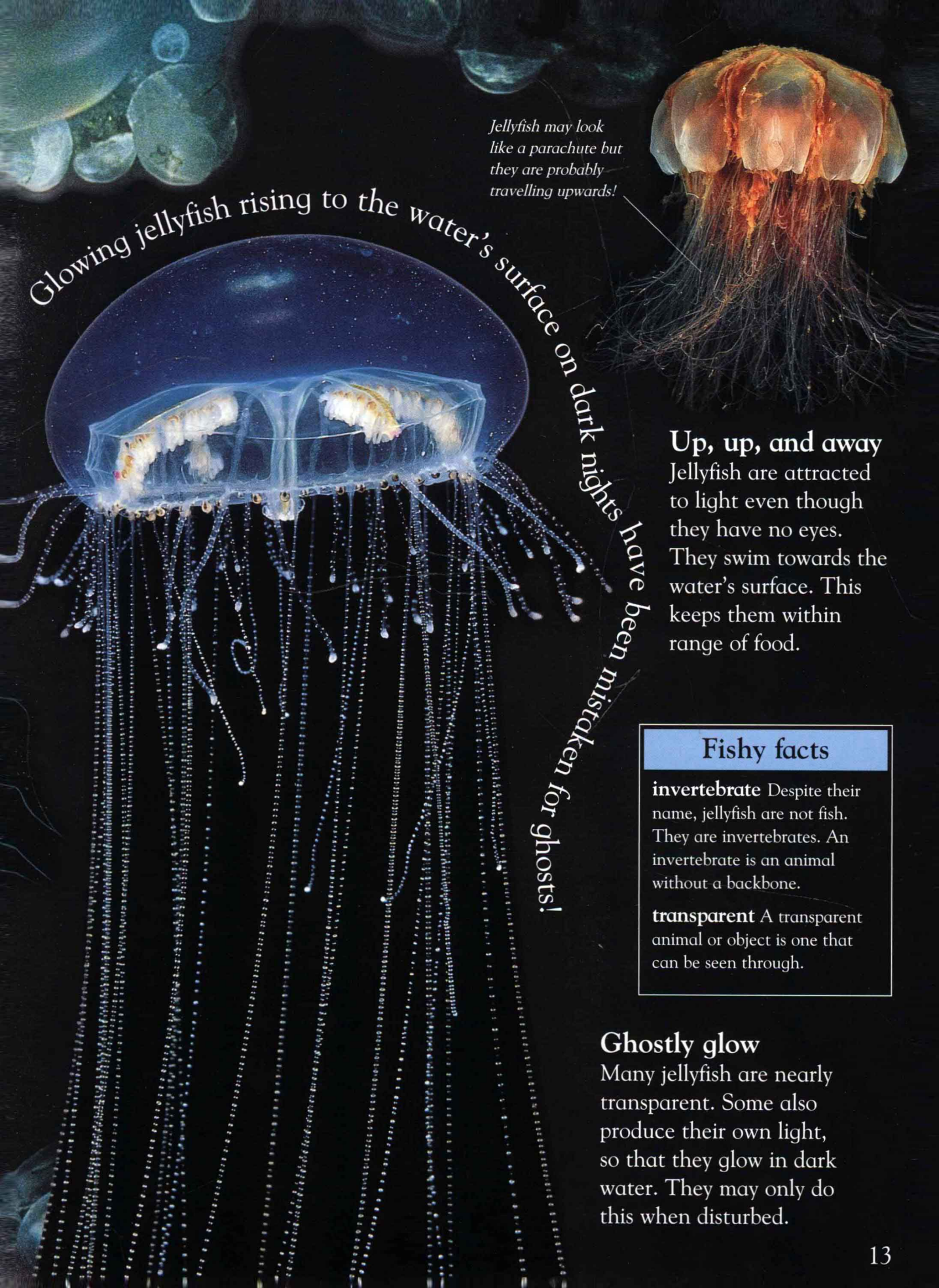
OCEAN DRIFTER

In warmer parts of the world, the Portuguese man-of-war drifts on the surface of the waves. It is held up by a balloon-like float. A relative of jellyfish, its other name is "blue jellyfish". It catches fish in its long tentacles. These shoot tiny stings into any animal that touches them. People are sometimes stung by a Portuguese man-of-war. The stings are not fatal to people, but they are very painful!



Underwater umbrella

Jellyfish have soft bodies called bells. The bell moves in and out like an umbrella opening and closing. This drives the jellyfish along.



Jellyfish may look like a parachute but they are probably travelling upwards!

Glowing jellyfish rising to the water's surface on dark nights have been mistaken for ghosts!

Up, up, and away
Jellyfish are attracted to light even though they have no eyes. They swim towards the water's surface. This keeps them within range of food.

Fishy facts

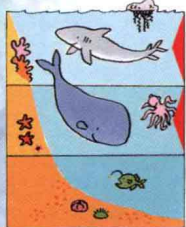
invertebrate Despite their name, jellyfish are not fish. They are invertebrates. An invertebrate is an animal without a backbone.

transparent A transparent animal or object is one that can be seen through.

Ghostly glow

Many jellyfish are nearly transparent. Some also produce their own light, so that they glow in dark water. They may only do this when disturbed.

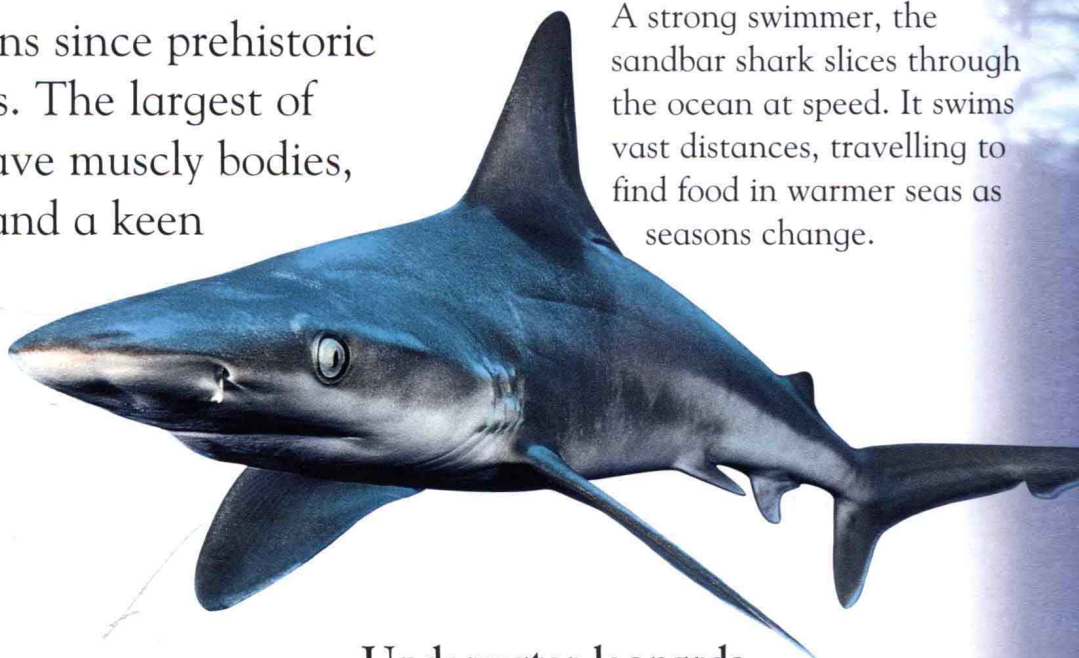
Spectacular sharks



Sharks are survivors! They have lived in the world's oceans since prehistoric times. The largest of all fish, they have muscly bodies, good hearing, and a keen sense of smell for sniffing out food.

Sleek and streamlined

A strong swimmer, the sandbar shark slices through the ocean at speed. It swims vast distances, travelling to find food in warmer seas as seasons change.



Underwater leopards

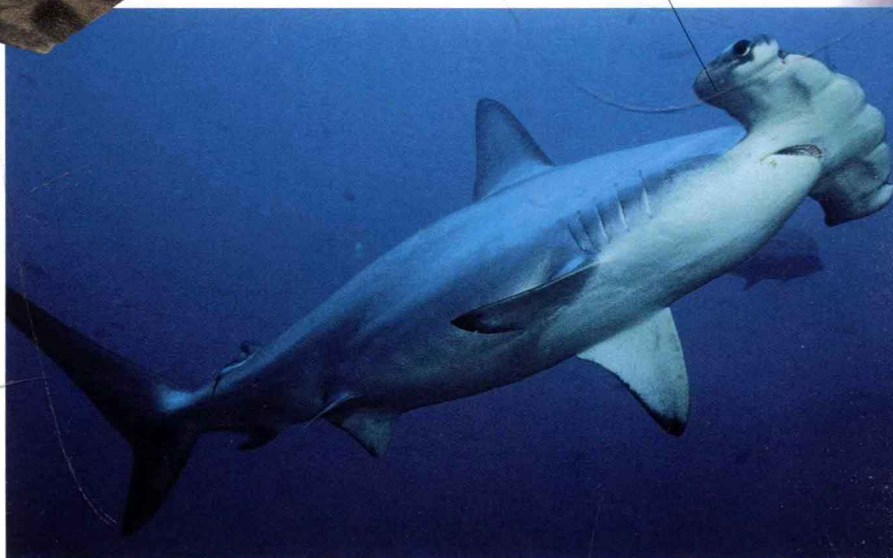
Leopard sharks are named for their golden, spotted skin. This is good camouflage on the seabed where they search for their favourite food – clams.



Head is shaped like a hammer.

Weird and wonderful

Hammerhead sharks have eyes at each end of their unusual, wide heads. This helps them to see more! Hammerhead sharks like to stick together. There may be as many as 100 of them in a school.



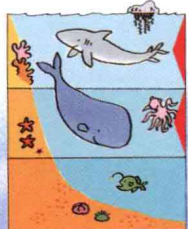


World's scariest shark

Great whites are the largest carnivorous fish. Seen as ferocious maneaters, they have been over-hunted and are now rare. In fact, great whites do not hunt humans. If they do bite people, they usually spit them out!

Great whites have more than 100 razor-sharp teeth.

Ocean giants

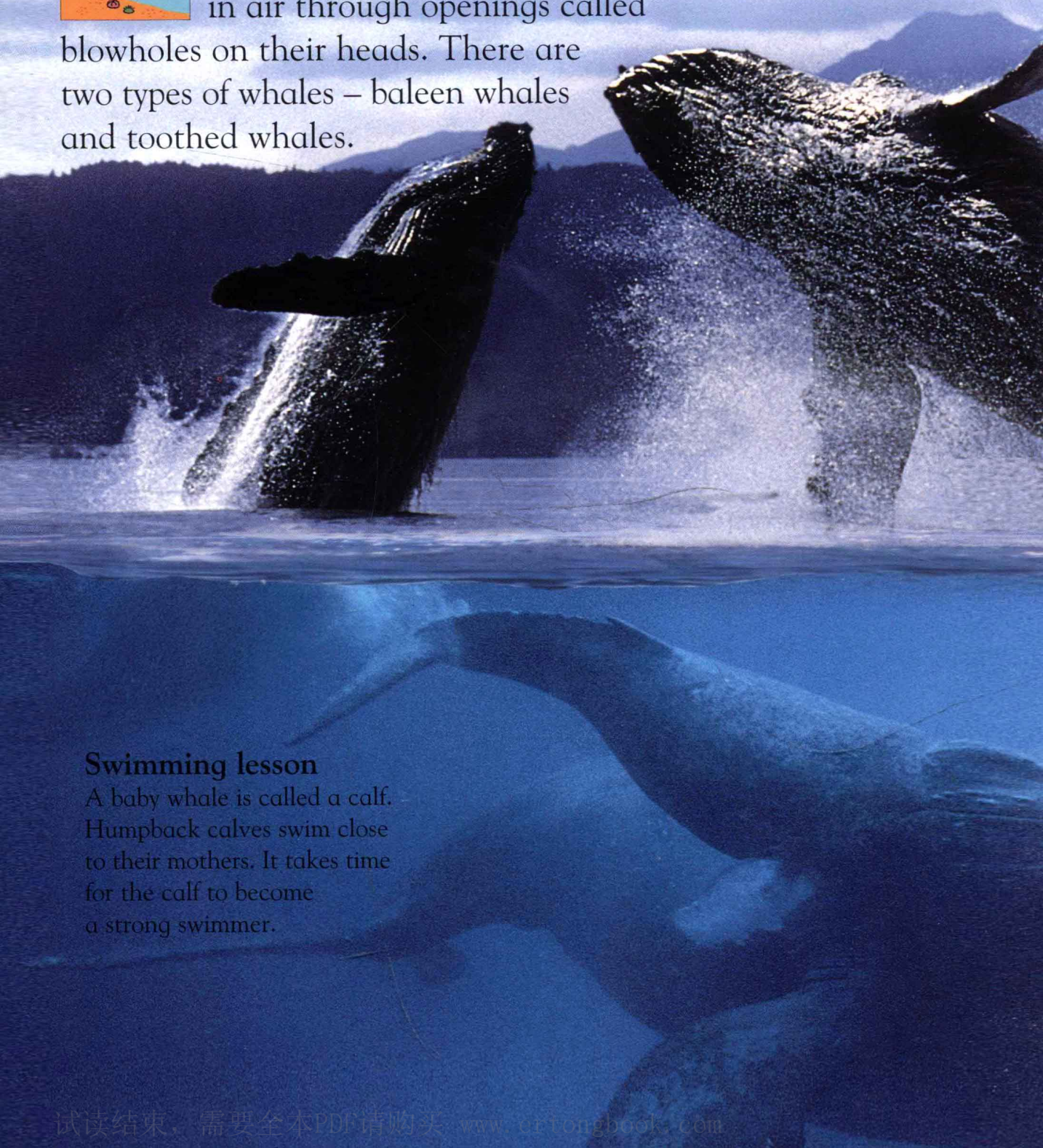


Whales are the largest creatures in the ocean. Like all mammals, they breathe air. Whales take in air through openings called

blowholes on their heads. There are two types of whales – baleen whales and toothed whales.

Splashing about

Humpback whales have longer flippers than other whales. They slap their flippers on the water to make loud splashes. This is called flippering!



Swimming lesson

A baby whale is called a calf. Humpback calves swim close to their mothers. It takes time for the calf to become a strong swimmer.