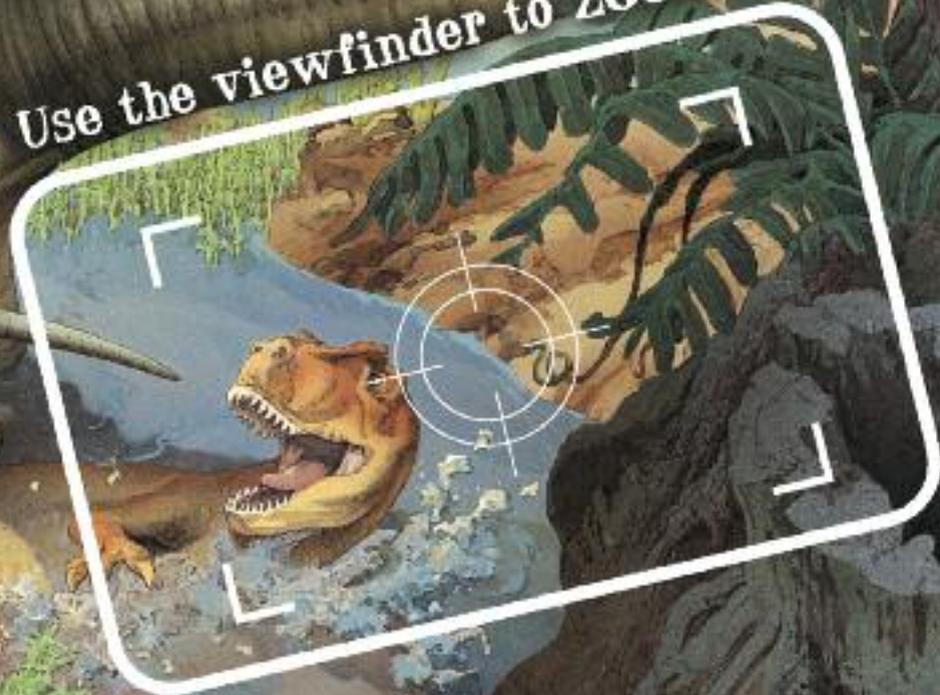


ZOOM!

into
the

Dinosaur world

Use the viewfinder to ZOOM in!



ZOOM!
into the
Dinosaur
world



 Orpheus

Let's zoom!

First published in 2012 by Orpheus Books Ltd.,
6 Church Green, Witney, Oxfordshire, OX28 4AW England
www.orpheusbooks.com

Copyright © 2012 Orpheus Books Ltd.

Created and produced by Orpheus Books Ltd.

Text Nicholas Harris

Consultant Professor Michael Benton, Department of Geology, University of Bristol

Illustrated by Studio Inklink, Firenze

All rights reserved. No part of this book 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.

ISBN 978 1 7418 3797 9

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

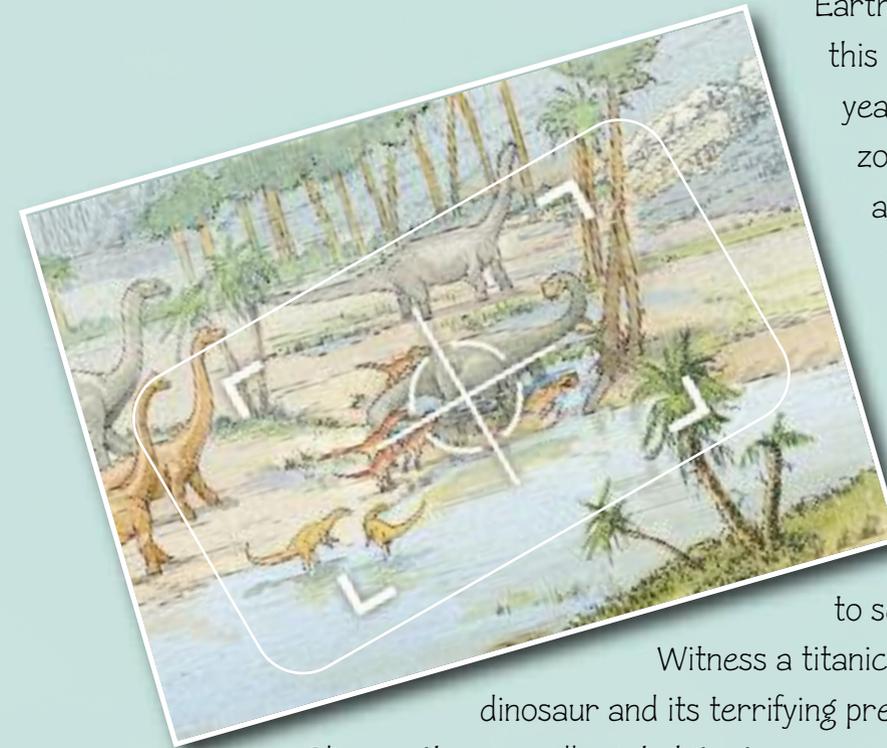
Printed and bound in Singapore.



IMAGINE you are out in space looking down on Earth. Through your viewfinder you can see the whole globe. Now — zoom in. What can you see now? Seas, mountains, plains, valleys, lakes... Zoom in some more. Forests, scrubland and wetlands come into view. But there are no cities, no roads, no farmland, no sign of any human habitation whatever.

Train your viewfinder anywhere on the Earth's surface and it's the same story. For this is planet Earth as it was 150 million years ago: the Jurassic Period. And if you zoom some more, you will soon come across the creatures whose domain this was in those times. In fact, they were the most awesome creatures that ever walked on this planet: the dinosaurs.

Look for the viewfinder on each illustration. Then turn the page to see what you've zoomed in on next.



Witness a titanic contest between a giant, long-necked dinosaur and its terrifying predators.

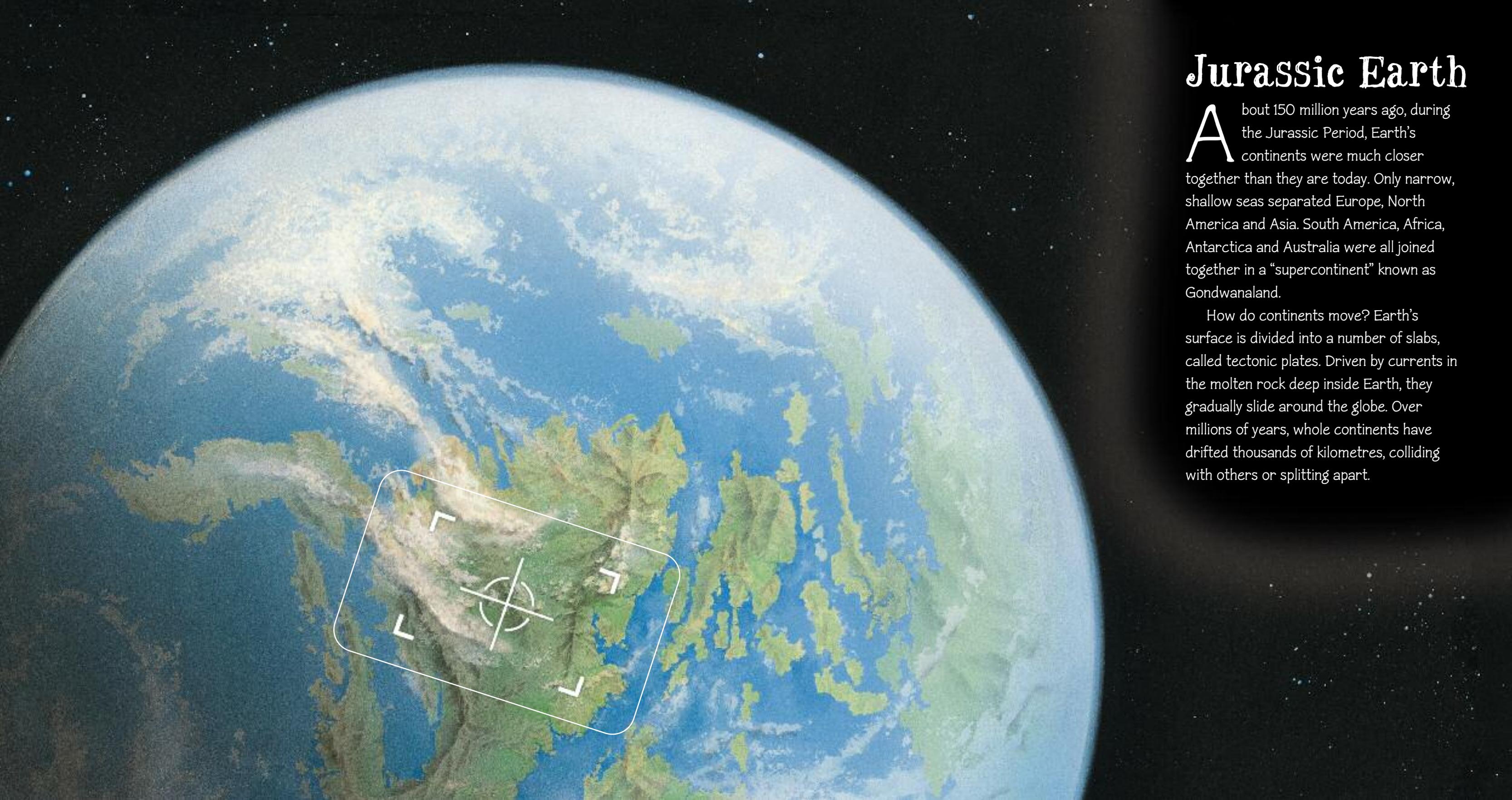
Glimpse those smaller inhabitants of the dinosaur world as they dart through the undergrowth. Finally, discover a nest hidden away in that undergrowth, and find a tiny dinosaur embryo inside that egg.



Jurassic Earth

About 150 million years ago, during the Jurassic Period, Earth's continents were much closer together than they are today. Only narrow, shallow seas separated Europe, North America and Asia. South America, Africa, Antarctica and Australia were all joined together in a "supercontinent" known as Gondwanaland.

How do continents move? Earth's surface is divided into a number of slabs, called tectonic plates. Driven by currents in the molten rock deep inside Earth, they gradually slide around the globe. Over millions of years, whole continents have drifted thousands of kilometres, colliding with others or splitting apart.



Landscape

Just as the shapes of the Earth's continents and oceans looked very different millions of years ago, so, too, was the Earth's surface.

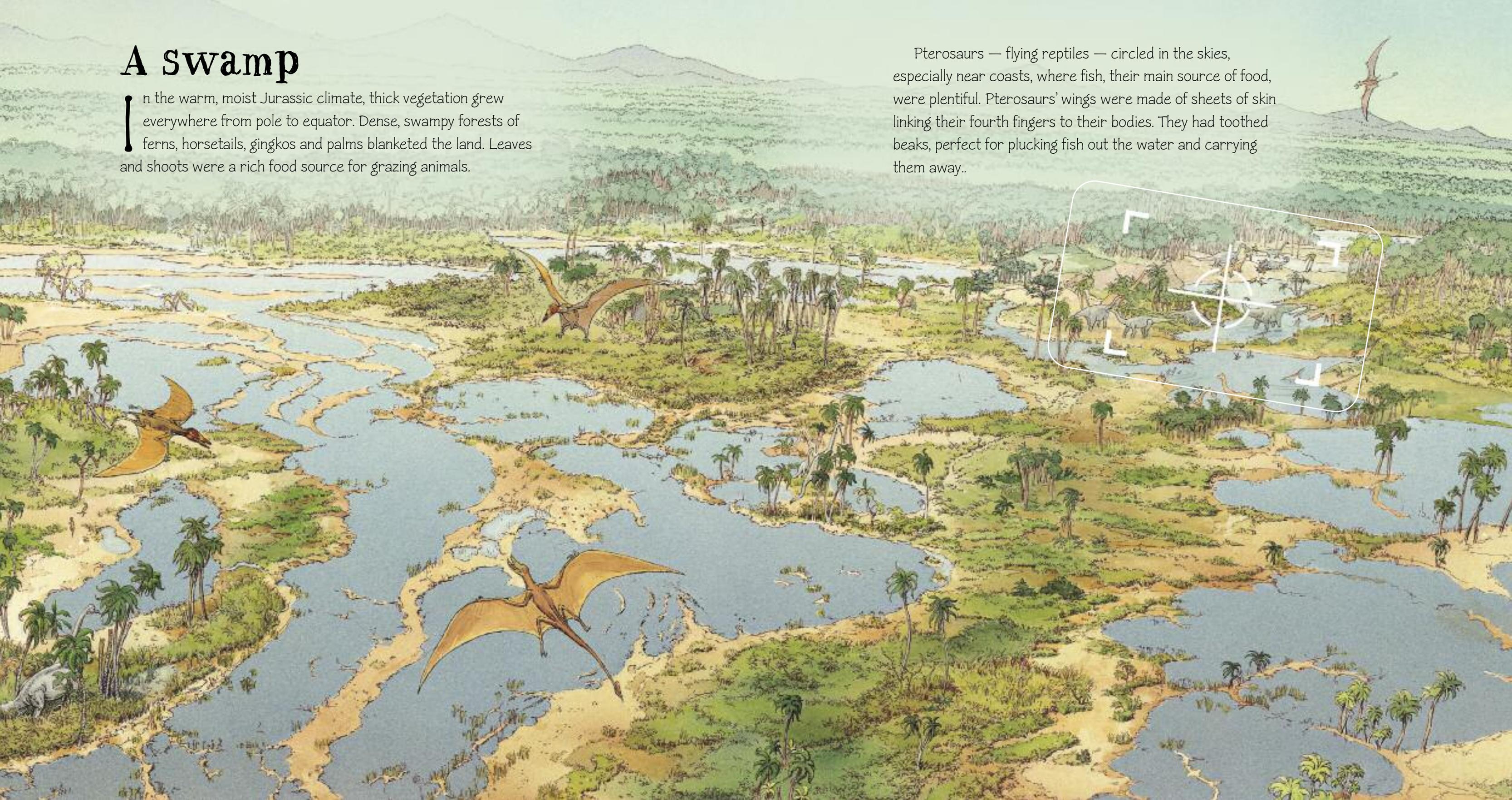
Worldwide, the climate in Jurassic times was warm and humid, with moist winds from the oceans bringing rain to inland regions. With all polar ice melted, sea levels were higher than they are today. Swampy lowlands covered great tracts of land. A typical landscape was lush and green with thick vegetation.

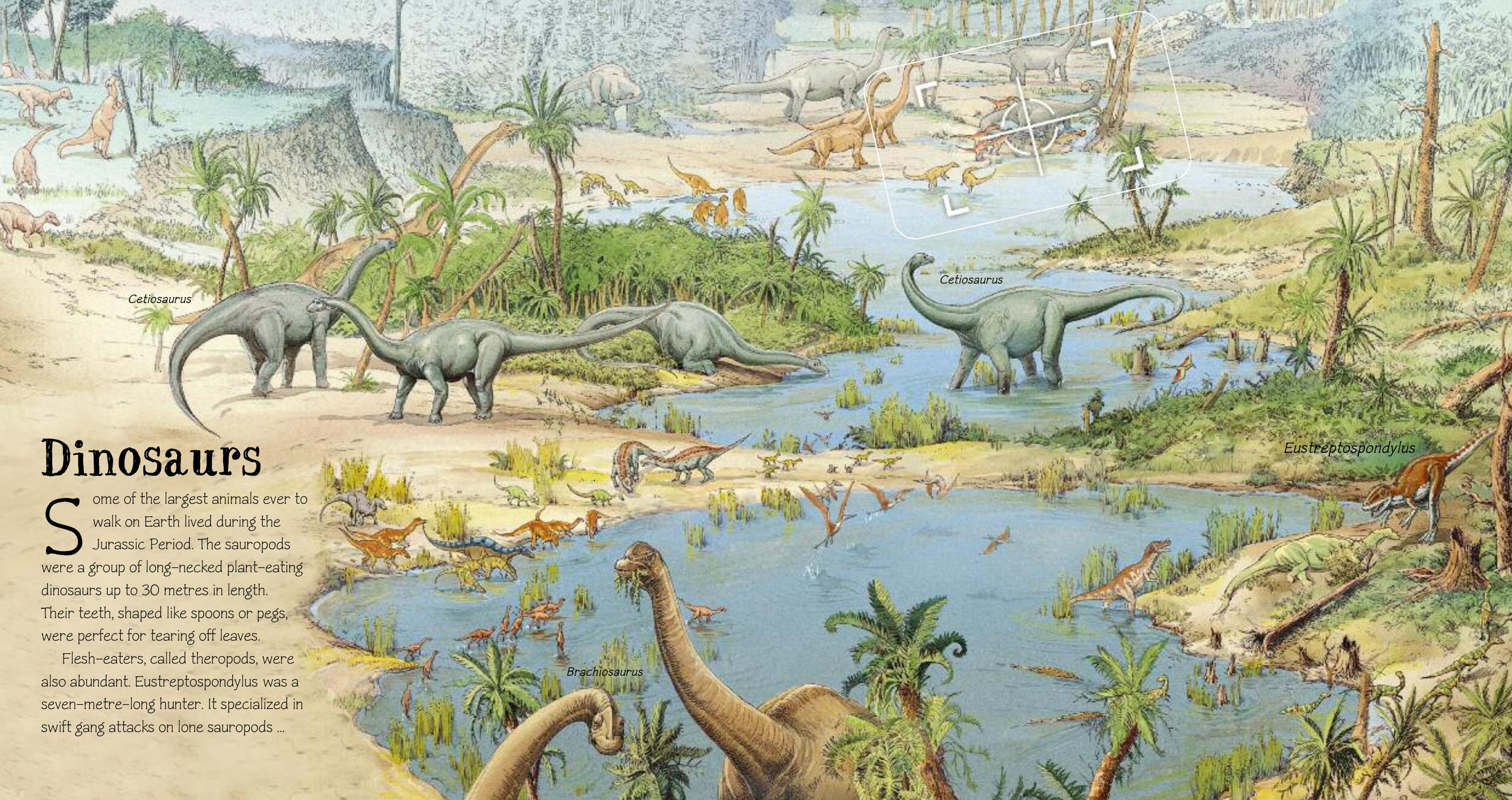


A Swamp

In the warm, moist Jurassic climate, thick vegetation grew everywhere from pole to equator. Dense, swampy forests of ferns, horsetails, ginkgos and palms blanketed the land. Leaves and shoots were a rich food source for grazing animals.

Pterosaurs — flying reptiles — circled in the skies, especially near coasts, where fish, their main source of food, were plentiful. Pterosaurs' wings were made of sheets of skin linking their fourth fingers to their bodies. They had toothed beaks, perfect for plucking fish out the water and carrying them away..





Cetiosaurus

Cetiosaurus

Eustreptospondylus

Brachiosaurus

Dinosaurs

Some of the largest animals ever to walk on Earth lived during the Jurassic Period. The sauropods were a group of long-necked plant-eating dinosaurs up to 30 metres in length. Their teeth, shaped like spoons or pegs, were perfect for tearing off leaves.

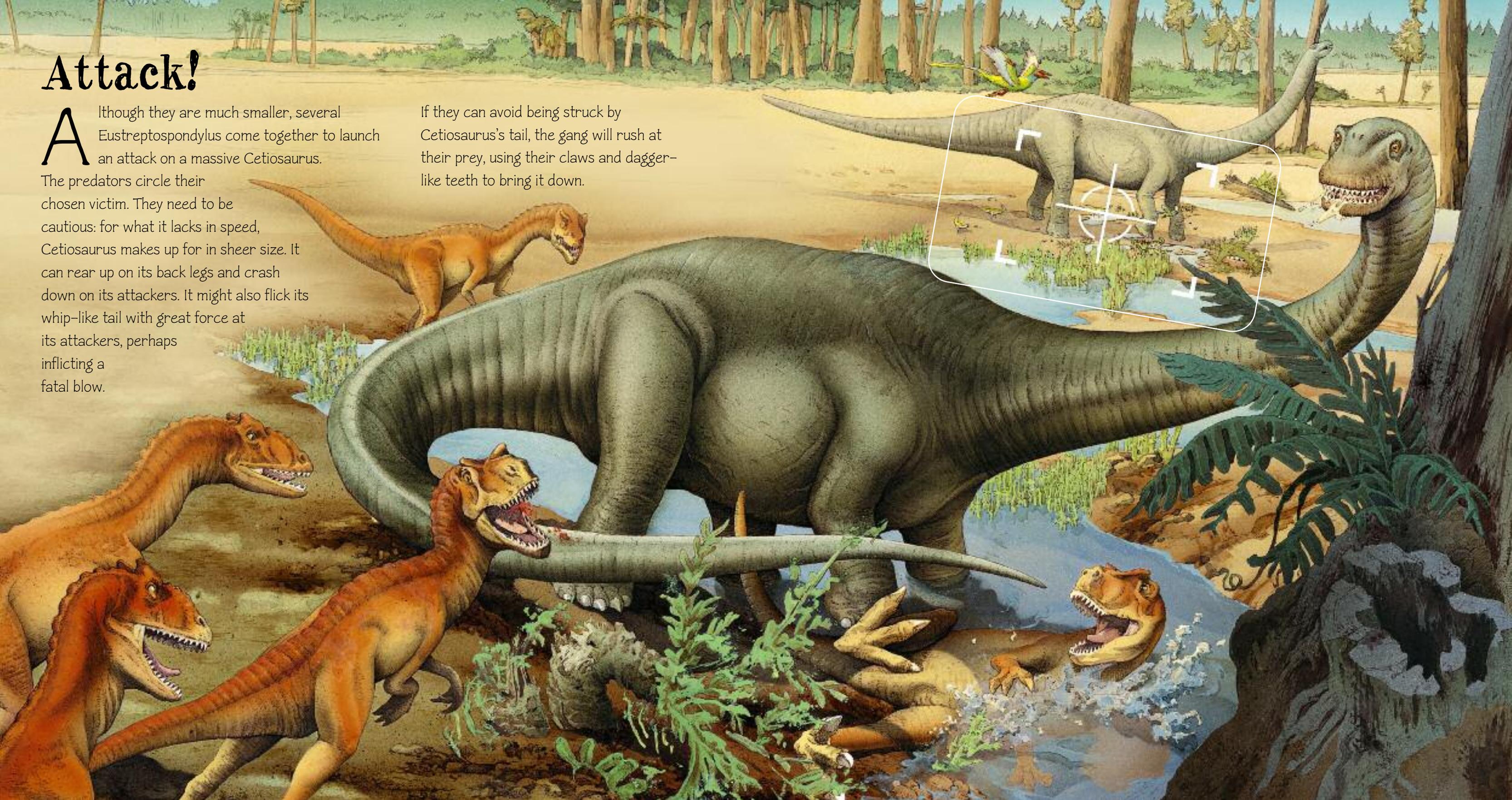
Flesh-eaters, called theropods, were also abundant. Eustreptospondylus was a seven-metre-long hunter. It specialized in swift gang attacks on lone sauropods ...

Attack!

Although they are much smaller, several *Eustreptospondylus* come together to launch an attack on a massive *Cetiosaurus*.

The predators circle their chosen victim. They need to be cautious: for what it lacks in speed, *Cetiosaurus* makes up for in sheer size. It can rear up on its back legs and crash down on its attackers. It might also flick its whip-like tail with great force at its attackers, perhaps inflicting a fatal blow.

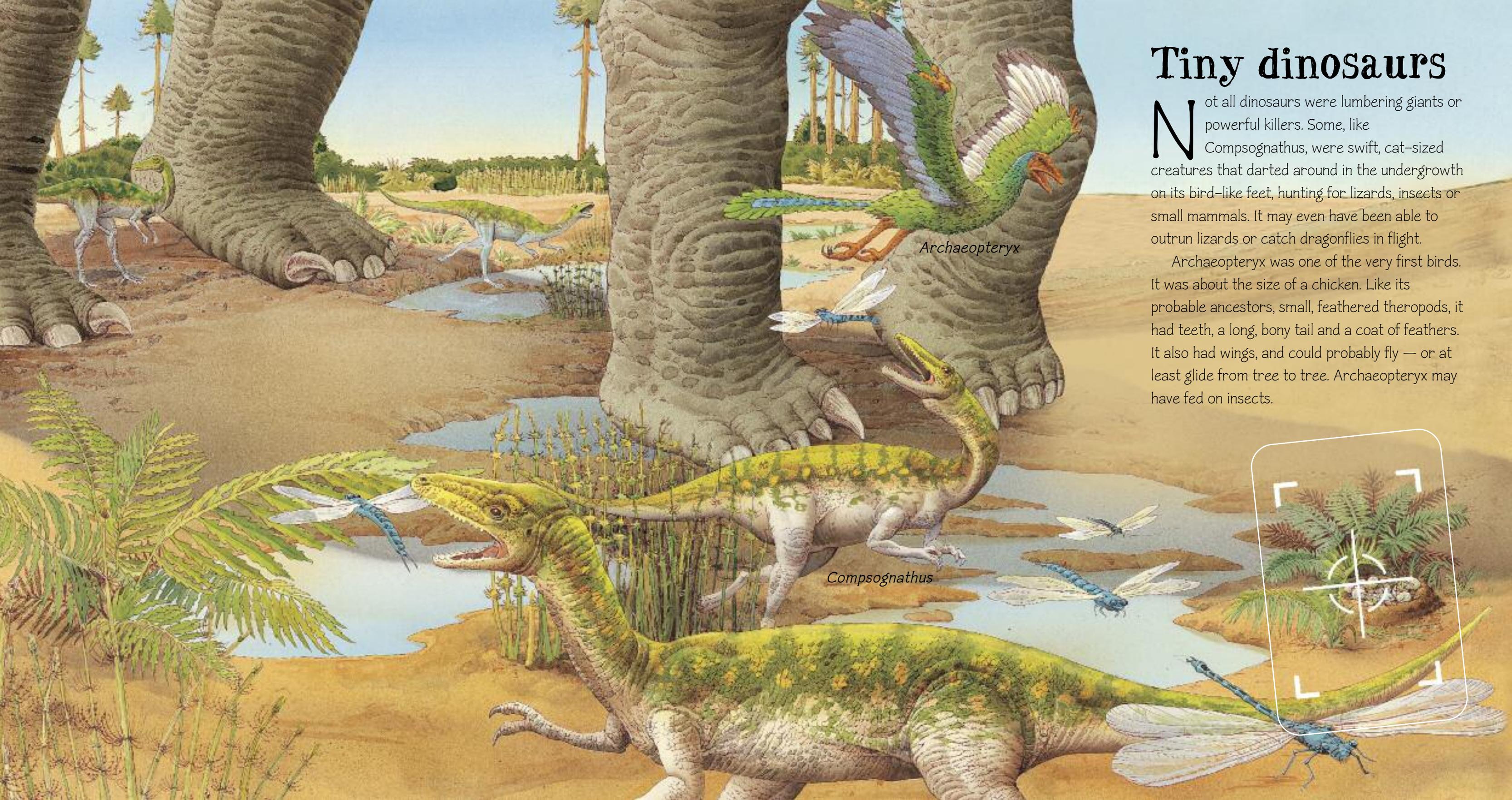
If they can avoid being struck by *Cetiosaurus*'s tail, the gang will rush at their prey, using their claws and dagger-like teeth to bring it down.



Tiny dinosaurs

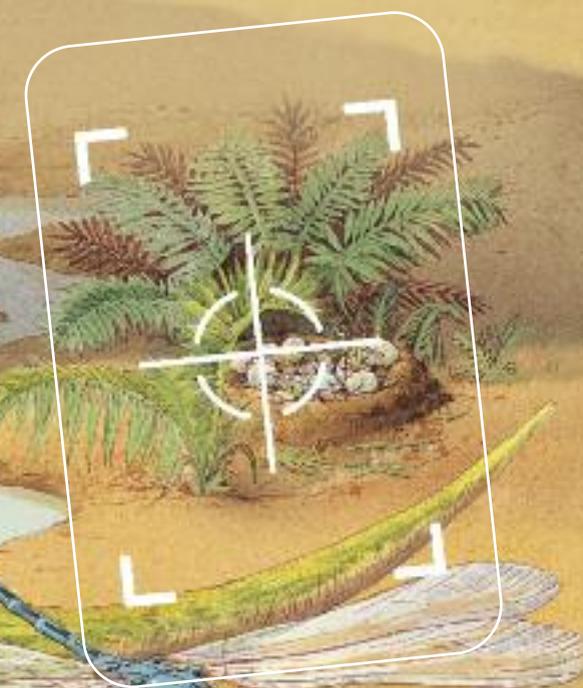
Not all dinosaurs were lumbering giants or powerful killers. Some, like *Compsognathus*, were swift, cat-sized creatures that darted around in the undergrowth on its bird-like feet, hunting for lizards, insects or small mammals. It may even have been able to outrun lizards or catch dragonflies in flight.

Archaeopteryx was one of the very first birds. It was about the size of a chicken. Like its probable ancestors, small, feathered theropods, it had teeth, a long, bony tail and a coat of feathers. It also had wings, and could probably fly — or at least glide from tree to tree. *Archaeopteryx* may have fed on insects.



Archaeopteryx

Compsognathus



Dinosaur nest

Here, some baby dinosaurs have hatched out of their eggs. They are fully formed and already on their feet and in search of food. Like birds, most dinosaurs made nests for their eggs. Some dinosaur mothers stayed by the nest to protect the eggs and the tiny hatchlings. Despite their best efforts, however, the eggs (and the hatchlings) were an easy source of food for other animals, including small mammals, lizards and other dinosaurs.



A detailed illustration of a green dinosaur's head and front paws. The dinosaur has a scaly, textured skin and is looking towards the right. Its front paws are visible, showing sharp claws. A white camera viewfinder overlay is positioned in the upper right quadrant of the image, featuring a central crosshair and four corner brackets. The background is a dark, reddish-brown color with some faint, glowing red lines.

Inside an egg

Dinosaur eggs were hard-shelled with tiny holes in the walls, allowing the baby dinosaur inside to breathe.

When ready to be born, the hatchlings simply knocked the tops off and climbed out. In some kinds of dinosaur, the hatchlings were still not fully developed and so depended on their parents for care.

In others, the babies (like the *Echinodon* illustrated) were born fully formed and able to fend for themselves immediately.



Skin

We know about what dinosaur skin was like from skin impressions preserved as fossils. There were scales of different shapes — some round, some hexagonal. They varied in size according to the part of the body they covered. The scales were not overlapping (as they are on snakes and lizards). Some were bony like the bumpy scales on alligators.

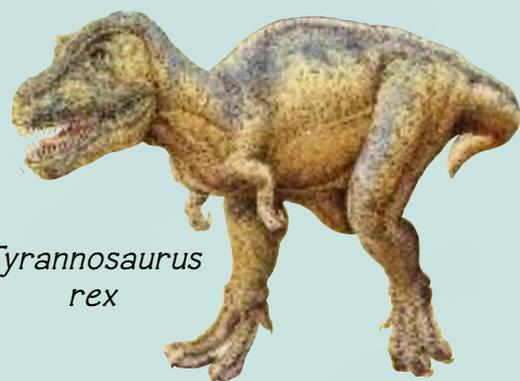
How can we tell what colours the dinosaur's skins were? Nobody knows. All we can do is make guesses based on the colours of modern reptiles.

Glossary

Amphibians Animals that live much of their lives on land, but which have to return to water to breed.

Anapsids A group of reptiles, which includes turtles and tortoises and their ancestors, with no openings in their skulls (apart from eye sockets and nostrils).

Ankylosaurs Ornithischian dinosaurs fully covered in armoured plates, studs and spikes. Some, for example, Euoplocephalus, had tail clubs.



Tyrannosaurus rex

Archosaurs A group of reptiles that first appeared in the late Permian Period and gave rise to the crocodiles, pterosaurs, dinosaurs and birds.

Asteroid A rocky body that orbits the Sun.

Asteroids range in size from tiny specks to just under 1000 kilometres in diameter.

Ceratopsians Horned dinosaurs of the ornithischian type. Some, such as Triceratops, had huge neck frills and narrow beaks.

Continents The great land masses, such as Asia, Africa and the Americas, that make up the land surface of Earth.

Continental drift The movement of continents around the globe. Earth's outer layer is made up of separate interconnecting pieces, called tectonic plates, which are constantly grinding into, away from, or alongside one another, taking continents or parts of continents with them.

Diapsids A group of reptiles, which includes lizards, snakes, crocodiles and dinosaurs, with two extra openings on either side of their skulls.

Dinosaurs Reptiles that lived on land during the Mesozoic Era (250–65 million years ago) and which walked upright on legs held beneath their bodies, like birds and mammals.

Diplodocids Sauropod dinosaurs with long, slender bodies and tails. They included Apatosaurus, Seismosaurus and Diplodocus.

Evolution The process by which forms of life have changed over millions of years, gradually adapting to make the best use of their environment.

Fossils The ancient remains or traces of once-living things, usually found preserved in rock. A living thing becomes fossilized when it is buried by sediments and the tiny spaces inside its hard parts are filled with minerals which set

hard over time.

Hadrosaurs “Duckbilled” dinosaurs from the late Cretaceous Period. Grazing in herds, they were plant-eaters with special grinding teeth.

Horsetails Plants that grew in the great swamp-forests to heights of 15 metres or more. They have regular whorls of spiky branches.

Invertebrates Animals that do not have backbones.

Ornithischians The “bird-hipped” dinosaurs, one of two major types of dinosaur (the others were the saurischians). Ornithischians had backward-slanting pubic bones—the lower part of the hip bone.

Ornithopods Ornithischian dinosaurs that had teeth and jaws enabling them to chew vegetation. The ornithopods (“bird feet”) included Iguanodon, Hypsilophodon and the hadrosaurs.



Sauropelta under attack from Deinonychus



Brachiosaurus

Pelycosaurs A group of reptiles, some of which had large sails of skin supported by bone projecting from their backs.

Predators Animals that prey on others.

Prosauropods The first plant-eating dinosaurs, emerging in late Triassic times. Some may have been partly bipedal (moving on two feet).

Pterosaurs Flying reptiles that existed from the late Triassic to late Cretaceous Periods. Their wings were formed from skin flaps between the fourth finger and lower body.

Saurischians The “lizard-hipped” dinosaurs, one of two major types of dinosaur (the others were the ornithischians). Saurischians had forward-jutting pubic bones—the lower part of the hip bone.

Sauropods Long-necked, four-legged, plant-eating dinosaurs. They were the largest and heaviest land animals of all time.

Theropods All the flesh-eating saurischians.

