

MEGALOSAURUS

bucklandii



The Geological Society

MEGA MEAT-EATER!

Megalosaurus was a meat-eating, carnivorous dinosaur. Its teeth were very sharp and serrated like a cutting knife so they would have pierced and ripped apart their prey - possibly plant-eating dinosaurs like *Stegosaurus* and long-necked sauropods! Sometimes these teeth would get ripped out or damaged whilst the dinosaur was eating or tackling its prey, but luckily *Megalosaurus* could replace its teeth multiple times during its lifetime. We know this because fragments of fossilised *Megalosaurus* jaw bones show layers of different teeth - some large fully-grown teeth and some smaller-growing teeth below where the gums would have been.

Although the name *Megalosaurus* means 'giant lizard', *Megalosaurus* was not the biggest theropod dinosaur. *Megalosaurus* is thought to have been around 6-9 metres in length and probably weighed around 700-900 kilograms. That's pretty big, but definitely a lot smaller than the likes of *Tyrannosaurus rex*, estimated to have been about 12.5 metres long and to have weighed in at over 5000 kilograms (the same weight as an African elephant!). Even though it wasn't the biggest, *Megalosaurus* was still likely to have been an apex predator in the mid-Jurassic of southern England, meaning that it was top of the food chain and had no predators of its own - a bit like a lion or an orca today.

WHAT IS A MEGALOSAURUS?

Megalosaurus bucklandii (meg-ah-low-sore-us buck-land-ee-eye) is a type of dinosaur known as a theropod. Theropods are usually bipedal, meaning they walk on two legs, have three toes in their feet, and have sharp, curved teeth and claws, as well as long, hollow bones. *Tyrannosaurus rex*, *Velociraptor* and *Spinosaurus* are some of the most well-known examples of extinct theropods, but modern-day birds are also theropods - they are living dinosaurs!

From various fossils, and the rocks they were found in, we know that *Megalosaurus bucklandii* lived in what is now southern England in the mid-Jurassic period around 166 million years ago. During this time, southern England was closer to the equator than it is today, so it would have had a much warmer and more humid climate. In the rocks where *Megalosaurus* fossils have been found, we also find the fossilised remains of land plants, insects and land mammals, as well as fish, crocodiles, clams, plesiosaurs and ichthyosaurs (ancient marine reptiles). This means that the habitat where *Megalosaurus* lived was likely to have been around low-lying swamps, creeks and lagoons, where both terrestrial (land-based) and aquatic (water-based) animals and plants could thrive.

WHAT'S THE BIG DEAL?

Megalosaurus bucklandii is an extremely important dinosaur because it was the first dinosaur in history to be given a written name.

From as early as 1676, fragments of *Megalosaurus* bones and teeth had been found as fossils in rocks around Oxfordshire in England. At the time, however, nobody knew what a dinosaur was and people were very puzzled as to what these strange fragments might be. Robert Plot, a chemistry professor at the University of Oxford, thought that a *Megalosaurus* femur (upper leg bone) fossil might instead belong to a species of ancient, giant human!

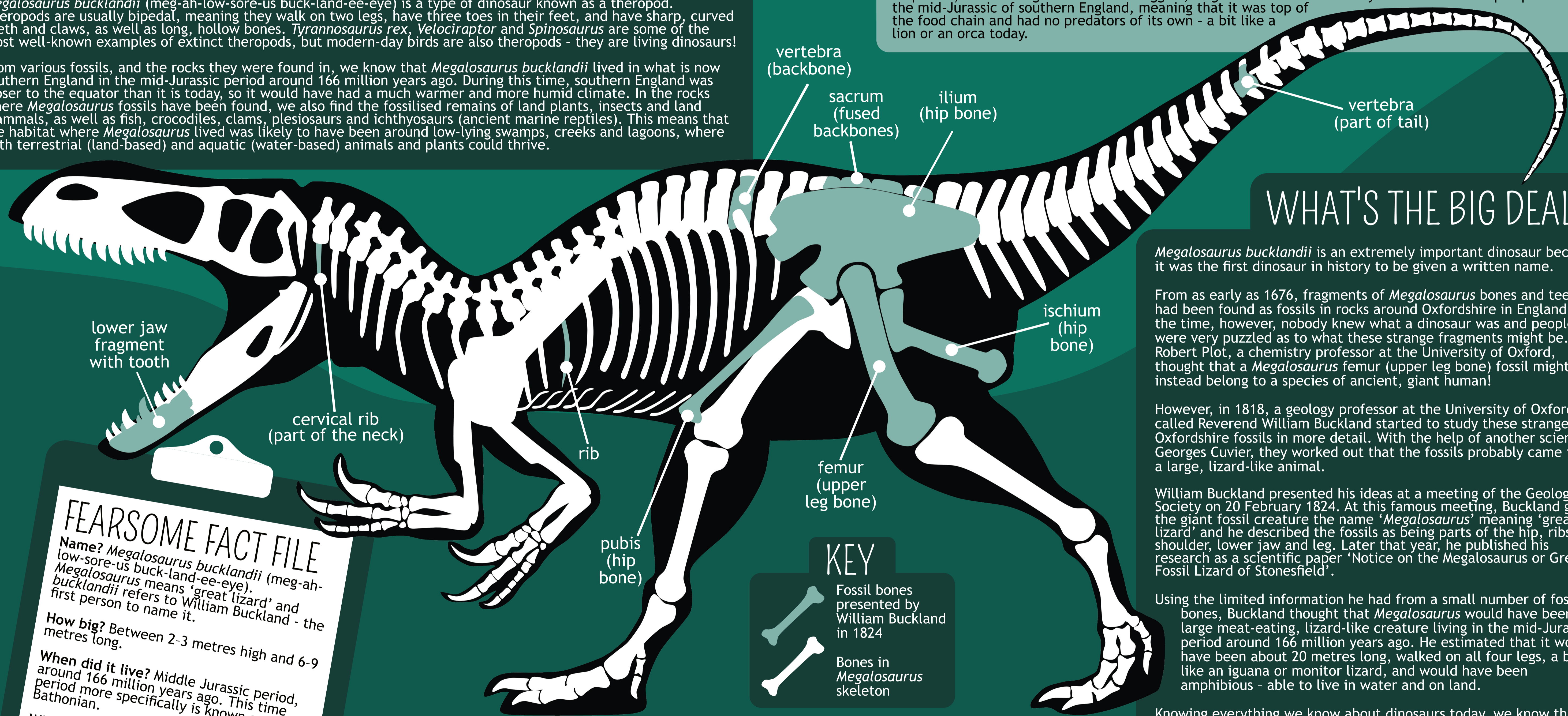
However, in 1818, a geology professor at the University of Oxford called Reverend William Buckland started to study these strange Oxfordshire fossils in more detail. With the help of another scientist, Georges Cuvier, they worked out that the fossils probably came from a large, lizard-like animal.

William Buckland presented his ideas at a meeting of the Geological Society on 20 February 1824. At this famous meeting, Buckland gave the giant fossil creature the name '*Megalosaurus*' meaning 'great lizard' and he described the fossils as being parts of the hip, ribs, shoulder, lower jaw and leg. Later that year, he published his research as a scientific paper 'Notice on the *Megalosaurus* or Great Fossil Lizard of Stonesfield'.

Using the limited information he had from a small number of fossil bones, Buckland thought that *Megalosaurus* would have been a large meat-eating, lizard-like creature living in the mid-Jurassic period around 166 million years ago. He estimated that it would have been about 20 metres long, walked on all four legs, a bit like an iguana or monitor lizard, and would have been amphibious - able to live in water and on land.

Knowing everything we know about dinosaurs today, we know that Buckland did make some mistakes in his ideas about *Megalosaurus* size and lifestyle. However, back in 1824, no scientist had ever even pictured an animal like a dinosaur and most people thought that the Earth was only a few thousand years old. So, it's still incredible to think that Buckland reconstructed the first ever known dinosaur from just a few bones and teeth fossils.

Buckland's discovery completely changed the way people thought about the history of the Earth and the past creatures that roamed around on land or swam in the ancient seas millions of years before we did. It is now 200 years since *Megalosaurus* was first named, and it is still considered an extremely important discovery in the history of geology and science as a whole.



FEARSOME FACT FILE

Name? *Megalosaurus bucklandii* (meg-ah-low-sore-us buck-land-ee-eye). *Megalosaurus* means 'great lizard' and *bucklandii* refers to William Buckland - the first person to name it.

How big? Between 2-3 metres high and 6-9 metres long.

When did it live? Middle Jurassic period, around 166 million years ago. This time period more specifically is known as the Bathonian.

Where did it live? Around low-lying swamps, creeks and lagoons.

What did it eat? *Megalosaurus* was a carnivore and probably ate other dinosaurs.

Did it have feathers? Maybe! Some dinosaur fossils similar to *Megalosaurus* have been found with feathers so it's thought that *Megalosaurus* probably would have been covered with thin, coarse feathers.

NAMING THE DINOSAURS

The word 'dinosaur' didn't exist until 1842 - that's 20 years after *Megalosaurus* was named! Richard Owen, a well-known biologist and founder of the Natural History Museum in London, noticed that fossils from *Megalosaurus* and two other prehistoric creatures (*Iguanodon* and *Hylaeosaurus*) had lots of features in common with each other that they didn't share with any other group of existing animals. He used these three ancient creatures to come up with the group 'Dinosauria' or 'dinosaurs' meaning 'terrible lizards'.

