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Why were some dinos so huge?

With necks as long as 11 m (36 ft) and bodies the size of buses, sauropods were the most distinctive dinosaurs to roam throughout the Jurassic and Cretaceous Periods, 200 to 65 million years ago. These giant vegetarians were able to browse leaves high up in trees and their huge size deterred predators.

How to: survive as a Jurassic plant-eater

Dinosaur skulls are made up of delicate bones which do not often fossilize. Scientists did not find a skull of the most famous sauropod, Apatosaurus (or Brontosaurus as it was known then) until a hundred years after the first skeletons had been found.

01. Grow thick skin like Barosaurus - it will help protect you from predators.

02. You will need a long, muscular, whip-like tail for balance and protection.

03. Large, elephant-like feet will help support your heavy body.

Sauropod myths

MYTH: It was once believed that sauropods lived in water because they were so heavy they would not have been able to support their weight on land.

TRUTH: Scientists can tell now from their footprints that they did not live in water, but were land-living animals.

MYTH: It was once thought that their necks could have been used as snorkels, so they could breathe while submerged under water.

TRUTH: The long neck as snorkel idea would never have worked, as water pressure would not have allowed the lungs of the submerged animal to expand, leading to breathing problems.

SAUROPOD SALAD

- (crunchy) conifers
- (low-calorie) cycads
- (glorious) ginkgo
- (succulent) seed ferns
- (mushy) moss

53

The number of bones in the tail of the sauropod Camarasaurus.

2.45 m

(6 ft) The length of the largest shoulder blade found, thought to belong to the sauropod Brachiosaurus.

1.8 m

(6 ft) The length of the largest neck vertebrae found, it came from a Diplodocus.

1 m

(3 ft) The size of the first sauropod embryo fossil ever discovered.

In numbers

RECORD BREAKER

Mamenchisaurus had the longest neck of any of the Jurassic sauropods. It measured 11 m (36 ft), and consisted of 19 vertebrae bones.

06.

You need pig-like teeth. You won't be able to chew, but they are perfect for ripping leaves from branches.

I don't believe it!

The sauropod Diplodocus used a long whip-like tail for defence. When thrashed, the tip of the tail could break the sound barrier, producing a thunderous crack to signal to other dinosaurs.

Mind your step

As the smallest Jurassic dinosaur, the tiny Compsognathus had to be careful it was not squashed in the land of giants. It was about the size of a chicken and may have travelled in groups to scavenge the kills of larger animals.

05.

Use your long neck and lightweight head to browse very high parts of trees for food.

Camarasaurus 18 m (59 ft)
Probably fed by swinging its strong neck stiffly sideways and down to strip tough leaves from shrubby trees.

Brachiosaurus 30 m (98 ft)
Long, spoon-shaped teeth capable of pulling twigs and needles from the highest conifer trees.

Paralititan 27 m (89 ft)
Its neck accounted for one-third of its entire body length, estimated to have weighed 80 tonnes.

Saltasaurus 27 m (89 ft)
Like many of the later sauropods, Saltasaurus had thick, armour-like skin along its back.

Sauropod enemies

Allosaurus was a fearsome 12-m- (39-ft-) long predator. It walked on two legs, had a massive tail, and a bulky body. It had sharp claws up to 15 cm (6 in) in length.

Ceratosaurus could grow up to 6 m (20 ft) long. It had large, powerful jaws and sharp teeth.

Megalosaurus grew up to 9 m (30 ft) long. As well as hunting sauropods, it is likely that it also scavenged already dead animals.

Super sauropods

How many people live in cities?

Top 10 megacities



01: Tokyo, Japan
34 million people



02: Seoul, South Korea
23 million people



03: Mexico City, Mexico
22.4 million people



04: New York City, USA
21.9 million people



05: Mumbai, India
21.6 million people



06: Delhi, India
21.5 million people



07: Sao Paulo, Brazil
18.3 million people



08: Los Angeles, USA
18 million people



09: Shanghai, China
17.5 million people



10: Osaka, Japan
16.7 million people

For the first time in history, more people live in cities than in rural areas, with 3 billion city dwellers. There are 22 megacities (with more than 10 million inhabitants) and upwards of 300 cities with a population greater than 1 million.

World's most polluted cities

Sumgayit Azerbaijan

Linfen China

Tianjing China

Sukinda India

Vapi India

La Oroya Peru

Dzershinsk Russia

Norilsk Russia

Chernobyl Ukraine

Kabwe Zambia

Do you know these capital cities?

1. Antananarivo
2. Bishkek
3. Bandar Seri Begawan
4. Dili
5. Nqayaboth
6. Nuku'alofa
7. Ouagadougou
8. Port Moresby
9. Tbilisi
10. Tegucigalpa
11. Ulaanbaatar
12. Vaduz

Answers bottom right-hand page

How the world's urban population has grown



1800
3 per cent of people live in cities; 1 city has a population of more than 1 million

1900
9 per cent of people live in cities; 13 cities have populations of more than 1 million

2000
50 per cent of people live in cities; 300 cities have populations of more than 1 million

In 1900 only **four Asian cities** had populations of more than **1 million**; today the number is **194**, with the majority of them in China.

By 2015 there are predicted to be **253 cities in Asia** with more than **1 million** people, plus **65** in South and Central America, and **59** in Africa.

Cities with the most skyscrapers



I don't believe it!

Nauru is the only country without a capital city, which is down to the centre of this tiny Pacific island being a phosphate mine. Its population of 13,000 lives on the narrow coastal strip fringing the shore.

WHAT'S IN A NAME?

According to an old Malay legend, a prince was shipwrecked and washed ashore on an island. He saw an animal he mistook for a lion and called the place **Singapura** ('Lion city'). It's doubtful if the story is true, but today the national emblem of Singapore is a lion.

Cities destroyed by major earthquakes



c.1400 BCE
Ancient Troy and Mycenae, Greece

1138
Lisbon, Portugal

1755
Lisbon, Portugal

1906
San Francisco, California

1923
Kobe, Japan

1960
Valparaiso, Chile

1963
Sokcho, North Korea

1976
Sokcho, North Korea

1995
Kobe, Japan

2003
Istanbul, Turkey

High altitude cities

- Wuzhuan in Tibet, China, is the **highest city in the world**, with an altitude of 5,100 m (16,730 ft).
- La Paz, Bolivia, is the **highest capital city in the world** at 3,600 m (11,811 ft).
- Highest city in Africa** is Oshana, Ethiopia, at 3,207 m (10,522 ft).
- Highest city in the USA** is Alma, Colorado, at 3,156 m (10,355 ft).
- Andorra la Vella, Andorra, is **Europe's highest capital city** at 1,023 m (3,356 ft).

Think twice before moving to...



Istanbul, Turkey

Since it was founded (as Constantinople) in 330 AD, this city has been hit by 15 major earthquakes - the last was in 1999.



Naples, Italy

Some experts believe that Vesuvius, the volcano that buried Pompeii in 79 AD, will erupt again. Naples would be right in its path.



Mumbai, India

When it rains heavily in India's largest city, whole sections of the city flood as the drains cannot cope with the volume of water.



Shanghai, China

China's showplace city is sinking by 1.5 cm (0.5 in) a year due to the weight of skyscrapers built in the past decade.



Phoenix, USA

This city of 1 million people, built in the middle of the desert in Arizona, is in danger of running out of water.

Blasts from the past

3,500 BCE

First cities appear in Mesopotamia (Iraq)

1,600 BCE

First cities in China

1 CE

Rome's population reaches 450,000 people

500

Teotihuacan (Mexico) is the largest city in ancient America

800

Population of the city of Baghdad reaches 700,000

1800

London is world's first city to lose a population of 1 million people

1950

New York is world's largest city with a population of 12.4 million

1965

Taipei is first city to lose 20 million

1985

The average living space in the crowded city of Shanghai, China, is the size of a small car