

Triceratops

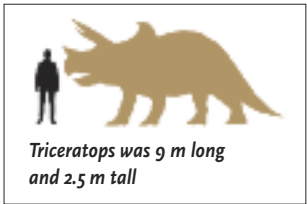
Appearance: Massive head with long snout. Neck frill made of solid bone. Two long brow horns and a shorter nose horn. Parrot-like beak. Four stocky legs supported a heavy body covered in tough skin.

Where and when: Open woodland in North America, 65 million years ago (Late Cretaceous).

Diet: Low-growing plants and young trees.

Predators: Tyrannosaurus rex, Albertosaurus.

Relatives: Styracosaurus, Centrosaurus, Chasmosaurus, Arrhinoceratops, Torosaurus, Anchiceratops, Pentaceratops.

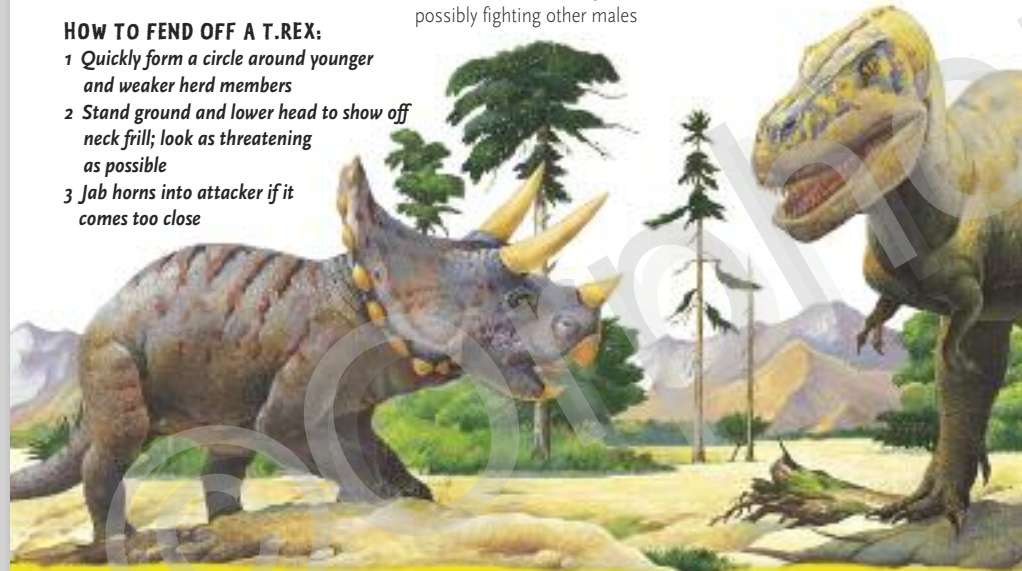


Useful features:

- Sharp, long beak: good for plucking low plants
- Hundreds of teeth, useful for grinding down tough, fibrous plant material
- Sheer bulk of body deters predators
- Horns for protection against predators and possibly fighting other males

HOW TO FEND OFF A T.REX:

- 1 **Quickly form a circle around younger and weaker herd members**
- 2 **Stand ground and lower head to show off neck frill; look as threatening as possible**
- 3 **Jab horns into attacker if it comes too close**



Try-SERRA-tops



HEAVY FRILL ...

- Triceratops means “three-horned face”.
- Only Triceratops had a frill that was made of solid bone. Its relatives had hollows in their frills covered with skin, which made them lighter.
- Its head comprised more one third of its entire body. Its neck frill was over 2 m long.
- What we know about Triceratops has been pieced together from hundreds of fossil pieces. A complete skeleton of Triceratops has never been found.



USES FOR A NECK FRILL:

- 1 **Protects an attack to the back of the neck**
- 2 **Makes it look bigger, meaner and more threatening than it actually is**
- 3 **Increases body surface area, helping it to warm up or shed heat more quickly**
- 4 **In males, good for display in courtship**



Therizinosaurus

THER-ee-ZINE-oh-SAW-rus

Appearance: Small head with toothless beak. Long neck, and broad heavy body, probably feather-covered. Relatively short tail. Walked on hindlegs. Short, four-toed foot. Most distinctive feature was presence of three gigantic finger-claws, gently curved, flat-sided and tapering. Longest was 1 m long.

Where and when: Riverside woodland in East Asia, 70 million years ago (Late Cretaceous).

Diet: Although classified as a theropod, it probably ate only plants and possibly termites.

Predators: Tarbosaurus.

Relatives: Segnosaurus, Nanshiungosaurus, Alxasaurus, Beipiaosaurus (all East Asia).

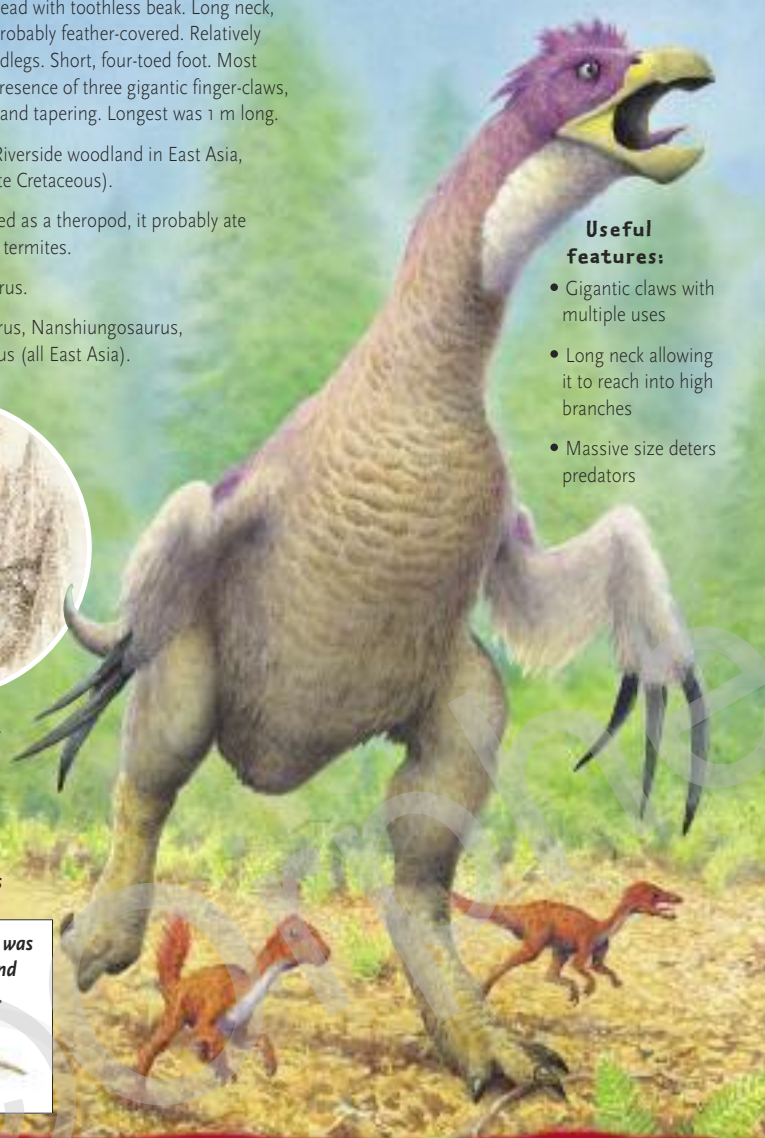
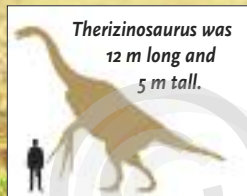
Useful features:

- Gigantic claws with multiple uses
- Long neck allowing it to reach into high branches
- Massive size deters predators



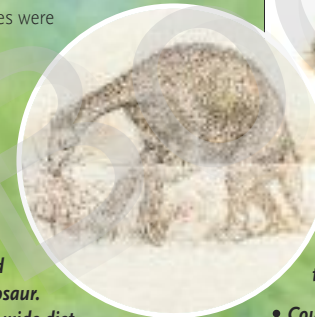
POSSIBLE USES FOR SCYTHE CLAWS (1):

- Ripping open termite nests (above)
- Defence from attack by Tarbosaurus



NOT A GIANT TURTLE ...

- Therizinosaurus means “scythe lizard”, after its huge claws.
- It may have weighed up to 6 tonnes.
- When the claw was first studied in the 1940s, palaeontologists thought it belonged to a giant turtle.
- Its skull has never been discovered. Reconstructions have been based on the skulls of related species.
- Therizinosaurus and its relatives were probably the oddest-looking dinosaurs. They were unusual for another reason: studies of their skeletons show they were theropods, but they were most likely herbivorous.



Oviraptor was a distant cousin to Therizinosaurus. Fossils show it brooding its eggs, using its feathered “wings” to cover the eggs just as modern birds do—further evidence that birds are descended from dinosaurs.

POSSIBLE USES FOR SCYTHE CLAWS (2):

- Raking out water plants (left)
- Pulling down branches towards its mouth
- Courtship display or fighting rival males.

Caudipteryx (below) had a bird-like beak and feathery wings and tail, but ran like a theropod dinosaur.

It may have had a wide diet, including fish, insects and plants.



MEAT-EATERS QUIZ

1. Which of these dinosaurs was not a meat-eater?

- a) Coelophysis
- b) Carnotaurus
- c) Megalosaurus
- d) Mamenchisaurus

2. Tyrannosaurus rex is thought to have had a top running speed of:

- a) 10 kilometres per hour
- b) 20 km/h
- c) 30 km/h
- d) 50 km/h

3. Which of these dinosaurs was the largest meat-eater to live on land?

- a) Tyrannosaurus rex
- b) Spinosaurus
- c) Giganotosaurus
- d) Eoraptor

4. Which dinosaur's name means "terrible claw"?

- a) Gallimimus
- b) Deinocheirus
- c) Compsognathus
- d) Deinonychus

5. What ability was Dilophosaurus shown to have in the 1993 film, Jurassic Park?

- a) It could swim
- b) It could stand on one leg
- c) It could spit out venom
- d) It could fly

6. Which of these dinosaurs probably hunted in packs?

- a) Tyrannosaurus rex
- b) Baryonyx
- c) Velociraptor
- d) Spinosaurus

7. Which of these dinosaurs had a lifestyle similar to that of a modern ostrich?

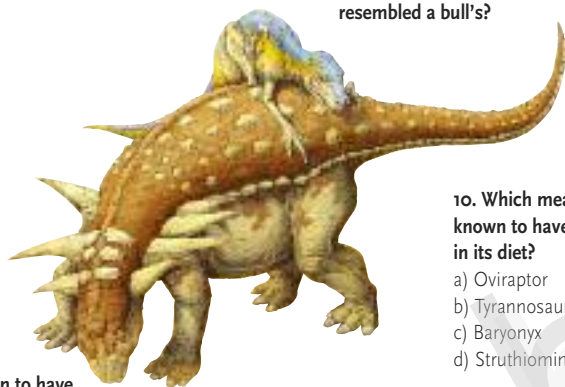
- a) Microraptor
- b) Dromaeosaurus
- c) Yangchuanosaurus
- d) Struthiomimus

8. The brains of the smartest meat-eaters were roughly the same size as which animal?

- a) Chimpanzee
- b) Dog
- c) Chicken
- d) Tiger

9. Which of these dinosaurs had a head that resembled a bull's?

- a) Velociraptor
- b) Carnotaurus
- c) Eoraptor
- d) Gallimimus



10. Which meat-eating dinosaur is known to have included fish in its diet?

- a) Oviraptor
- b) Tyrannosaurus rex
- c) Baryonyx
- d) Struthiomimus

11. Which of these dinosaurs had a row of spikes along its back?

- a) Ceratosaurus
- b) Ornithomimus
- c) Albertosaurus
- d) Oviraptor

12. Which of these dinosaurs was as small as a cat?

- a) Compsognathus
- b) Herrerasaurus
- c) Allosaurus
- d) Dilophosaurus

ANSWERS TO MEAT-EATERS QUIZ

1. Which of these dinosaurs was not a meat-eater?

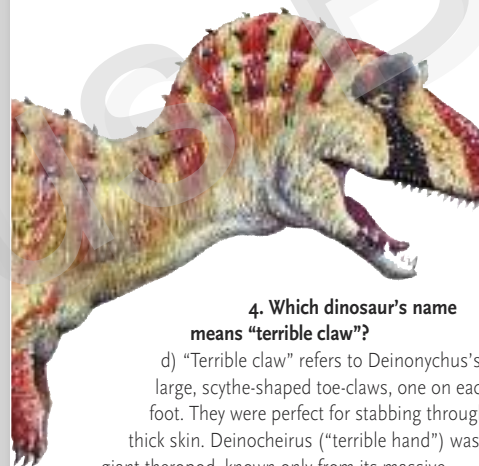
- d) Mamenchisaurus was a large plant-eating sauropod from the Late Jurassic period in East Asia

2. Tyrannosaurus rex is thought to have had a top running speed of:

- c) From a computer programme that compared T. rex's overall size with its leg muscles, scientists have been able to estimate its top speed at 30 kilometres per hour.

3. Which of these dinosaurs was the largest meat-eater to live on land?

- b) Studying a recently discovered partial skull, scientists have been able to estimate Spinosaurus as being about 17 m long.



4. Which dinosaur's name means "terrible claw"?

- d) "Terrible claw" refers to Deinonychus's large, scythe-shaped toe-claws, one on each foot. They were perfect for stabbing through thick skin. Deinocheirus ("terrible hand") was a giant theropod, known only from its massive forelimbs (2.4 m long). It was thought to be an ornithomimid, an ostrich dinosaur.

5. What ability was Dilophosaurus shown to have in the 1993 film, Jurassic Park?

- c) Dilophosaurus had a starring role in the 1993 film, featuring its amazing ability to spit out venom. However, this was purely fictional.

6. Which of these dinosaurs probably hunted in packs?

- c) A trackway of fossil footprints in China shows six individuals, probably Velociraptors, moving as a group. Being small, hunting in packs would have been more effective when bringing down prey.

7. Which of these dinosaurs had a similar lifestyle to that of a modern ostrich?

- d) Groups of Struthiomimus roamed across hot, dry plains looking after their young while on the move, much like ostriches do today. They fed on small animals and insects.

8. The brains of the smartest meat-eaters were roughly the same size as which animal?

- c) Even though most meat-eaters were fairly clever compared to other dinosaurs, their brains were actually tiny—about as small as a chicken's.

9. Which of these dinosaurs had a head that resembled a bull's?

- b) Its horns and short, bull-like head gave Carnotaurus its name, meaning "carnivorous bull".

10. Which meat-eating dinosaur is known to have included fish in its diet?

- c) The first Baryonyx specimen discovered had fossilized scales from the fish *Lepidotes* in its stomach. The dinosaur's long, crocodile-like snout with 96 sharp teeth was ideal for snapping up fish.

11. Which of these dinosaurs had a row of spikes along its back?

- a) The name Ceratosaurus means "horned lizard". This animal had two large horns on its snout, along with several smaller spikes running down its back.

12. Which of these dinosaurs was as small as a cat?

- a) Compsognathus was a long-legged, fast-moving predator that fed on small forest creatures. Its build was ideal for chasing prey through thick vegetation.