

Discovering  
**prehistoric  
species**  
at Tampa's Lowry Park Zoo



Tampa Bay  
**Times**  
**NIE**  
newspaper in education  
[tampabay.com/nie](http://tampabay.com/nie)



- Get up-close and personal with life-sized dinosaurs that move, roar and interact with you
- Learn about dinosaurs through the eyes of a paleontologist
- Connect with present-day species of wildlife on the brink of extinction
- Participate in fun, interactive activities, including digging for fossils

Limited-time engagement dinosaurs will take over Tampa's Lowry Park Zoo!

# DINOS ALIVE!

For more information, visit [tplz.org/dinos](http://tplz.org/dinos)

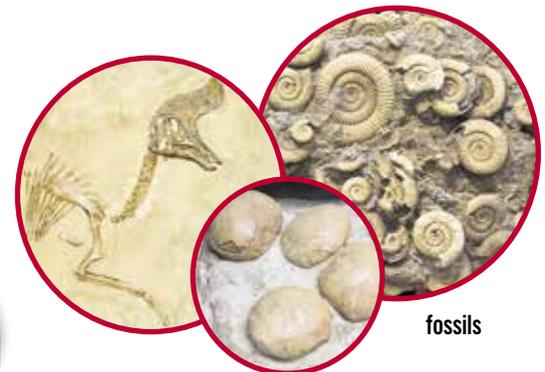
## What is a dinosaur?

Dinosaurs lived on Earth for about 160 million years – from about 225 million years ago until about 65 million years ago.

Dinosaurs ranged in size from smaller than a chicken (*Epidexipteryx* was only 10 inches long) to as much as 80 tons and more than 120 feet long.

Scientists have discovered more than 1,000 different species of dinosaurs. There were likely many more that we just haven't discovered yet.

We learn about dinosaurs by the traces they left behind. This evidence is called fossils. Fossils are the remains



fossils

of past life on Earth, such as animal bones, eggs, teeth or shells; plant stems or leaves; and even footprints.

Paleontology is the study of the history of life on Earth as shown in the fossil record. Scientists who study fossils are called paleontologists.

Sources: American Museum of Natural History, Brevard Zoo, Florida Department of Environmental Protection/ Florida Geological Survey, Tampa's Lowry Park Zoo

## Going beyond the text Florida fossils

Did you know that the formation of much of the islands of the Florida Keys was due to fossilization of coral?

That is pretty cool, right? According to PBS Learning media, "although they occupy less than one quarter of one percent of Earth's marine environments, coral reefs are home to more than 25 percent of all known marine fish species." Watch this video of a Florida girl as she explores the warm shallow waters off the coral island on which she lives: [tbtim.es/195s](http://tbtim.es/195s). After watching the video, respond to the following questions:

- What process had to occur for living coral to be transformed into fossil coral?
- What other organisms live in reef ecosystems and what do they need to survive?

Next, look through all of the photos in the *Tampa Bay Times*. What organisms live in your ecosystem? Make a list with your class. What do these organisms need to survive?



A dinosaur called *Archaeopteryx* that lived 147 million years ago is considered to be the first bird.

# modern dinosaurs

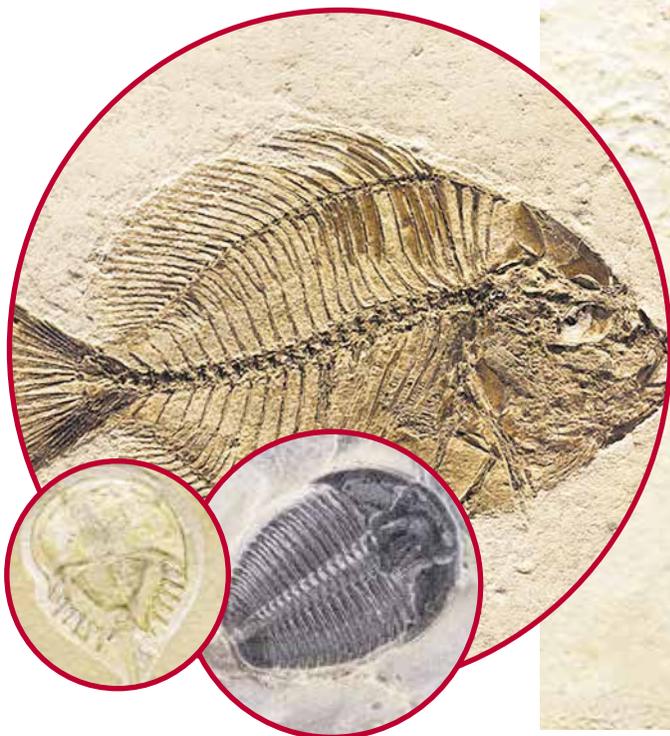
One group of dinosaurs did not go extinct 65 million years ago. In fact, we see their descendants every day! We call them birds.

Birds are the closest living relatives of a type of nonflying dinosaur called theropods. Theropods were a group of meat-eaters that walked on two legs.

The most famous dinosaur of all – *T. rex* – was a theropod. A dinosaur called *Archaeopteryx* that lived 147 million years ago is considered to be the first bird.

So, the next time you see a chicken, you're really looking at a dinosaur!

Sources: American Museum of Natural History, California Museum of Paleontology



## Vocabulary

- Bipedal** – An animal that walks on two legs.
- Carnivore** – An animal that eats other animals.
- Extinction** – When all members of a species have died out.
- Fossils** – The remains of ancient animals and plants.
- Geology** – The study of the history of the earth.
- Herbivore** – An animal that eats only plants.
- Invertebrate** – An animal without a backbone.
- Omnivore** – An animal that eats both plants and other animals.
- Paleontology** – The study of the life of past geological periods from fossil remains.
- Predator** – An animal that kills and eats other animals.
- Prey** – An animal that is killed and eaten by another animal.
- Quadrupedal** – An animal that walks on four legs.
- Vertebrate** – An animal with a backbone.

# T-Rex

## Tyrannosaurus Rex

- Meaning of name: "Tyrant lizard king"
- Pronunciation: tie-ran-oh-SORE-us
- Height: 15-20 feet
- Length: 40 feet
- Weight: 12,000 pounds
- Diet: Carnivore

Sources: BBC Earth,  
National Geographic

*Tyrannosaurus rex* was one of the largest dinosaurs that ever lived.

This dinosaur was bipedal, meaning that it walked on two legs.

Compared to other dinosaurs, *T. rex* had a large brain and excellent sight, hearing, smell and balance.

It wasn't very fast, though. Scientists

think its top speed was around 15 miles per hour.

The carnivorous *T. rex* could eat up to 500 pounds of meat in one bite. Its serrated teeth are among the largest ever known. Its 5-foot-long jaw had possibly the most powerful bite of any land animal ever.

*T. rex* lived in North America during the late Cretaceous period.

## Meet Sue

*T. rex* fossils are not very rare. Hundreds have been discovered over the past century.

Probably the most famous *T. rex* fossil of all is Sue. Sue was discovered in South Dakota in 1990 by Sue Hendrickson. The fossil was named Sue in her honor. Sue is the largest, best-preserved and most complete *T. rex* fossil ever found.

Sue is now on display at the Field Museum of Natural History in Chicago.

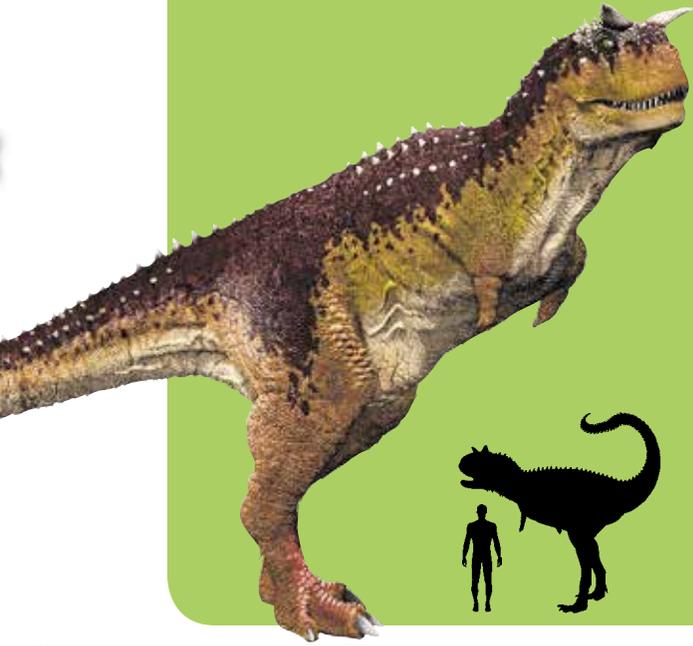
Sources: BBC Earth, Field Museum of Natural History



Photo courtesy of the Field Museum of Natural History



# Carnotaurus



- Meaning of name: “Meat-eating bull”
- Pronunciation: kar-noh-TORE-us
- Height: 10 feet
- Length: 26-30 feet
- Weight: 4,000 pounds
- Diet: Carnivore

Although *Carnotaurus* looks a little similar to *T. rex*, they are only very distantly related.

Like *T. rex*, *Carnotaurus* was bipedal with short forelimbs. In fact, *Carnotaurus*' forelimbs were so short that they could not reach each other!

*Carnotaurus* had bull-like horns on its head that some scientists think were used to fight. It had much smaller teeth and a much

less-powerful bite than *T. rex*, but it could bite very quickly, similarly to a snapping turtle. It had small, pebbly scales over its body with large bony plates on its sides.

*Carnotaurus* had a large brain, but very small eyes: Scientists think it only had average vision and hearing. Its large leg and tail muscles allowed it to run faster than *T. rex* and other similar dinosaurs. Scientists think it may have been more of a scavenger than a predator.

*Carnotaurus* lived in South America during the Late Cretaceous period. Only one *Carnotaurus* fossil has been found, but it was unusually complete.

Sources: BBC Earth, National Geographic

# Suchomimus

- Meaning of name: “Crocodile mimic”
- Pronunciation: sook-oh-MIME-us
- Height: 12 feet
- Length: 35 feet
- Weight: 10,000 pounds
- Diet: Carnivore

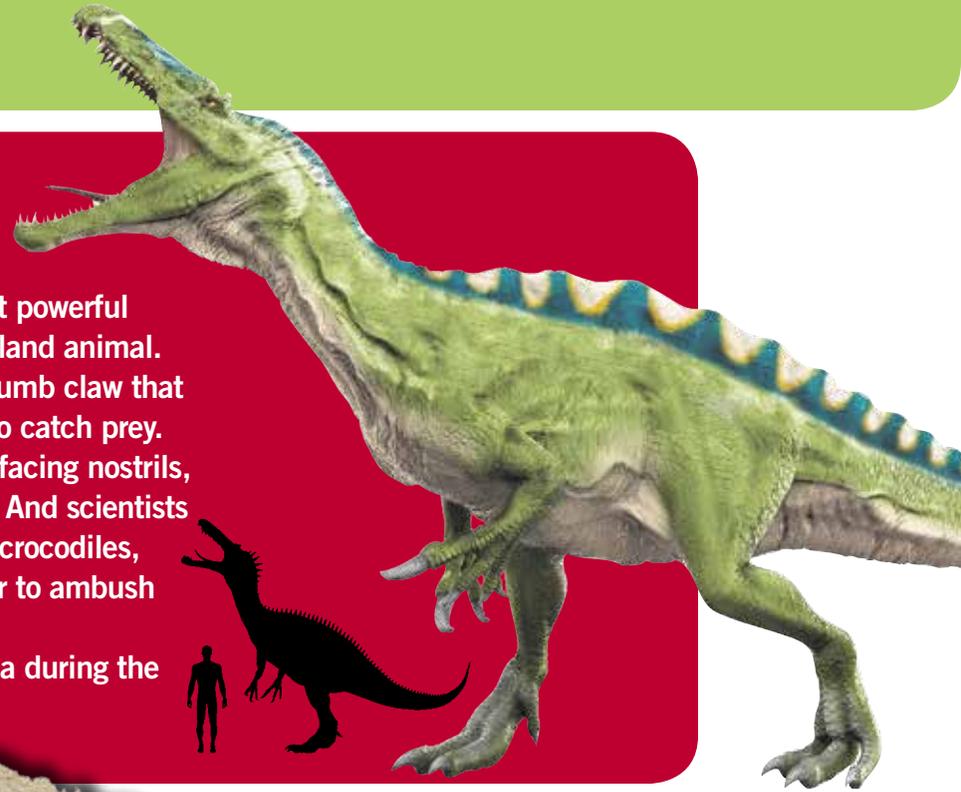
*Suchomimus* was a huge, bipedal, semi-aquatic carnivore. Its name comes from its long, narrow skull and snout, which resemble those of a crocodile.

Source: University of Chicago

*Suchomimus* had the most powerful forelimbs of any two-legged land animal. It had a curved, foot-long thumb claw that scientists believe helped it to catch prey.

*Suchomimus* had upward-facing nostrils, just like a modern crocodile. And scientists think this predator, just like crocodiles, would lie in wait in the water to ambush unwary fish and other prey.

*Suchomimus* lived in Africa during the Early Cretaceous period.



## Newspaper scavenger hunt

Okay, so you probably won't be able to find any pictures of dinosaurs in the *Tampa Bay Times* – at least not live ones – but let's see what you can find! Using the advertisements and headlines, you need to find all of the letters to create the following words. If you can find a photo or cartoon of any of these items, you will earn bonus points.

- |           |           |          |
|-----------|-----------|----------|
| Alligator | Chicken   | Lizard   |
| Animal    | Crocodile | Pig      |
| Aquatic   | Dinosaur  | Predator |
| Bipedal   | Dragon    | Prey     |
| Bird      | Duck      | Rhino    |
| Bull      | Fossil    |          |
| Carnivore | Horns     |          |

## Going beyond the text Being Creative

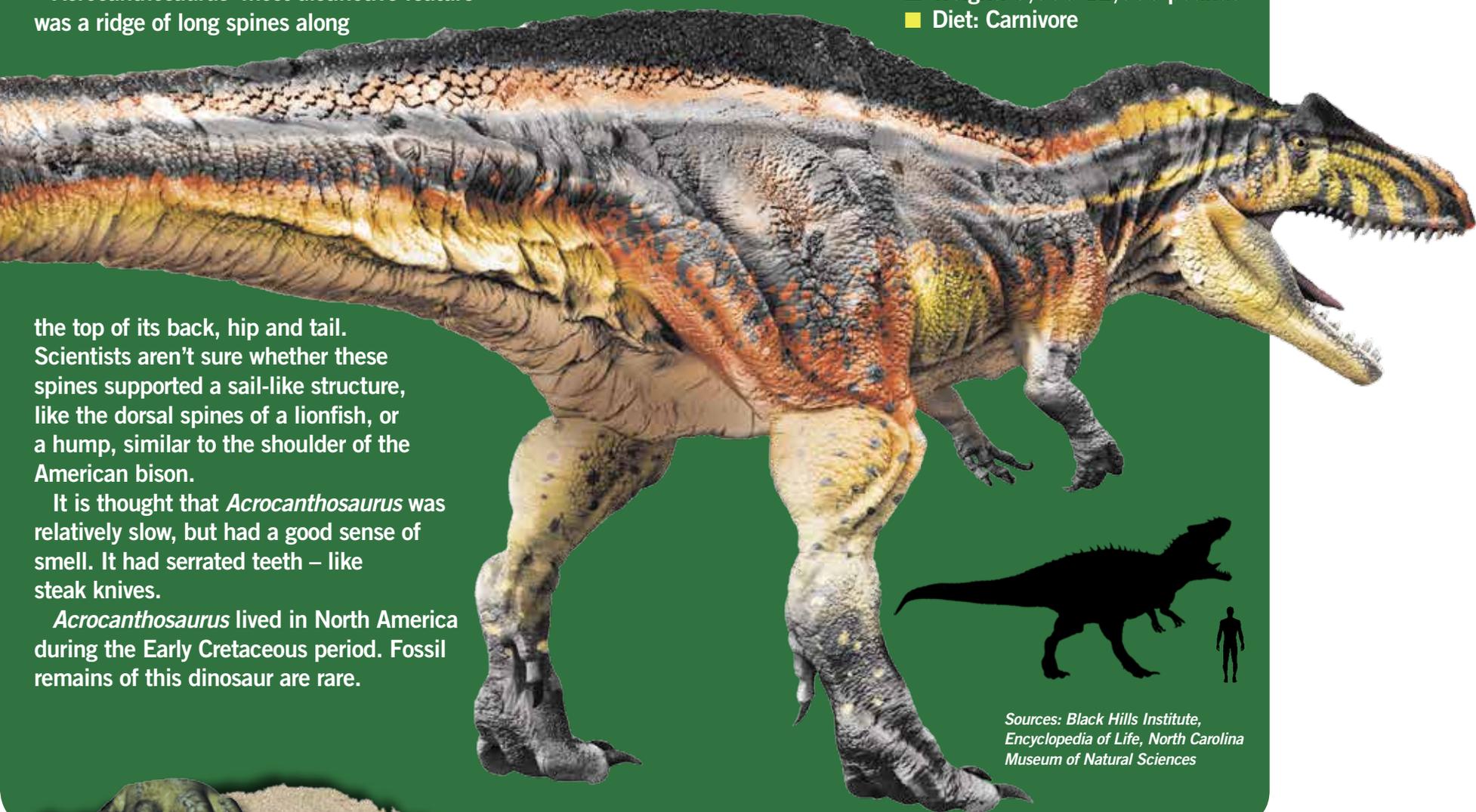
What would happen if you were sent back in time to the Cretaceous period? What dinosaurs would you encounter? Where would you live? What would you eat? What would you wear? What would you do for fun? Use the geologic timeline on pages 8-9 and the internet resources listed on page 16 of this publication to learn more about the Cretaceous period. Next, use the information you have learned to write a paragraph imagining your life in the Cretaceous. Share your paragraph with your class.

# Acrocanthosaurus

*Acrocanthosaurus* was the largest North American predator of its time. In fact, it was nearly as large as *T. rex* – but it lived more than 45 million years earlier, and is not related to *T. rex*.

*Acrocanthosaurus*' most distinctive feature was a ridge of long spines along

- Meaning of name: "High-spine lizard"
- Pronunciation: ah-kroh-kan-tho-SORE-us
- Height: 13 feet
- Length: 38 feet
- Weight: 5,000-12,000 pounds
- Diet: Carnivore



the top of its back, hip and tail. Scientists aren't sure whether these spines supported a sail-like structure, like the dorsal spines of a lionfish, or a hump, similar to the shoulder of the American bison.

It is thought that *Acrocanthosaurus* was relatively slow, but had a good sense of smell. It had serrated teeth – like steak knives.

*Acrocanthosaurus* lived in North America during the Early Cretaceous period. Fossil remains of this dinosaur are rare.

Sources: Black Hills Institute, Encyclopedia of Life, North Carolina Museum of Natural Sciences

## Going beyond the text

# Dinosaur Trading Cards

As you have learned, there were hundreds of different species of dinosaurs! Choose five of the dinosaurs featured in this publication. Use the internet resources listed on page 16 of this publication to research more about each one. Next, use the interactive tool at [readwritethink.org/files/resources/interactives/trading\\_cards\\_2](http://readwritethink.org/files/resources/interactives/trading_cards_2) to create a trading card for each dinosaur. Print or save your cards and share what you have learned with your class.

## In depth

Using the comics from the *Tampa Bay Times* as a model, create a comic strip using your characters that tells a story. Your comic strip will need a title. Be creative!

- Meaning of name: "First hadrosaur"
- Pronunciation: proh-toh-HAD-ros
- Height: 9 feet
- Length: 20 feet
- Weight: 2,000 pounds
- Diet: Herbivore

*Protohadros* is believed to be one of the earliest hadrosaurs. Hadrosaurs are also known as duck-billed dinosaurs because their mouths have a flat, duckbill shape.

# Diabloceratops

- Meaning of name: “Devil-horned face”
- Pronunciation: dee-ob-low-SERAH-tops
- Height: 8 feet
- Length: 18 feet
- Weight: 4,000 pounds
- Diet: Herbivore

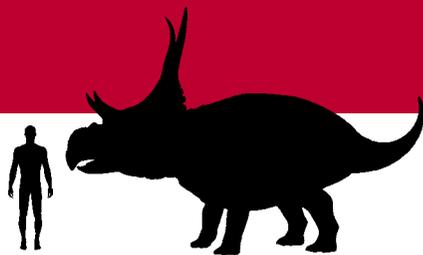
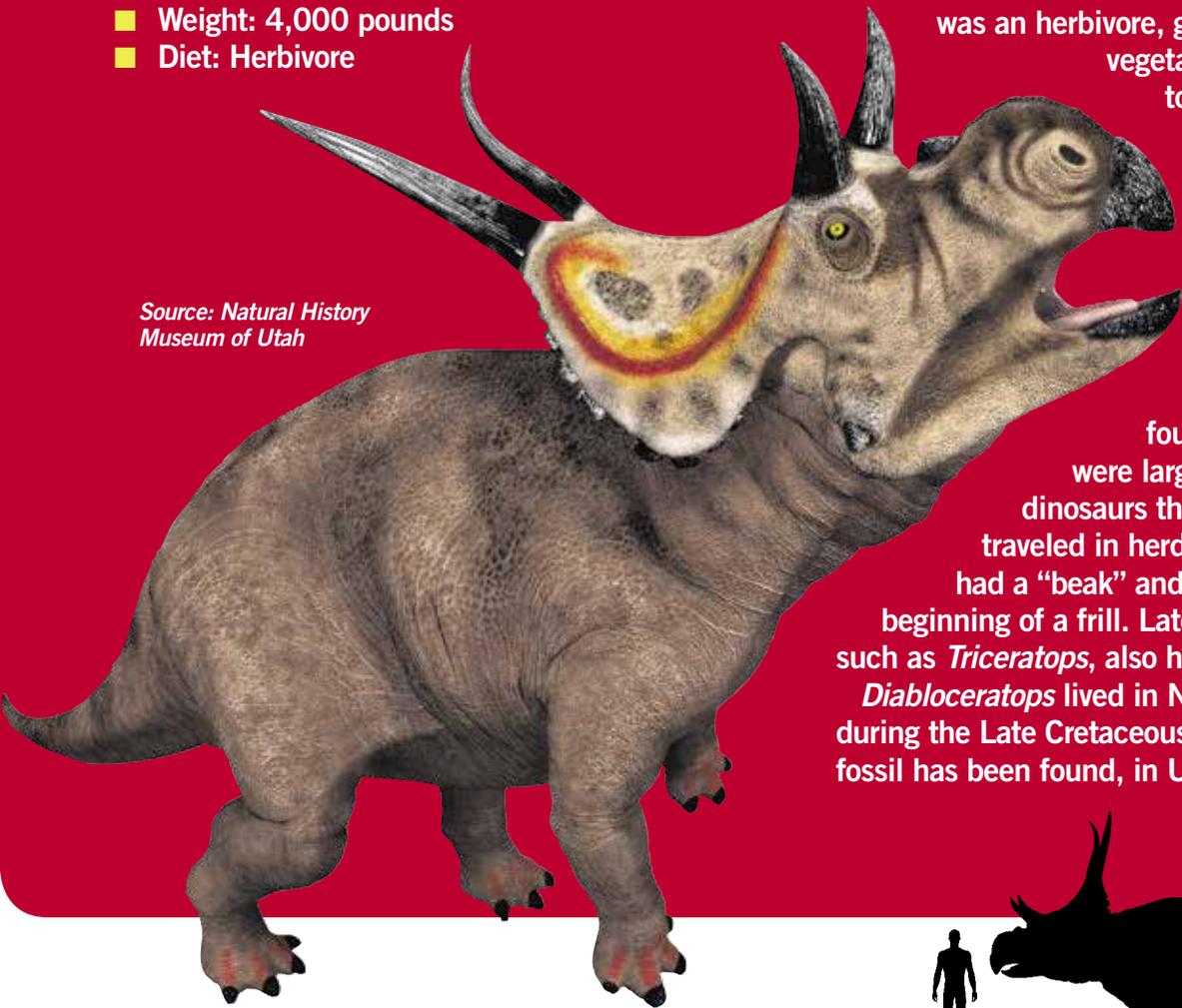
*Diabloceratops* had a big, round nose, long horns, a large, bony neck frill and a beaked mouth. Although the large horns that gave it its name look scary, *Diabloceratops* was an herbivore, grazing on ground vegetation much like today’s rhino species.

Not very much is known about *Diabloceratops*. It is one of the oldest ceratopsian dinosaurs ever found. Ceratopsians

were large, plant-eating dinosaurs that probably traveled in herds. All ceratopsians had a “beak” and at least the beginning of a frill. Later ceratopsians, such as *Triceratops*, also had horns.

*Diabloceratops* lived in North America during the Late Cretaceous period. Only one fossil has been found, in Utah.

Source: Natural History Museum of Utah



## Footprints

Studying fossilized footprints can help scientists learn about the activities and behavior of dinosaurs and other extinct animals. Since we can’t observe them in life, we have to figure out how they behaved using other clues.

From studying trackways, or series of footprints, scientists can guess how much a dinosaur weighed, how fast it was moving and even how it held itself. For example, examination of dinosaur trackways show that they never have a tail drag mark. So, we can guess that dinosaurs walked with their tails carried off the ground, not dragging behind them.

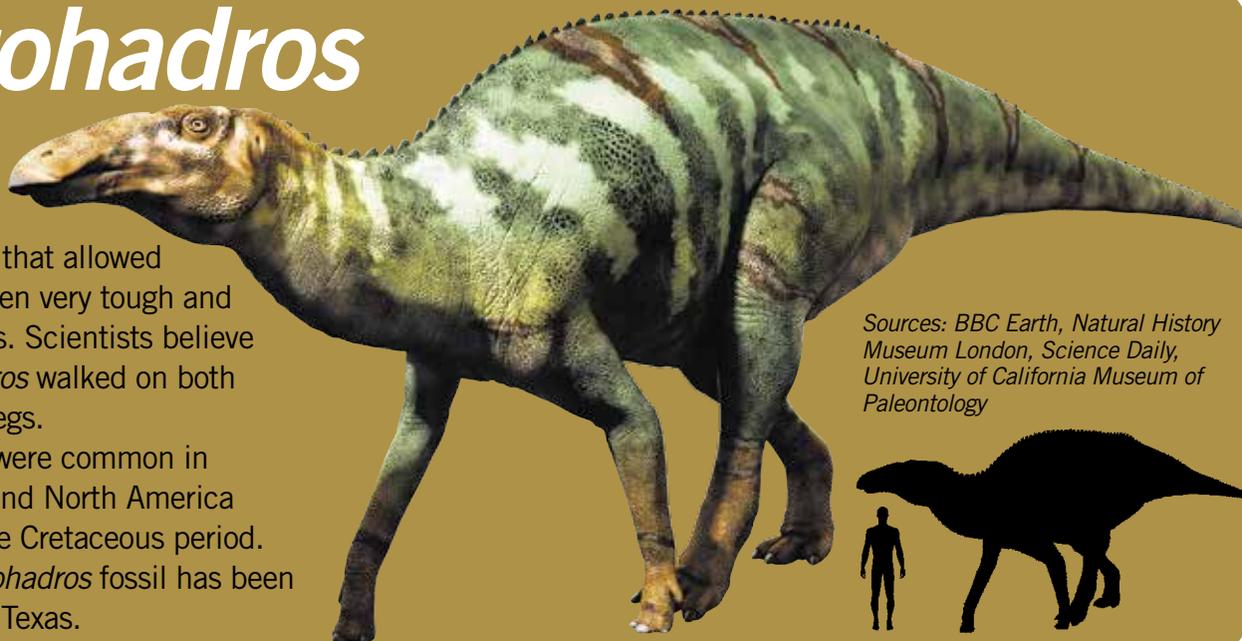
When many sets of the same kind of dinosaur footprints are found together, it can mean that type of dinosaur traveled in herds. Some tracks even seem to show herds protecting their young by keeping them in the middle of the adults, very much as some modern animals do.

Sources: American Geosciences Institute, American Museum of Natural History, Kentucky Geological Society

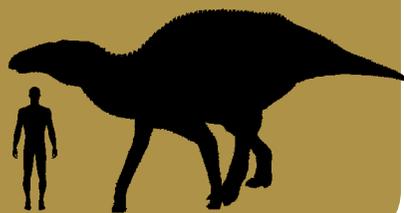
# Protohadros

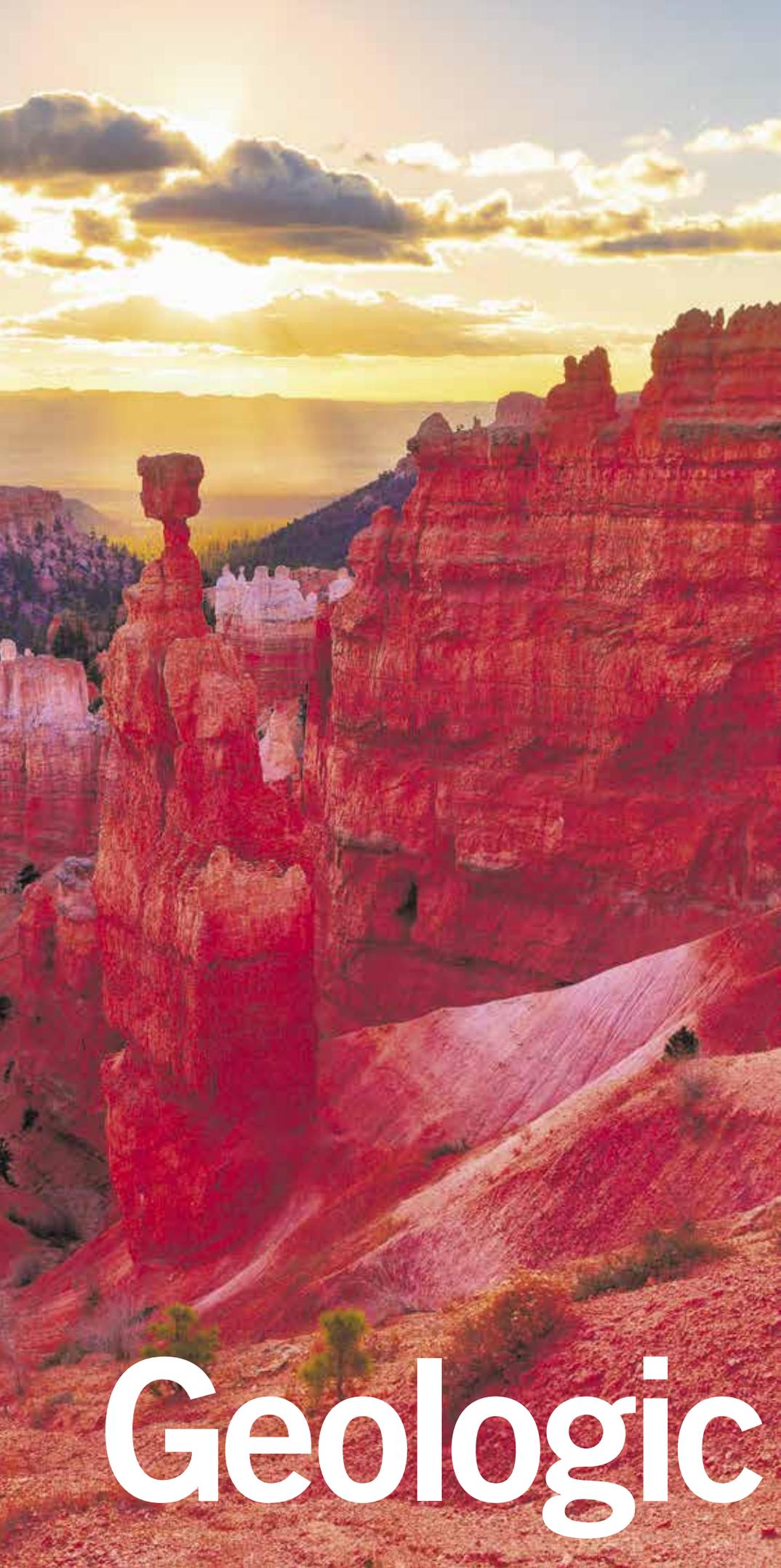
Hadrosaurs had jaws full of very hard grinding teeth that allowed them to eat even very tough and abrasive plants. Scientists believe that *Protohadros* walked on both four and two legs.

Hadrosaurs were common in Europe, Asia and North America during the Late Cretaceous period. Only one *Protohadros* fossil has been discovered, in Texas.



Sources: BBC Earth, Natural History Museum London, Science Daily, University of California Museum of Paleontology



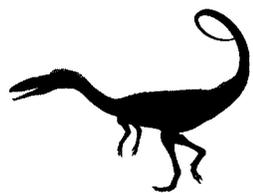


# Geologic

# timeline



**Dinosaurs  
appear**



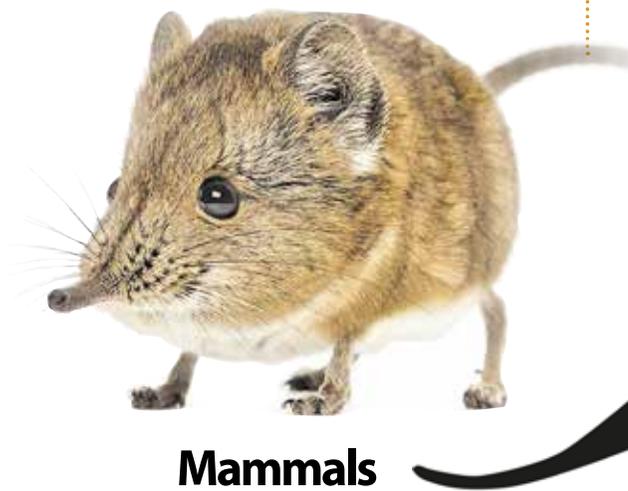
*Coelophysis*

300 million  
years ago

240 million  
years ago

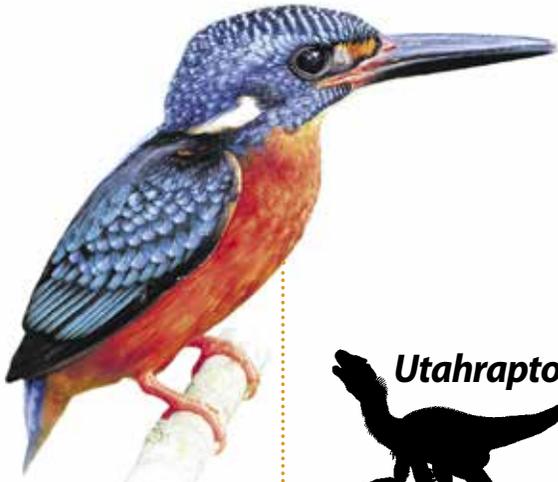
200 m  
years

**Triassic Period**  
(251–200 million years ago)

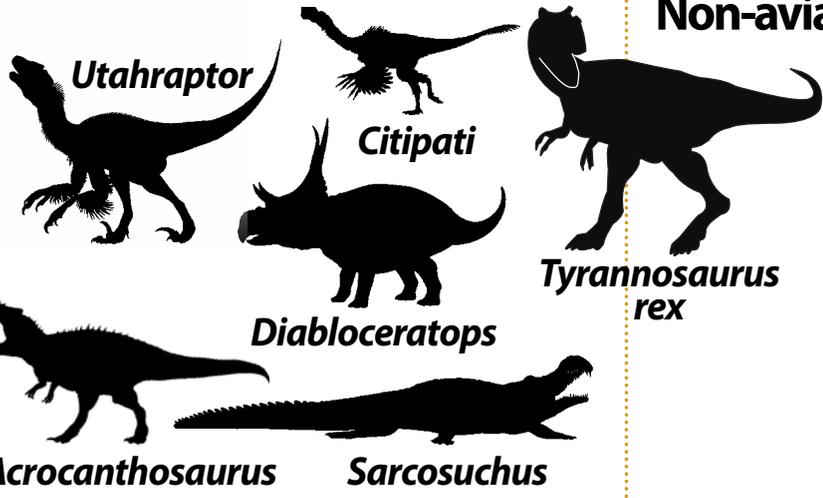


**Mammals  
appear**

Birds appear



Non-avian dinosaurs go extinct



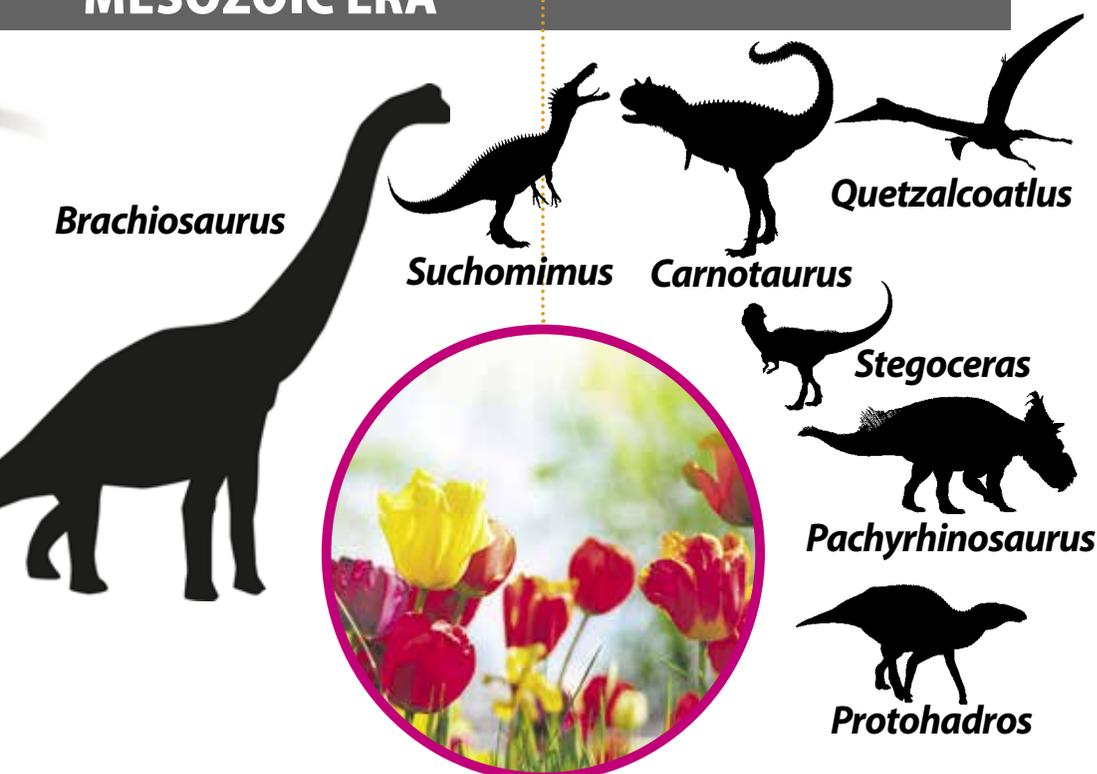
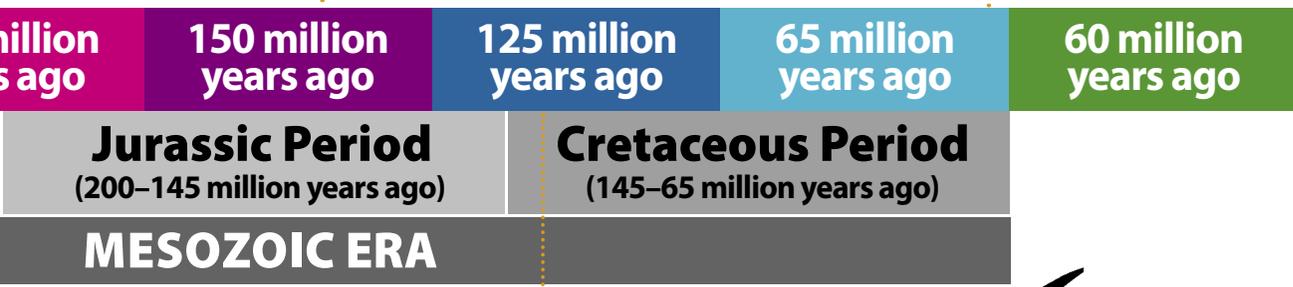
Dilophosaurus



Acrocanthosaurus



Sarcosuchus



Brachiosaurus

Suchomimus

Carnotaurus

Quetzalcoatlus

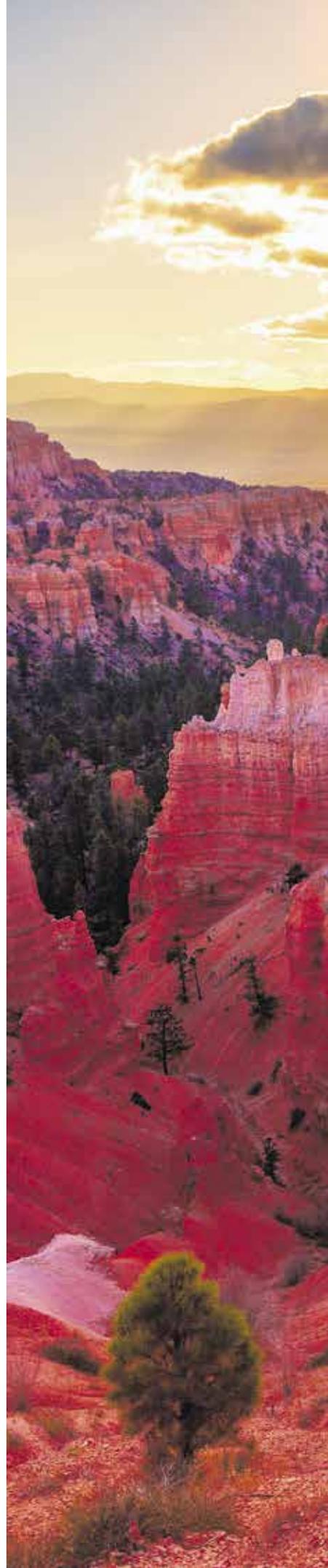
Stegoceras

Pachyrhinosaurus

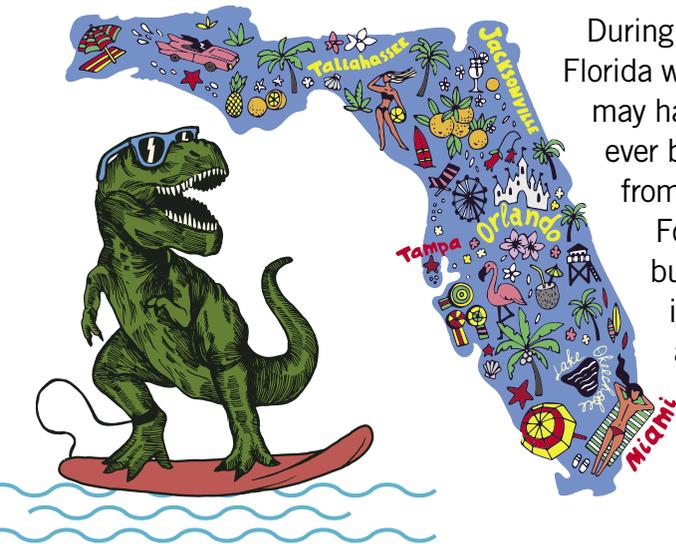
Protohadros



Flowering plants appear



# Were there dinosaurs in Florida?



During the time when dinosaurs were alive, most of Florida was underwater. Although some of north Florida may have been above sea level, no dinosaur fossils have ever been found there. Florida has lots of other kinds of fossils from more recent animals and plants, though!

Fossil collecting can be an interesting and rewarding hobby, but there are rules. For example, fossil collecting is not allowed in national or state parks or wildlife refuges. You may need a permit to collect some kinds of fossils on public lands. You can learn more about fossils in Florida and how to begin collecting them at [dep.state.fl.us/geology/geologictopics/fossils\\_artifacts.htm](http://dep.state.fl.us/geology/geologictopics/fossils_artifacts.htm).

Sources: Florida Department of Environmental Protection/Florida Geological Survey, Florida Department of State, Tampa Bay Fossil Club

- Meaning of name: "Arm lizard"
- Pronunciation: brak-ee-oh-SORE-us
- Height: 50 feet
- Length: 85 feet
- Weight: 50,000-124,000 pounds
- Diet: Herbivore

## Brachiosaurus

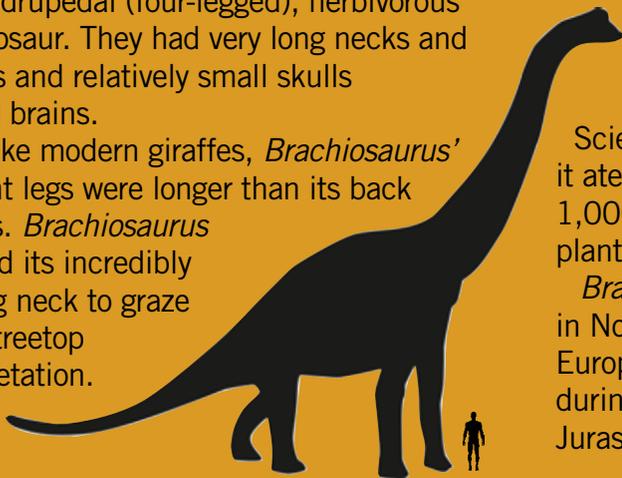
*Brachiosaurus* was one of the largest and tallest known land animals ever to have lived.

*Brachiosaurus* was a sauropod, a type of quadrupedal (four-legged), herbivorous dinosaur. They had very long necks and tails and relatively small skulls and brains.

Like modern giraffes, *Brachiosaurus*' front legs were longer than its back legs. *Brachiosaurus* used its incredibly long neck to graze on treetop vegetation.

Scientists think it ate almost 1,000 pounds of plants every day.

*Brachiosaurus* lived in North America, Europe and Africa during the late Jurassic period.



Sources: Canadian Museum of Nature, Live Science, Natural History Museum London, University of California Museum of Paleontology

# Dilophosaurus



- Meaning of name: "Double-crested lizard"
- Pronunciation: die-loaf-oh-SORE-us
- Height: 5 feet
- Length: 20 feet
- Weight: 1,000 pounds
- Diet: Carnivore

Its forelimbs were flexible, with an opposable thumb capable of grasping prey. *Dilophosaurus'* most recognizable feature was a set of paired "crests" on the top of its skull, similar to modern-day hornbills.

The only *Dilophosaurus* fossils that have been found are a group of three found in Arizona.

*Dilophosaurus* lived in North America during the early Jurassic period.

Sources: *How Stuff Works*, University of California Museum of Paleontology

*Dilophosaurus* was a small (about the size of a modern horse), bipedal carnivore that probably lived in groups.

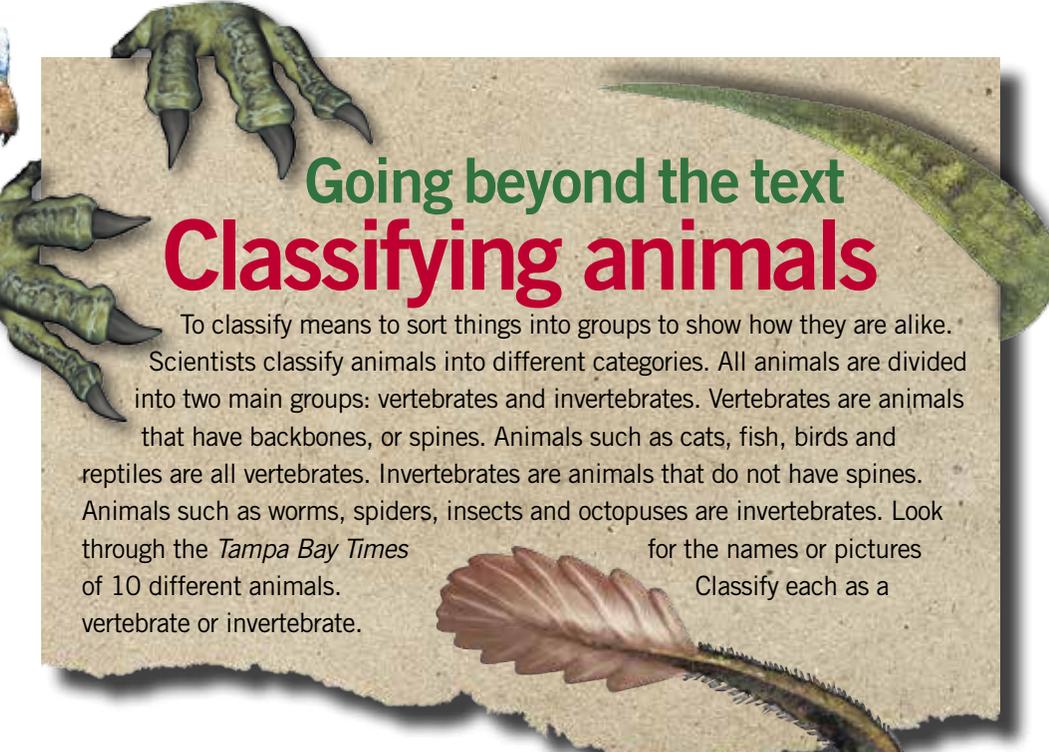
*Dilophosaurus* had long, strong back legs, and scientists think it was probably very fast and agile.

## Going beyond the text

# Classifying animals

To classify means to sort things into groups to show how they are alike. Scientists classify animals into different categories. All animals are divided into two main groups: vertebrates and invertebrates. Vertebrates are animals that have backbones, or spines. Animals such as cats, fish, birds and reptiles are all vertebrates. Invertebrates are animals that do not have spines. Animals such as worms, spiders, insects and octopuses are invertebrates. Look through the *Tampa Bay Times* for the names or pictures of 10 different animals. Classify each as a vertebrate or invertebrate.

# Utahraptor



- Meaning of name: "Utah's predator"
- Pronunciation: YOO-tah-rap-tor
- Height: 6 feet
- Length: 23 feet
- Weight: 2,000 pounds
- Diet: Carnivore

One of the largest raptors to walk the Earth, *Utahraptor* was a fierce hunter that had a large, retractable claw on each foot that it used to attack and rip apart its prey. Scientists think that *Utahraptor* hunted in packs. *Utahraptor* is

closely related to birds, and may have been covered in feathers.

*Utahraptor* fossils are rare and have been found only in Utah. *Utahraptor* lived in North America during the Early Cretaceous period.

Sources: *National Geographic*, *Natural History Museum of Utah*, *University of California Museum of Paleontology*



## Going beyond the text

# Classifying animals – in depth

Scientists classify vertebrates and invertebrates into even more groups, such as mammals, birds, fish, amphibians, arthropods and reptiles. Watch the Brain Pop Jr. Video "Classifying Animals" at [jr.brainpop.com/science/animals/classifyinganimals](http://jr.brainpop.com/science/animals/classifyinganimals). Using the information in the video, write down what classification each of the animals you found in the *Times* belongs to and why. Share what you have learned with your class.

# Quetzalcoatlus

- Meaning of name: "Feathered serpent"
- Pronunciation: kwet-zal-koh-AT-lus
- Height: 16-18 feet
- Length: 32 feet (wingspan)
- Weight: 400 pounds
- Diet: Carnivore



Sources: BBC Earth, National Park Service, Wired

*Quetzalcoatlus* wasn't actually a dinosaur, although it lived during the same time. Instead, it's a flying reptile — a group known as Pterosauria.

*Quetzalcoatlus* is believed to be the largest flying creature ever to exist. It was almost as tall as a giraffe and had a 32-foot wingspan.

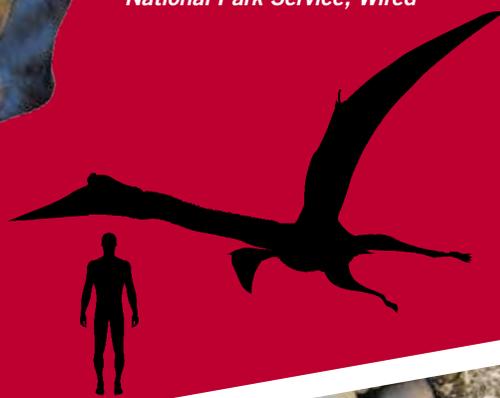
Pterosaur wings are thought to have been membranes, like bat wings, rather than feathers, like modern birds. While early birds existed at the same time as some of the pterosaurs, they are not related at all.

Because of its size, scientists think that

*Quetzalcoatlus* spent most of its time in the air gliding, rather than flapping. It could also walk on the ground.

*Quetzalcoatlus* had a relatively large brain and good vision, balance and muscle control. It also had the longest jaws of any non-marine animal, estimated at more than 8 feet.

*Quetzalcoatlus* lived in North America during the Late Cretaceous period.



Sources: Paleontological Research Institution, U.S. Bureau of Labor Statistics

## So you want to be a paleontologist?

Paleontologists study fossils in order to learn about the geologic history of the earth.

Professional paleontologists work for colleges and universities, museums and government organizations.

To have a career in paleontology, you'll need strong math, science and computer skills. Most paleontologists study biology and geology in college, followed by graduate training in paleontology.

But you don't have to wait until high school to get started!

Students interested in paleontology can get some firsthand experience in the field by joining local fossil clubs or by volunteering at a nearby museum or college.

## Going beyond the text Careers in science

Paleontologists, geologists, biologists, zoologists .... There are so many fields in science! What field of science interests you? Do you want to work for a university, a museum, a zoological institution or in the field? Look through the *Tampa Bay Times* and this Newspaper in Education publication and make a list of career possibilities that interest you. Next, do some research at [kids.usa.gov/science/science-jobs/index.shtml](http://kids.usa.gov/science/science-jobs/index.shtml). What type of education will you need? What is the typical salary for that position? What type of an environment will you be working in? Share what you have learned with your class.

Paleo Preserve Fossil Museum  
[paleopreserve.com](http://paleopreserve.com)

Peace River Fossil Hunting  
[canoeoutpost.com/peace/showpage.asp?page=fossilhunting](http://canoeoutpost.com/peace/showpage.asp?page=fossilhunting)

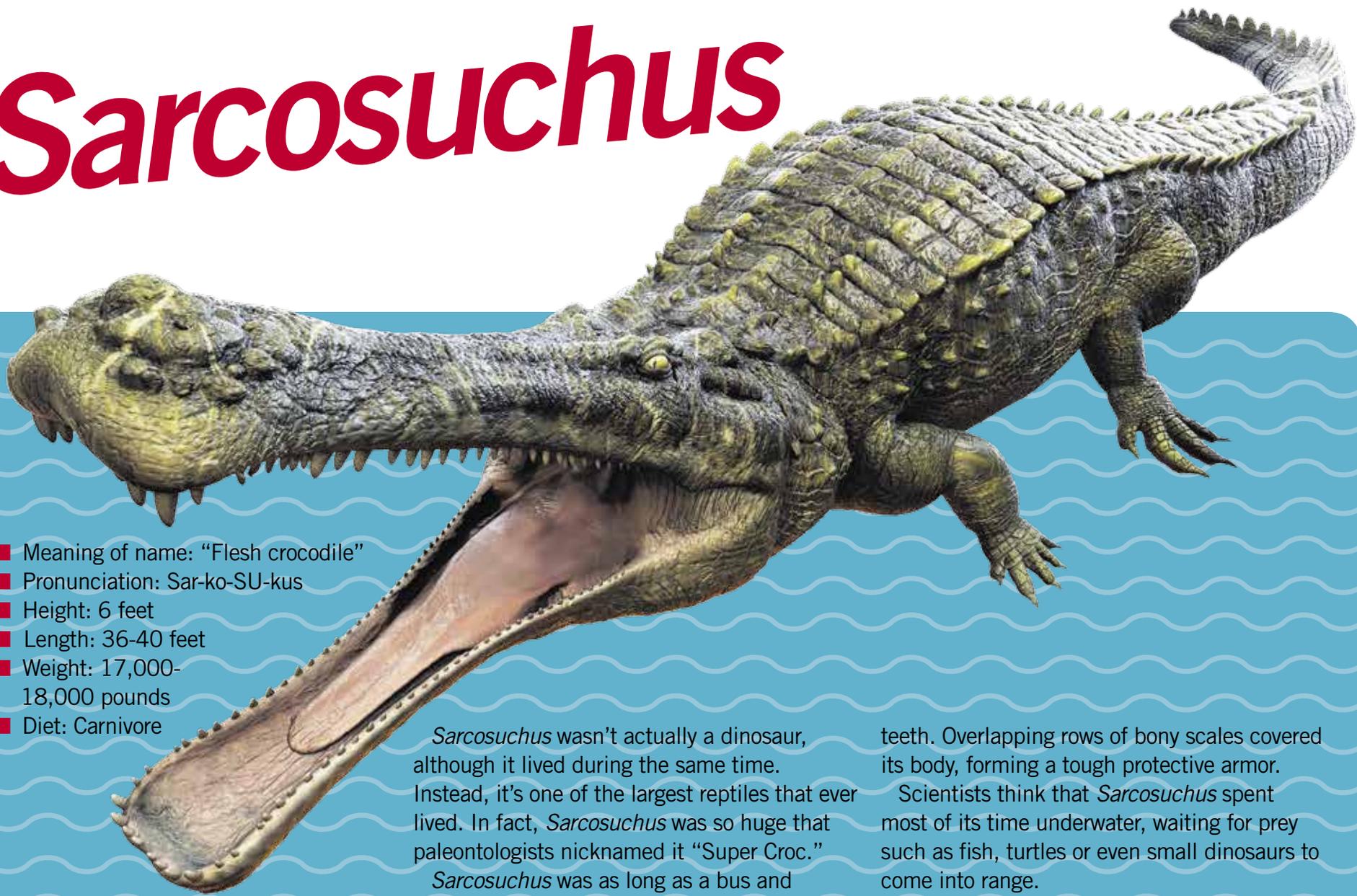
Suncoast Gem and Mineral Society  
[sgams.com](http://sgams.com)

Tampa Bay Fossil Club  
[tampabayfossilclub.com](http://tampabayfossilclub.com)

University of South Florida  
School of Geosciences  
[geology.usf.edu](http://geology.usf.edu)

Withlacoochee Rockhounds of  
Hernando County  
[withlacoocheerockhounds.com](http://withlacoocheerockhounds.com)

# Sarcosuchus



- Meaning of name: “Flesh crocodile”
- Pronunciation: Sar-ko-SU-kus
- Height: 6 feet
- Length: 36-40 feet
- Weight: 17,000-18,000 pounds
- Diet: Carnivore

*Sarcosuchus* wasn't actually a dinosaur, although it lived during the same time. Instead, it's one of the largest reptiles that ever lived. In fact, *Sarcosuchus* was so huge that paleontologists nicknamed it “Super Croc.”

*Sarcosuchus* was as long as a bus and weighed more than 8 tons. Its jaws alone were nearly 6 feet long, with more than 100

teeth. Overlapping rows of bony scales covered its body, forming a tough protective armor.

Scientists think that *Sarcosuchus* spent most of its time underwater, waiting for prey such as fish, turtles or even small dinosaurs to come into range.

*Sarcosuchus* lived in Africa during the Middle Cretaceous period.



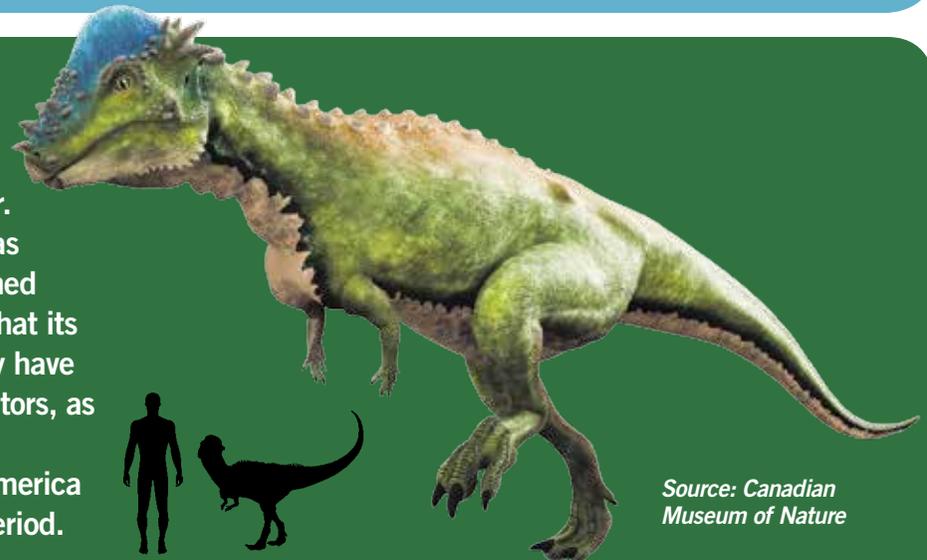
Sources: National Geographic, Scientific American

# Stegoceras

- Meaning of name: “Horny roof”
- Pronunciation: ste-GOS-er-as
- Height: 4 feet
- Length: 7 feet
- Weight: 170 pounds
- Diet: Herbivore

*Stegoceras* was a small, bipedal, plant-eating dinosaur. Its most distinctive feature was its extremely thick, bony, domed skull. Scientists aren't sure what its function was, but think it may have used it to ram potential predators, as sheep and goats do.

*Stegoceras* lived in North America during the Late Cretaceous period.



Source: Canadian Museum of Nature

- Meaning of name: "Lord of the funeral pyre"
- Pronunciation: sih-tee-PAH-tee
- Height: 6-8 feet
- Length: 6 feet
- Weight: 500 pounds
- Diet: Possible omnivore

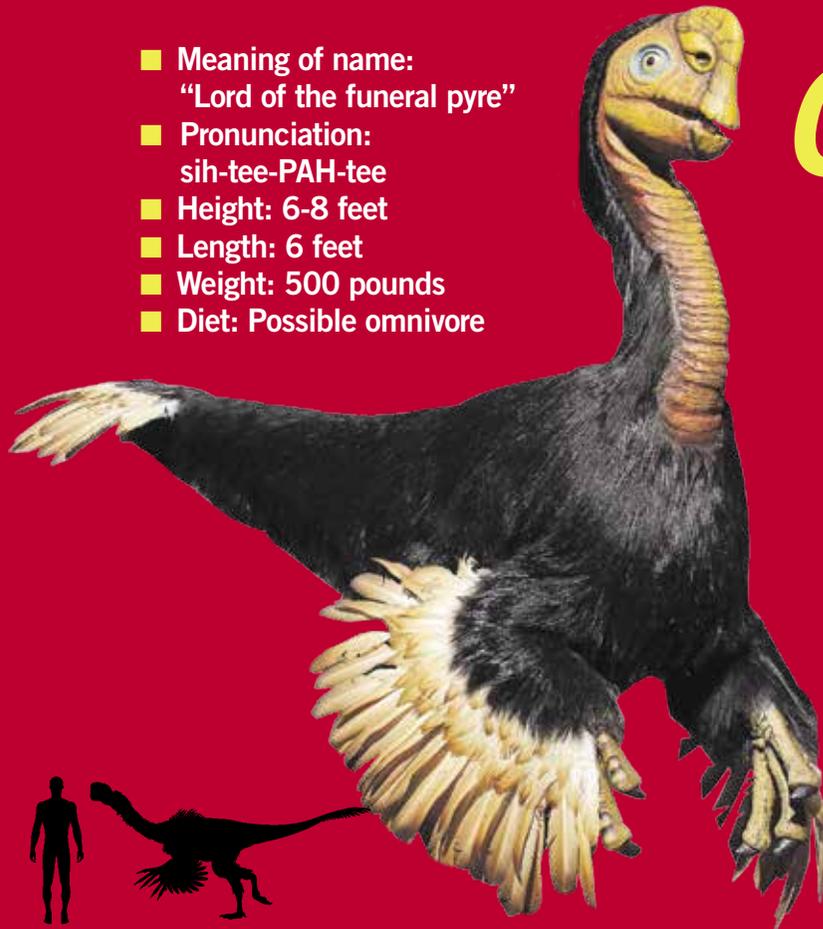
# Citipati

*Citipati* was a bipedal, beaked, feathered dinosaur that resembled a modern ostrich or emu. Scientists think that *Citipati* was possibly omnivorous – it ate both plants and meat.

*Citipati* fossils have been found in nesting positions sitting on top of fossilized eggs. Researchers think that this dinosaur nested and protected its eggs similarly to modern birds.

*Citipati* lived in Asia during the Late Cretaceous period.

Sources: American Museum of Natural History, Discover, National Museum of Natural History, Nature, Science



# The scientific method

The scientific method is a process that scientists use to answer questions about the natural world. The steps of the scientific method are as follows:

1. Ask a question.
2. Do background research.
3. Form a hypothesis (a possible explanation that can be tested).
4. Test the hypothesis with an experiment.
5. Analyze the results of the experiment.
6. Draw a conclusion.
7. Communicate the results.

Scientists have many questions about what dinosaurs were really like. Because there are no living dinosaurs, scientists have to form theories about what they looked like and how they behaved using the evidence they left behind: fossils.

For example, fossilized teeth provide clues to what dinosaurs ate. *Tyrannosaurus rex* had sharp, knife-like teeth suitable for tearing meat, providing evidence that it was a carnivore. Other dinosaurs had mouths full of grinding teeth that are similar to those that modern plant-eaters use to grind up plants, providing evidence that they were herbivores.

# Coprolites

Coprolites are a very special type of fossil... They are the remains of ancient poo!

It's very hard to determine what ancient creature originally pooped a coprolite specimen. Scientists have to guess based on the fossil's age, shape and size. But these rare fossils can tell scientists quite a lot about where the pooper lived and what it ate.

The South Florida Museum in Bradenton has the world's largest coprolite collection, with 1,277 individual coprolites. You can view the collection online at [poozeum.com](http://poozeum.com)!

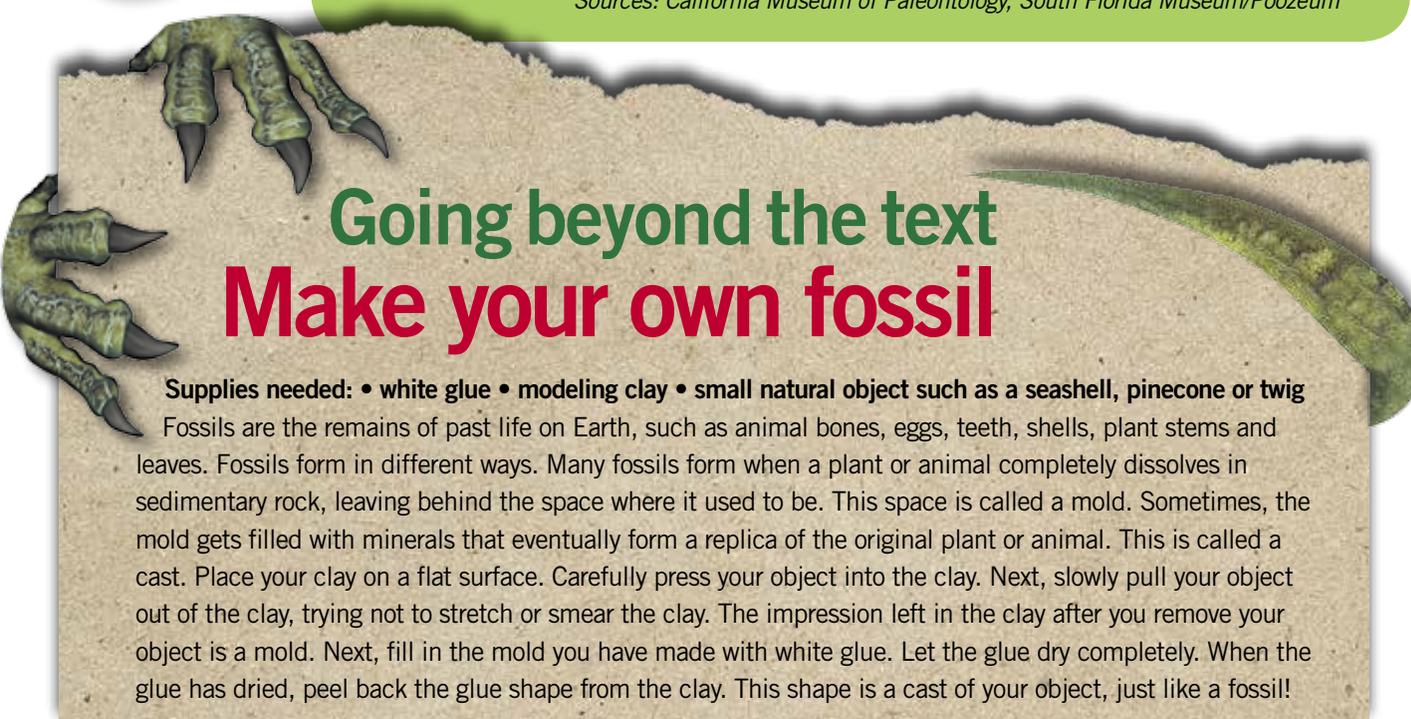
Sources: California Museum of Paleontology, South Florida Museum/Poozeum



# Going beyond the text Make your own fossil

**Supplies needed:** • white glue • modeling clay • small natural object such as a seashell, pinecone or twig

Fossils are the remains of past life on Earth, such as animal bones, eggs, teeth, shells, plant stems and leaves. Fossils form in different ways. Many fossils form when a plant or animal completely dissolves in sedimentary rock, leaving behind the space where it used to be. This space is called a mold. Sometimes, the mold gets filled with minerals that eventually form a replica of the original plant or animal. This is called a cast. Place your clay on a flat surface. Carefully press your object into the clay. Next, slowly pull your object out of the clay, trying not to stretch or smear the clay. The impression left in the clay after you remove your object is a mold. Next, fill in the mold you have made with white glue. Let the glue dry completely. When the glue has dried, peel back the glue shape from the clay. This shape is a cast of your object, just like a fossil!



# Pachyrhinosaurus



- Meaning of name: "Thick-nosed lizard"
- Pronunciation: pak-ee-rine-oh-SORE-us
- Height: 8 feet
- Length: 20 feet
- Weight: 4,000-6,000 pounds
- Diet: Herbivore

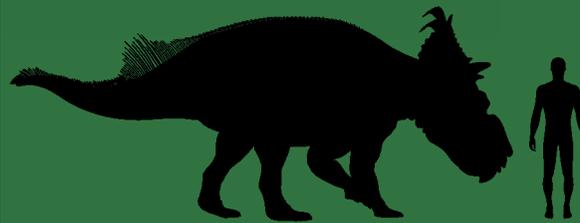
*Pachyrhinosaurus* was a large, quadrupedal, beaked plant eater. It had a huge skull with thick bones above its nose and eyes, horns and a frill.

*Pachyrhinosaurus* had a small, poorly developed brain and poor senses of vision, hearing and smell. Scientists believe it may have lived in large herds.

*Pachyrhinosaurus* lived further north than most dinosaurs, in what is now Alaska and Alberta, Canada. Scientists aren't sure how it coped with the long, dark winters, or if it migrated south to escape them.

*Pachyrhinosaurus* lived in North America during the Late Cretaceous period.

Source: BBC Earth



- Meaning of name: "Hollow form"
- Pronunciation: see-lo-FIE-sis
- Height: 3 feet
- Length: 9 feet
- Weight: 50-100 pounds
- Diet: Carnivore

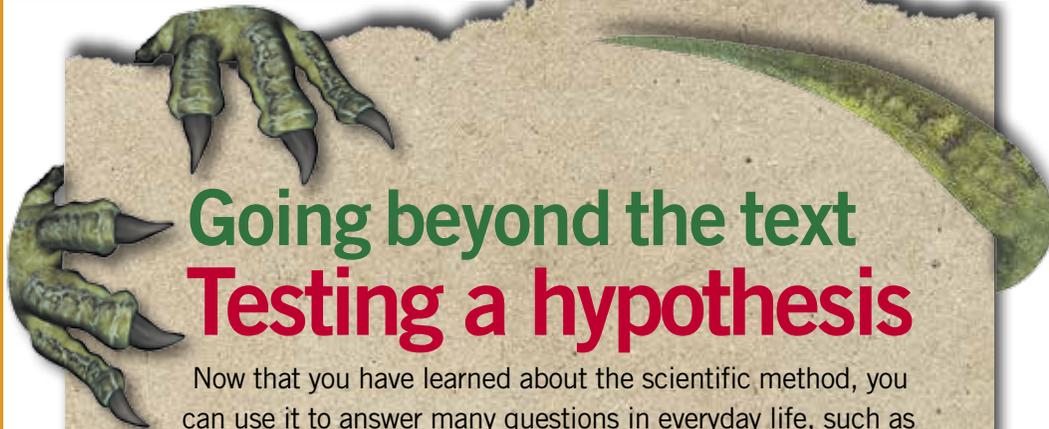
## Coelophysis

*Coelophysis* was one of the earliest carnivorous dinosaurs. A small, bipedal predator, *Coelophysis* had light, hollow bones like modern birds that allowed it to move very quickly. It probably traveled in packs for protection against larger predators.

Scientists think that it probably behaved very much like modern large ground birds such as cassowaries and emus.

*Coelophysis* lived in North America during the Late Triassic period.

Source: Carnegie Museum of Natural History



## Going beyond the text Testing a hypothesis

Now that you have learned about the scientific method, you can use it to answer many questions in everyday life, such as which route to school is quicker, or what brand of food your cat prefers. In small groups, look in the *Tampa Bay Times* for ideas about a question you can try to answer using the steps above. Write down your question. Next, develop a hypothesis and an experiment that you could use to test your hypothesis. Share your question, hypothesis and proposed experiment with your class.

# dinosaur word search

Directions: Find the hidden dinosaurs in the word search puzzle.

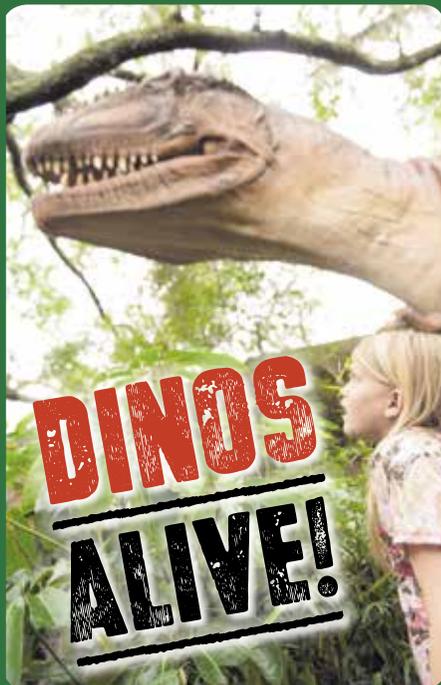
J X U A I C O Y U A E H H S V D G E M C  
 H S R O M Z T E O C K B X M J B J D S A  
 M U P A P K I T Q R L V T M O P S U J R  
 R T L O S E J H C O B O L N A S U L P N  
 Y A O W T O U G D C S U N C U U L L L O  
 V H E V C A R Y C A M B H R N G T S O T  
 T R M G K B R D R N H Y U Y D Q A N Q A  
 H A R F H A L E A T R A B K Z A O P Q U  
 F P T Z R T C C C H S Q C J Y I C M S R  
 G T M R A O I Z I O O G P P J Y L B U U  
 Y O N J G T H N I S L T W D N I A W H S  
 F R J E I T O H Q A X B O N V C Z S C O  
 O R T P W S C X L U O W A R Z A T Q U O  
 M S A A A A G C A R O O J I P T E U S W  
 U T S U R L K Z B U A G A M D A U M O X  
 I J R B J U Y M J S A Z Q N D G Q B C V  
 P U X E R S U R U A S O N N A R Y T R X  
 S I M O R D I L O P H O S A U R U S A K  
 S I S Y H P O L E O C J T R Y I J P S Y  
 F S U C H O M I M U S I D M O Q M W G D

- Acrocanthosaurus
- Brachiosaurus
- Carnotaurus
- Citipati
- Coelophysis
- Diabloceratops
- Dilophosaurus
- Pachyrhinosaurus
- Protodactylus
- Quetzalcoatlus
- Sarcosuchus
- Stegoceras
- Suchomimus
- Tyrannosaurus rex
- Utahraptor

## About Tampa's Lowry Park Zoo

No day of adventure is complete without a visit to Tampa's Lowry Park Zoo, home to Florida's rescued manatees. Observation pools allow for year-round, up-close viewing of these gentle giants. Then, explore 56 acres of lush habitats with more than 1,000 incredible animals, including elephants, koalas, tigers, penguins, orangutans and much more. Plus, enjoy fun rides, water play areas, shops, educational shows and interactive exhibits where you can feed a giraffe, touch a stingray, walk with wallabies and more.

To visit Tampa's Lowry Park Zoo, take I-275 to Exit 48 (Sligh Ave.) and turn west. The zoo is just 10-15 minutes from downtown Tampa, Channelside, Ybor City and Tampa International Airport.



Limited-time engagement dinosaurs will take over Tampa's Lowry Park Zoo!

## Resources for teachers

**American Museum of Natural History Dinosaur Curriculum Collection**  
[amnh.org/explore/curriculum-collections/dinosaurs-activities-and-lesson-plans](http://amnh.org/explore/curriculum-collections/dinosaurs-activities-and-lesson-plans)

**Smithsonian National Museum of Natural History Science Teaching Resources**  
[qrius.si.edu/teachers/online/science-teaching-resources#paleontology](http://qrius.si.edu/teachers/online/science-teaching-resources#paleontology)

**Smithsonian National Museum of Natural History Lesson Plans & Classroom Resources**  
[naturalhistory.si.edu/education/classroom\\_resources.html](http://naturalhistory.si.edu/education/classroom_resources.html)

**University of California Museum of Paleontology K-12 teacher resources**  
[ucmp.berkeley.edu/education/teachers](http://ucmp.berkeley.edu/education/teachers)

## Florida Standards

This publication and its activities incorporate the following Florida Standards for elementary and middle school students.

**Science:** SC.2.E.6.2; SC.2.L.17.2; SC.2.N.1.1; SC.2.N.1.3; SC.3.L.15.1; SC.3.N.1.6; SC.3.N.3.1; SC.4.N.1.3; SC.4.N.1.4; SC.4.N.1.7; SC.5.L.15.1; SC.7.E.6.4; SC.7.L.15.1; SC.7.L.15.2; SC.7.L.15.3; SC.7.N.1.5; SC.7.N.1.6; SC.7.N.2.1; SC.2.L.17.2; SC.6.E.6.2  
**Language Arts:** LAFS.3-5.L.1.1; LAFS.3-5.L.1.2; LAFS.3-5.L.2.3; LAFS.3-5.L.3.4; LAFS.3-5.L.3.5; LAFS.3-5.L.3.6; LAFS.3-5.RF.3.3; LAFS.3-5.RF.4.4; LAFS.3-5.RI.1.1; LAFS.3-5.RI.1.2; LAFS.3-5.RI.1.3; LAFS.3-5.RI.2.4; LAFS.3-5.RI.2.5; LAFS.3-5.RI.2.6; LAFS.3-5.RI.3.7; LAFS.3-5.SL.1.1; LAFS.3-5.SL.1.2; LAFS.3-5.SL.1.3; LAFS.3-5.SL.2.4; LAFS.3-5.SL.2.5; LAFS.3-5.SL.2.6; LAFS.3-5.W.1.1; LAFS.3-5.W.1.2; LAFS.3-5.W.1.3; LAFS.3-5.W.2.4; LAFS.3-5.W.2.5; LAFS.3-5.W.2.6; LAFS.3-5.W.3.7; LAFS.3-5.W.3.8; LAFS.3-5.W.4.10; LAFS.6-8.L.1.1; LAFS.6-8.L.1.2; LAFS.6-8.L.2.3; LAFS.6-8.L.3.4; LAFS.6-8.L.3.5; LAFS.6-8.L.3.6; LAFS.6-8.RF.3.3; LAFS.6-8.RF.4.4; LAFS.6-8.RI.1.1; LAFS.6-8.RI.1.2; LAFS.6-8.RI.1.3; LAFS.6-8.RI.2.4; LAFS.6-8.RI.2.5; LAFS.6-8.RI.2.6; LAFS.6-8.RI.3.7; LAFS.6-8.SL.1.1; LAFS.6-8.SL.1.2; LAFS.6-8.SL.1.3; LAFS.6-8.SL.2.4; LAFS.6-8.SL.2.5; LAFS.6-8.SL.2.6; LAFS.6-8.W.1.1; LAFS.6-8.W.1.2; LAFS.6-8.W.1.3; LAFS.6-8.W.2.4; LAFS.6-8.W.2.5; LAFS.6-8.W.2.6; LAFS.6-8.W.3.7; LAFS.6-8.W.3.8; LAFS.6-8.W.4.10

## Learn more

**American Museum of Natural History**  
[amnh.org/dinosaurs](http://amnh.org/dinosaurs)

**BBC Earth Walking with Dinosaurs**  
[bbcearth.com/walking-with-dinosaurs](http://bbcearth.com/walking-with-dinosaurs)

**Florida Museum of Natural History**  
[flmnh.ufl.edu](http://flmnh.ufl.edu)

**National Geographic Prehistoric World**  
[science.nationalgeographic.com/science/prehistoric-world](http://science.nationalgeographic.com/science/prehistoric-world)

**Natural History Museum London Dino Directory**  
[nhm.ac.uk/discover/dino-directory](http://nhm.ac.uk/discover/dino-directory)

**The Paleontology Portal**  
[paleoportal.org](http://paleoportal.org)

**Smithsonian National Museum of Natural History**  
[naturalhistory.si.edu/fossil-hall/last-american-dinosaurs/index.cfm](http://naturalhistory.si.edu/fossil-hall/last-american-dinosaurs/index.cfm)

**University of California Museum of Paleontology**  
[ucmp.berkeley.edu](http://ucmp.berkeley.edu)

## About NIE

The Tampa Bay Times Newspaper in Education program (NIE) is a cooperative effort between schools and the Times Publishing Co. to encourage the use of newspapers in print and electronic form as educational resources – a “living textbook.” Our educational resources fall into the category of informational text, a type of nonfiction text. The primary purpose of informational text is to convey information about the natural or social world.

Since the mid-1970s, NIE has provided schools with class sets of the daily newspaper plus award-winning original curriculum supplements, teacher guides, lesson plans, educator workshops and many more resources at no cost to schools, teachers or families. Each year, more than 5 million newspapers and electronic licenses are provided to Tampa Bay teachers and students free of charge thanks to our generous individual, corporate and foundation sponsors. NIE teaching materials cover a variety of subjects and are correlated to the Florida Standards.



For more information about NIE, visit [tampabay.com/nie](http://tampabay.com/nie), call 727-893- 8138 or email [ordernie@tampabay.com](mailto:ordernie@tampabay.com). Follow us on Twitter at [Twitter.com/TBTimesNIE](https://twitter.com/TBTimesNIE).

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