Annotated Object List:
Dinosaurs

Tyrannosaurus Rex

Tooth (Cast)
Location: North America
Lived: 85 - 65 million years ago, Cretaceous Period

The Tyrannosaurus Rex (T-Rex) was a meat-eating dinosaur that lived during the Cretaceous Period in North America. These dinosaurs could grow to as tall as 20 feet and as long as 40 feet. They walked upright on two legs and scientists have calculated that the T-Rex could probably move as fast as 10 to 20 mph.

This dinosaur is famous for its large teeth, which are often described as resembling bananas. T-Rex bite marks have been found on other dinosaur fossils. A T-Rex would have had a five foot-long skull full of these teeth!

The T-Rex went extinct around 65 million years ago during the Cretaceous-Tertiary Extinction. Scientists believe this extinction was caused by a meteor impact in Chicxulub, Mexico. The Chicxulub meteor crater is between 110 and 180 kilometers in diameter.

Although T-Rex is extinct, their fossils can be found in rocks in the western part of the United States. Living relatives of the Tyrannosaurus Rex include modern-day birds.

An Interesting Fact-
The name Tyrannosaurus Rex means "tyrant lizard."

Allosaurus

Foot Claw (Cast)
Location: North America
Lived: 150 million years ago, Jurassic Period

The Allosaurus was a two-legged carnivorous predator that lived during the Jurassic Period in North America. It resembled a smaller version of the Tyrannosaurus Rex, but lived about 80 million years before the T-Rex did.

This dinosaur could grow up to 40 feet long and probably lived to the age of 25 years old. Its most distinctive feature was the presence of bony ridges over its eyes. The Allosaurus ate other dinosaurs; Paleontologists are still debating if whether Allosaurus hunted large prey in packs, or smaller animals as solitary hunters.

This dinosaur constantly grew in new teeth and shed old teeth; therefore old Allosaurus teeth are relatively common in the fossil record. These teeth can be as big as four inches long.

An Interesting Fact – The name Allosaurus means "different lizard."

Velociraptor

Skull (Cast)
Claw (Cast)
Location: Asia
Lived: 85 million years ago, Cretaceous Period

The Velociraptor lived about 85 million years ago in the woodlands of Asia. It was about 6 feet long and weighed about 40 pounds. The Velociraptor was a two-legged carnivore that ate small mammals and dinosaurs. Although pop culture has represented this dinosaur as a fierce – and fear-inducing – hunter, Velociraptors are believed to have resembled large chickens. Paleontological evidence also suggests that they were solitary and did not hunt in packs.

Although Velociraptor means "speedy thief" in Greek, it probably could not have moved much faster than a chicken. Currently, there is a debate over whether the Velociraptor had scales or a thin coat of feathers. Paleontologists who argue that this dinosaur had feathers also suggest that it was warm-blooded.

An Interesting Fact- The dinosaurs identified as Velociraptors in the movie *Jurassic Park* are actually Deinonycus. Velociraptors were much smaller than what is shown in the movie. Many characteristics that people associate with the Velociraptor actually belong to Deinonycus.

Stegosaurus

Tail Spike (Cast)
Location: North America
Lived: 140 million years ago, Jurassic Period

The Stegosaurus was a large herbivore dinosaur that walked on all four legs. It could grow up to 40 feet long, although most were only about 20 feet long. Since Stegosaurus did not have teeth, it cut its food using a beak .The Stegosaurus' most distinctive feature was the bony plates that lined its back. Hypotheses for the purpose of these plates include armor or

a radiator that helped it control its body temperature. Both male and female Stegosauruses had these plates.

The Stegosaurus also had four spikes on its tail that were about 3 feet long. These spikes are collectively called a thagomizer by paleontologists. The thagomizer was probably used by the Stegosaurus as a defensive weapon.

Although the Stegosaurus was a large dinosaur, it had a brain the size of a walnut. Paleontologists still debate how this small brain could have controlled such a big dinosaur.

An Interesting Fact- The name Stegosaurus means "roofed reptile".

Oviraptor

Baby Louie Model (Cast)
Oviraptor Egg Shell Fragment (Real)
Location: Central Asia
Lived: 80 to 65 million years ago, Cretaceous Period

Oviraptors were carnivorous dinosaurs who lived in Central Asia approximately 80 to 65 million years ago. Paleontologists think that these dinosaurs resembled birds and had feathers and a beak. However, it is believed that Oviraptors could not fly. They were about 8 feet long and weighed about 75 pounds. The name Oviraptor is Greek for "egg thief". This name was given to the dinosaur because the first fossil of an Oviraptor found was sitting on a pile of eggs that were then believed to belong to a different dinosaur. Paleontologists now think that the Oviraptor was caring for its own eggs, and therefore didn't actually steal them.

The dinosaur egg model included in this kit is a replica of the famous Oviraptor fossil called 'Baby Louie." Discovered in 1994 in the Henan Province of China, Baby Louie's skeleton is still in the position it was in while alive in the egg. It is the only articulated dinosaur embryo to ever be found. Paleontologists believe that Baby Louie died either before or during hatching. Baby Louie was fossilized when his nest was covered by silt during a flood.

An Interesting Fact- Oviraptor nests have been found that are as large as 7 feet in diameter.

Spinosaurus

Teeth (2) (Real)
Location: Northern Africa
Lived: 100 to 93 million years ago, Cretaceous Period

The Spinosaurus was the largest carnivorous dinosaur of all time. It could reach up to 60 feet long and weighed nearly 10 tons. Its head alone was over six feet long.

The Spinosaurus' most distinctive feature was the large sail on its back. Although paleontologists are still debating the function of this sail, some hypotheses suggest that it was used to regulate body temperature, scare away other Spinosaurus and attract mates.

This dinosaur had large, straight, knife-like teeth. It ate meat and possibly fish; it may also have scavenged for food.

An Interesting Fact- While many television shows and movies feature Spinosaurus and Tyrannosaurus Rex fighting against each other, they actually lived millions of years apart in time.

Hadrosaurus:

Tooth (Real)
Location: North America, Europe and Asia
Lived: 75 to 65 million years ago, Cretaceous Period

The Hadrosaurus, also known as the Duck Billed dinosaur, was an herbivore that grazed on the plains of North America, Europe and Asia. Hadrosaurus could grow up to about 30 feet in length. This dinosaur is thought to have lived in large herds, much like cows, and had both a beak and teeth to chew vegetation. Scientists are still debating as to whether the Hadrosaurus walked on two or four legs or both. They are most famous for the large crest on their head. Paleontologists believe that this crest may have been used by the Hadrosaurus to make a trumpeting sound to communicate with other dinosaurs.

An Interesting Fact- The Hadrosaurus was the first dinosaur skeleton to be mounted for display.

Gastrolith (Real)

This kit includes a gastrolith. A gastrolith is a stone that an animal swallows to help with digestion. Many gastroliths are found associated with herbivore dinosaurs. They often look like river stones. Modern day animals such as chickens, seals and whales have gastroliths. Chickens swallow much smaller rocks to help them digest their food. Scientists are not entirely sure why some animals swallow gastroliths. Some hypotheses include that the rocks help with stability and/or buoyancy when swimming or that they help with digestion.

Since gastroliths resemble smooth river rocks, it sometimes difficult if to tell if it really is a gastrolith. One way paleontologists determine if it is a gastrolith is by its location; if a pile of smooth rocks are found in the ribcage of a fossil skeleton, then scientists are almost certain that they were gastroliths. If the rocks are found outside the skeleton, then the paleontologists compare these stones to the surrounding rock's composition. However, determining the nature of gastroliths is still a difficult aspect of paleontology.

Coprolite (3) (Real)

This kit includes three coprolites. The term coprolite refers to fossilized feces.

Dinosaur feces were very beneficial to the environment. It was a source of food for other animals and it acted as fertilizer for plants.

Paleontologists study coprolites to help them learn about dinosaurs and their environment. Coprolites can reveal what type of food the animal ate, information about the environment the dinosaur lived in, the types of plants and animals living at the same time, and a host of other information about the dinosaur and its environment.

Coprolites are examples of a trace fossil. Instead of being a part of an organism, a trace fossil is the remains of an activity of an animal. Trace fossils help paleontologists learn about the behavioral traits of animals.

An Interesting Fact- the largest coprolite ever found was 17 inches long and 6 inches thick. It was thought to have belonged to a Tyrannosaurus Rex and it contains pieces of bone and blood vessels.

Therapod Footprint (Cast)

This is a cast of a fossil footprint of a Therapod. Therapods are a group of dinosaurs that include the largest carnivorous dinosaurs; these animals were also bipedal. Many Therapods had thin, hollow bones. Modern birds are descendents of these dinosaurs.

This footprint is an example of a trace fossil. Instead of being a part of an organism, a trace fossil is the remains of an activity of an animal. This Therapod footprint was created when a dinosaur stepped in the mud and left a footprint. The mud dried out. Then the footprint was covered and protected by more mud and sand and over time it became a fossil. Trace fossils help paleontologists learn about the behavioral traits of animals.

Please handle museum specimens with care.

For more information and the sources of this document:

Tyrannosaurus Rex:

Tyrannosaurus Rex. National Geographic.
Available on-line at http://animals.nationalgeographic.com/animals/prehistoric/tyrannosaurus-rex/

The Tyrant Lizards: The Tyrannosauridae. University of California Museum of Paleontology.
Available on-line at http://www.ucmp.berkeley.edu/diapsids/saurischia/tyrannosauridae.html

Images of Chicxulub Crater. Near Earth Object Program. NASA.
http://neo.jpl.nasa.gov/images/yucatan.html

Allosaurus:

Allosaurus. Bob Strauss. About.com.
Available on-line at http://dinosaurs.about.com/od/carnivorousdinosaurs/p/allosaurus.htm

10 Facts about Allosaurus. Bob Strauss. About.com.
Available on-line at http://dinosaurs.about.com/od/dinosaurbasics/a/allosaurusfacts.htm

Velociraptor:

Velociraptor. Bob Strauss. About.com.
Available on-line at http://dinosaurs.about.com/od/carnivorousdinosaurs/p/velociraptor.htm

10 Facts about Velociraptor. Bob Strauss. About.com.
Available on-line at http://dinosaurs.about.com/od/dinosaurbasics/a/velofacts.htm

Stegosaurus:

Stegosaurus. American Museum of Natural History.

Available on-line at
http://www.amnh.org/exhibitions/expeditions/treasure_fossil/Fossils/Specimens/stegosaurus.html

Stegosaurus Dinosaur. Rare Resource.
Available on-line at http://www.rareresource.com/stegosaurus.htm

Stegosaurus. The Editors of Publications International, Ltd. How Stuff Works. The Discovery Channel.
Available on-line at http://animals.howstuffworks.com/dinosaurs/stegosaurus.htm

Oviraptor:

Meet Baby Louie. The Children's Museum of Indianapolis.
http://www.childrensmuseum.org/themuseum/dinosphere/profiles/babylouie.html

Oviraptor. About.com
http://dinosaurs.about.com/od/carnivorousdinosaurs/p/oviraptor.htm

Spinosaurus:

Spinosaurs: World's Largest Carnivorous Dinosaur. Jennifer Viegas. Discovery Channel
http://dsc.discovery.com/dinosaurs/spinosaurus.html

Hadrosaurus:

Hadrosaurus – The Duck-Billed Dinosaur. Bob Strauss. About.com
http://dinosaurs.about.com/od/typesofdinosaurs/a/hadrosaurs.htm

Hadrosaurus. The Editors of Publications International, Ltd. How Stuff Works. The Discovery Channel.
http://animals.howstuffworks.com/dinosaurs/hadrosaurus.htm

Coprolites:

Coprolites (Dinosaur Poop): What Fossilized Coprolites Can Tell Us About Ancient Dinosaurs. Bob Strauss. About.com.
Available on-line at http://dinosaurs.about.com/od/dailylifeofadinosaur/a/dinosaurpoop.htm

Gastrolith:

Gastroliths. University of California Museum of Paleontology

http://www.ucmp.berkeley.edu/taxa/verts/archosaurs/gastroliths.php

Therapods:

Therapod Dinosaurs: The "Beast-Footed" Carnivorous Dinosaurs. University of California Museum of Paleontology
http://www.ucmp.berkeley.edu/diapsids/saurischia/theropoda.html

What are Trace Fossils?. Virtual Museum of Canada.
http://museum.gov.ns.ca/mnh/nature/tracefossils/english/sections/whatare.html

The Discovery Kit carry-on size cases used by the University of Colorado Museum of Natural History were generously donated by:

COLORADO BAG'n BAGGAGE and HEYS

We thank them for their support.