

Evidence about the asteroid theory



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Introduction

The purpose of the case study is to investigate ' Did a meteorite make the dinosaurs extinct'. These theories are not exactly been justified. It is an unsolved mystery nobody knows the reason and what caused the dinosaurs to become extinct.

A meteorite is a body of matter that reaches the earth's surface because it has not been heated up by friction with the atmosphere. It is made up of iron, stone or a mixture of both. Most meteorites are made as two asteroids are collided with each other or fragments of asteroids and comets. Asteroids are medium sized rocks that orbit the sun; Asteroids can be smaller than one-mile to almost 600 miles. There are many asteroids in our solar system. The asteroid belt was created when the solar system was formed and the asteroid belt is made from a cloud of dust, ice and gas. The Earth orbits the sun. The earth meets objects in space like dust or bits of rock broken off from asteroids. By the end of the Cretaceous period 50% of all living things on Earth and in sea were wiped out. Dinosaurs had been living on the earth about 230 million years ago and they became extinct nearly 65millionyearsago. Their extinction has confused scientists for years. It affected plant and animals on land and in water.

- Some scientists believe that dinosaurs died in all at once, in a mass extinction.
- A large asteroid or comet crashed into Earth and changed the climate.
- An increase in volcanic activity caused a sand dust which blocked the sun.
- Diseases wiped out entire populations of dinosaurs.

- A severe ice age could have changed temperatures and frozen a lot of Earth's water.
- The amount of earth's oxygen could have dropped which caused suffocation to the dinosaurs.
- Mammals came that ate dinosaur eggs.
- An exploding star supernova could have killed the dinosaurs.

Any of these theories could have been responsible for the extinction of dinosaurs; none of these theories have been proven. The theory which has the most evidence and has been approved by most of the geologists and scientist is the Asteroid theory.

Scientific Theories

There are two types of extinction theories: Gradual extinction and catastrophic extinction. Gradual extinction would have been like the changes in the earth's climate. It could also have been because new animals achieved in the struggle and coped with all the difficulties example mammals, etc. Theory explained that mammals ate dinosaur's eggs. Catastrophic extinction would have caused the death of the dinosaurs suddenly, such as an asteroid hitting the earth, or the eruption of volcanoes causing sudden death.

There were many theories to show how the dinosaurs were wiped out. The theories are not been declared yet. The most accepted theory is the Asteroid Theory. The first people who found this theory were Luis and Walter Alvarez in 1980. This theory explains that an asteroid hit or collided with the Earth nearly 65 million years ago and this collision would have given off so much dust into the environment that the sun rays would not be able to enter or shine and plants and animals would die. The debris in the atmosphere would

have obstructed the sun for a long time causing changes in temperature; the temperature would get cooler and caused severe interruption to photosynthesis. Dinosaurs could not adapt to the changes in climate that occurred from this huge collision and therefore they were not able to survive. Because plants energy comes from the sun, they would probably be affected first by the changes in climate. Even though having this much support to the evidence a few geologists did not believe in the Asteroid Theory and asked to show the crater where the meteorite must have fallen but the crater had buried in sediment. The elements were left behind in lots of amounts in the K-T layer where the collision happened. The impact would have also created forest fires and long term environmental changes. The speed of the asteroid would have been 100, 000 kilometres per hour approximately.

Another theory that shows how the dinosaurs were wiped off is volcanic theory. The consequences of volcanic activity could have caused so much ash and gasses added to the atmosphere which then blocked sunlight and creating difficult conditions for dinosaurs. The level of volcanic activity would also have given off greenhouse gasses which increased the Earth's temperature.

It has also been suggested that a disease killed off the dinosaurs. A very dangerous disease may have spread among all the dinosaurs causing them to become extinct. A disease might have wiped out all the dinosaurs if they had no cure, but the disease wouldn't kill off all the plants all around the earth.

Another theory is that the dinosaurs died during an ice age. During this time periods, temperatures drop, cooler temperatures may have killed all the plants and dinosaurs. Scientists have not found any evidence of an ice age that could have happened during the life of the dinosaurs.

A supernova explodes with plenty energy and can keep our sun burning for billions of years. A supernova is a star that gives off large volumes of energy. The chance of a supernova to occur is nearly one in a million. The increased amount of radiation from a supernova could have affected the Earth's ozone layer.

Effects on Marine Life

The amount of oxygen in the seas would have decreased. Many sea creatures would have died because of the collapse of the food chain. There could have been an increase of acid rain. The Asteroid effected species both on sea and land.

Deflecting a meteorite

To collision can only be avoided if we move the meteorite away or if the meteorite can split into small pieces so that they can burn up in the atmosphere by friction. The often move around very fast which makes it difficult to deflect it. If the meteorite is broken you would expect to get many small rocks instead of a large meteorite, but some of the small rocks may burn up in the atmosphere which is better than having a larger meteorite hitting the earth and causing problems

A graph to explain the extinction, climate and the amount of iridium

The climate is normal at the start of the Cretaceous period but during the end it eventually decreases and shows the evidence that climate change might have also caused the extinction. Cooler temperatures may have caused problems like the sunlight would not be able to shine. The dust from the asteroid would have blocked the sun.

The mass extinction shows the decline of the dinosaurs almost towards the end of the Cretaceous period and by the beginning of the tertiary period all of the dinosaurs had vanished.

“ The KT boundary sediments has high amount of element iridium shown, which is common in extraterrestrial material.”

Extraterrestrial material is a type of material or object that has fallen out of the Earth or its atmosphere and falls onto the planet. The page will explain the evidence about the two most proved theory.

Evidence about the asteroid theory

The evidence to explain the asteroid theory is that a crater was then found at around 1990, 150 miles in diameter named the Chicxulub crater which is located on the Yucatan peninsula. The crater was about 120 mile wide or across and 1 mile deep. Seismic monitoring equipment which is designed to hunt for oil discovered the huge crater. The iridium layer is what lead the Alvarez team to blame an asteroid collision for the extinction – asteroids and other extraterrestrial bodies are enriched with high amounts of iridium than the Earth's crust The asteroid theory has gained more evidence than any other of the theories

Evidence against Asteroid theory

The Asteroid theory has proved more evidence than any other theory; there is still a problem with the theory. Paleontologists have to find dinosaurs fossils related to the time period of the impact and some evidence explains that dinosaurs might have already been extinct before this impact. Actually dinosaurs had been declining slowly before the asteroid hit the earth. There have been a lot of mass extinctions in the past history and many large asteroid collisions. Even though there have been many of these collisions they haven't caused mass extinctions all around the world. The asteroid theory is still the most powerful theory to provide reasons for the extinction of the dinosaurs. Some scientist believe this impact did not cause the extinction of all the dinosaurs and other creatures, there could have been two or more collisions.

Evidence to volcanic activity

The dinosaurs could have died because of a volcano. A research explains that a volcano erupted in India.

The researcher said: “ Now we find that another catastrophe, which is Deccan Volcanism, which has not had much attention paid to it, may be the real culprit. Volcanic eruptions on India's Deccan plateau between 63 and 67 million years ago spewed huge amounts of sulfur dioxide into the air for around 10, 000 years”