

A volcano has the power to be extremely destructive, as demonstrated by the Cretaceous-Tertiary extinction, the eruption of Mount Vesuvius and Mount Pelee, and the threat of the Yellowstone supervolcano erupting. However, volcanoes also have the power to create unique ecosystems and preserve history, as seen by the formation of the Galapagos Islands and the preservation of Pompeii and prehistoric fossils. Therefore, volcanoes have the conflicting ability to destroy life, create life and preserve knowledge for future generations.

Volcanoes have the power to cause widespread terror and destruction. This is shown by the eruption of Mount Vesuvius in 79AD, which caused settlements on the Bay of Naples, including Pompeii, to suffer significant damage, and killed 16,000 people. Pliny the Younger, who witnessed the eruption, described being in "thick darkness" and hearing "shrieks of women" and "screams of children", presenting the event to have been ominous and terrifying. More recently, Mount Pelee, a volcano on the island of Martinique, erupted in 1932 and caused roughly 30,000 deaths.

Whilst the above eruptions caused devastation to local areas, a volcano also has the power to be incredibly destructive on a global scale with long-lasting effects, as illustrated by the Cretaceous-Tertiary extinction, which occurred 66 million years ago. This was a major event which caused the mass extinction of 75% of the species at the time, and is thought to have been largely caused by volcanic eruptions. It is believed that the large masses of carbon dioxide that were released during the eruptions caused an enhanced greenhouse effect, which led to a rise in sea temperatures and global warming. As a result, not enough oxygen could dissolve into the sea, and a significant number of marine species were starved of oxygen. Additionally, the release of poisonous substances from the volcanoes, such as mercury and sulphur dioxide, caused acid rain and severely harmed the flora. Consequently, the rest of the ecosystem which depended on the flora also died out.

It is feared that the Yellowstone supervolcano, located in Wyoming, USA, is also capable of causing a global catastrophe if it were to erupt. The release of large volumes of ash would block out direct sunlight and result in a cooling effect which could cause many species to go extinct due to the unsuitable climate. The above demonstrates that volcanoes have the power to be incredibly destructive as it can cause both local and global catastrophes.

However, volcanoes have also demonstrated the power to create and support unique environments. This is illustrated by the Galapagos Islands, a volcanic archipelago located in the Pacific Ocean. The land was formed by volcanic activity and is therefore rich in nutrients that are beneficial to the flora, allowing a huge array of rare plants to grow in the area. This also allows for a diverse population of fauna to inhabit the islands, as the variety and quantity of plants can support a wider range of animals, such as the rare land iguanas and giant tortoises. The plentiful food has allowed these tortoises to grow to lengths of more than 1.5 metres, making them the largest living species of tortoises.

Hawaii, another volcanic archipelago, provides a further example of the volcano's ability to create and support unique life. The rich, nutritious soils, called andisols, created by the decomposed volcanic debris, have allowed many species of coffee, grape vines and moss to grow in the ecosystem, as well as the rare argyroxiphium, which only grows on Maui's tallest summit.

Submarine volcanoes also display this ability. Thermophiles, a group of bacteria which can only live in temperatures between 41°C and 122°C, thrive near submarine volcanoes, where the heat from the volcanoes creates an ideal environment for them to thrive.

Finally, volcanoes have the power to preserve history and allow future generations to learn about the past. For instance, although Pompeii was destroyed by the eruption of Mount Vesuvius, it was also frozen in time by the volcanic ash and debris and is now one of the most well-preserved historical sites in the world. The thick layers of volcanic ash preserved the remnants of the people, foods and documents, allowing them to be studied and researched by modern day historians. Without the volcanic eruption and its preservative effects, Pompeii is likely to have been destroyed by war, natural disasters, erosion looters etc, like the majority of other ancient settlements.

Similarly, in Hubei, China, the fossils of many species of dinosaurs, birds and mammals have been found preserved by volcanic ash. These fossils were created by a series of volcanic eruptions that occurred 120 million years ago which released ash that covered and preserved the fossils. Thanks to the volcanic ash, these are some of the most well-preserved fossils ever to have been discovered.

Although the volcanoes caused the tragedy in Pompeii and killed the wildlife in China, the volcanoes also preserved them, which allowed them to last longer than most relics of their time. Thus, volcanoes have the ability to preserve history. This also allows future generations to better understand the process of evolution and the ancient civilisations that we would otherwise have very little information on. As a result, future generations can make greater advances in science, society and their understanding of the world.

In conclusion, volcanoes have the power to destroy, create and preserve. They have the power to be extremely destructive, and can pose an immense threat on a local scale, as shown in Martinique or, in some instances, the entire world, as seen in the Cretaceous-Tertiary extinction. However, volcanoes have also demonstrated the power to create and support a range of unique ecosystems and rare species, such as the Hawaiian argyroxiphium and the wide variety of flora and fauna on the Galapagos Islands. Finally, the preservation of Pompeii and 120 million year old fossils in China has shown that volcanoes have the power to preserve history and gives future generations an important opportunity to learn more about the past in a way that would otherwise be impossible.