

Genes

1. Variation

CONCEPT 3

LESSON GUIDE

EXTINCTION

PRECISE LEARNING POINTS

KNOW

I know the different causes for the extinction of a species.

APPLY

I can apply my knowledge to explain methods to prevent extinction of a species.

EXTEND

I can extend my knowledge to evaluate an extinction theory.

NOTES

Causes of extinction

Extinction of a species occurs when there are no more individuals of that species alive in the world. This is a natural part of evolution, but sometimes extinctions happen at a much faster rate than usual. For example, at the end of the Cretaceous period 65 million years ago, a mass extinction called the 'K/T event' caused the death of many different species. Natural causes of extinction include **climatic heating and cooling, changes in sea level, asteroid impacts and disease**.

Today human intervention is causing rapid extinction, which in turn is causing a rapid decline in global biodiversity. **Hunting, habitat destruction, the introduction of invasive species and the over-exploitation** of wildlife mean that many types of plants and animals are being pushed to the edge of extinction.

Methods to prevent extinction

Endangered species are those in danger of becoming extinct. **Gene banks** are a strategy being used to preserve the genetic material of a plant or animal that is endangered. For plants, this could involve freezing cuttings of the plant or storage of seeds in seed banks. For animals, this involves storage of genetic material from sperm, eggs, embryos or even blood in liquid nitrogen (-196°C).

Other strategies used to prevent extinction are **captive breeding, creation of protected areas and habitat creation**.

Extinction theories for the dinosaurs

Mass extinctions are periods in the Earth's history when abnormally large numbers of species die out at the same time or within a limited time frame. There have been five mass extinctions – the most recent, the K/T extinction (named so because it occurred between the Cretaceous and Tertiary periods) is the most famous because it caused the extinction of the dinosaurs.

Scientists have suggested several theories about the cause and one

widely held theory is that a huge asteroid hit the Earth; this is the '**impact theory**'. Other scientists believe that the extinction was more gradual and that **climate change** over time led to the demise of the dinosaurs. One theory is that increased **volcanic activity** changed the climate and dinosaurs could not adapt. It is suggested that iridium from the Earth's core could have been carried with these erupting volcanoes, explaining the iridium layer.

| Evidence | Explanation |
|--|---|
| The sedimentary clay layer that was laid down at the time of the extinction contains high levels of iridium. | Iridium is expected to be found only in the Earth's core, not on the surface, but is expected to be a component of an asteroid. |
| Soot is found in the clay layer. | A huge asteroid would cause fires on Earth. |
| Huge crater (180km) found in Chicxulub, Mexico age dated at 65 million years. | This ageing fits with the K/T time. |