

4. A study of palaeontology and past environments increases our understanding of the possible future range of plants and animals

Students learn to:

- **explain the importance of the study of past environments in predicting the impact of human activity in present environments**

It is interesting that Charles Darwin who is credited with helping to suggest the theory of evolution, which lies behind most of the concepts of modern Biology was greatly influenced by a Geology book. “The Principles of Geology” was written by Charles Lyell a friend of Darwin in the early 19th century. Lyell believed that the forces that are altering the earth today; slow mountain building and slow erosion have been the same forces that have shaped the earth for millions of years; floods, volcanoes and earthquakes are just parts of those forces. This gave enough time for the slow evolutionary changes that Darwin explained.

Humans are changing the earth today; altering its soil, water and atmosphere. We can only guess at the final effects of these changes but we can also look back to see how similar changes during the earth’s history impacted on the whole planet.

The “Nuclear Winter” scenario of dust clouds blocking the sun after a nuclear war MIGHT be similar to the dust released by the comet 65 mya that wiped out the dinosaurs.

Global warming and cooling have occurred many times in the past 50 million years. The greenhouse effect, caused by increased Carbon Dioxide levels might just be another example of global warming.

- **identify the ways in which palaeontology assists understanding of the factors that may determine distribution of flora and fauna in present and future environments**

By looking at changes of distribution of organisms that formed fossils over millions of years we may be able to predict the future spread of organisms around the earth. Placental mammals have overrun nearly all of the marsupial species in the last 5million years in South America. Is that the ultimate fate of marsupials in Australia???

- **explain the need to maintain biodiversity**

A constant environment will not select different animals but if we assume that the earth’s environment is changing then a wide range of genetic variation and a wide range of biodiversity will mean that as the environment does change then at least some of the organisms will survive.

Students:

- **gather, process and analyse information from secondary sources and use available evidence to propose reasons for the evolution, survival and extinction of species, with reference to specific Australian examples**

Overwhelmingly the two most critical changes to Australia have been the movement north from Gondwana and the consequent warming and drying of the continent and the arrival of Aborigines with their hunting methods and fire.

- **process information to discuss a current effort to monitor biodiversity**

Look up Wollemi Pine genetics or Eucalypt genetics on the Internet.