

The Theory and Mechanism of Evolution; Charles Darwin and Wallace

There are 1.9 million named and identified species, however approximately 8.7 million is the new estimated total number of species on Earth. The number has to be estimated because we haven't explored every part of the world and deepest part of the oceans. 6.5 million species on land and 2.2 million in the sea.

The most widely accepted **theory of evolution** is that all the species of living things alive on our planet today are descended from the first simple life forms that existed on Earth, and that this process was a gradual change, with new species arising from existing ones, whilst others became extinct.

By the 19th century, scientists were beginning search for a **mechanism** which might explain how this could have happened.

In the present day, the majority believe that mechanism to be Charles Darwin's theory of **Natural Selection**.

Darwin's Story

In 1831, Darwin was 22 years old when he sailed on the HMS Beagle. the ship was to sail around most of the world and he would make observations. On Galapagos Island, he saw species similar to the South American continent. As well as that, he analysed and collected 13 types of finch, but he wasn't sure whether they were actually different species. In 1836, Darwin returned home. In 1859, hearing that another scientist was about to put forward the same ideas as him, he was forced to publish and lose credit.

Darwin made Several Observations

1. Species naturally tend to overproduce ((too many offspring may lead to some not surviving) - not enough food).
2. Most population sizes are stable.
3. There is **natural variation** (in characteristics) between individuals of the same species in a population. (We now know that these variations are due to random mutations in **genes** that occur during cell division.
4. These characteristics (**genes/alleles**) are passed down (inherited) by offspring.