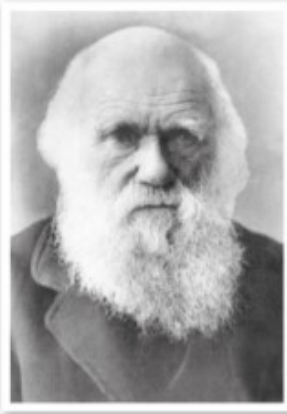


Darwin's Delights

Charles Darwin

Charles Darwin (1809–1882) was an expert in natural history who put forward a theory of evolution by natural selection. He went on a famous sea voyage in 1831 on a ship called HMS *Beagle* and visited many places around the world, collecting animal and plant samples. The observations he made led him to his theory of evolution. When Darwin's book *On the Origin of Species by Means of Natural Selection* was published in 1859, some religious people were very shocked that he was suggesting animals and humans shared a common ancestry.

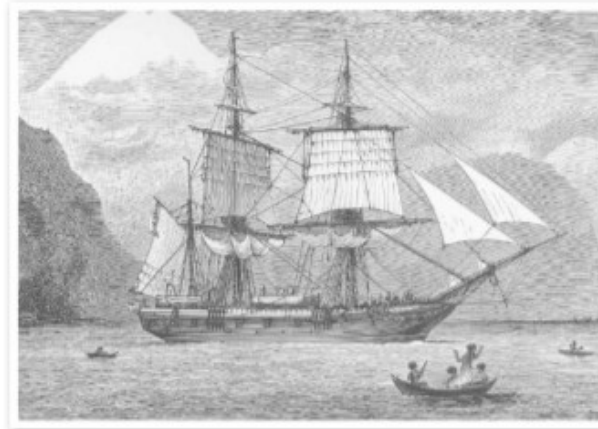


Darwin's investigations

Darwin was fascinated by the natural world and spent much of his time recording his observations and setting up experiments. During his time in the Galápagos Islands, Darwin made detailed observations about the finches, tortoises and mockingbirds he saw there. While living in Down House in Kent, Darwin continued his experiments in his 'outdoor laboratory' discovering much about plant growth, earthworm behaviour and bumblebee flight.

Route of HMS *Beagle*

On 27th December 1831, HMS *Beagle* set sail from Plymouth Harbour. It carried a crew of 73 men, including Captain Robert FitzRoy and Charles Darwin. It travelled across the Atlantic Ocean to South America where it stopped frequently, allowing Darwin to gather specimens. After spending five weeks in the Galápagos Islands, HMS *Beagle* travelled across the Pacific Ocean to New Zealand and Australia. The ship eventually arrived back in England on 2nd October 1836.

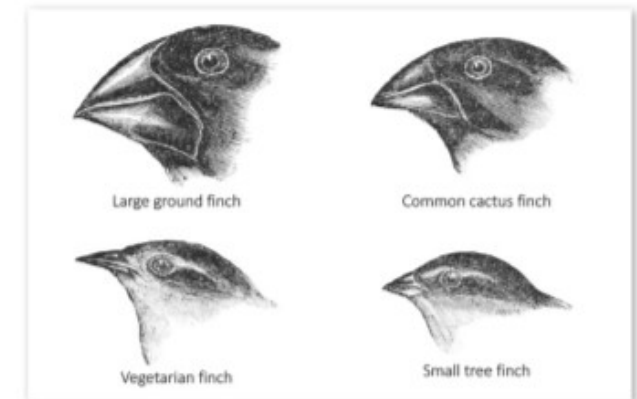


Galápagos Islands

The volcanic Galápagos islands lie 1000 km off the west coast of Ecuador in South America. There are 13 main islands, with several smaller islands and rocks. Darwin noticed that many species of animal, including land and marine iguanas, the blue-footed booby and the flightless cormorant, were only found on these islands. Darwin also noticed several different species of finch that all lived on the Galápagos Islands. Each had developed a different type of beak that best suited their diet.

Theory of natural selection

After studying the animals from the Galápagos Islands, Charles Darwin came up with the idea that animals evolve due to having the characteristics that make them best suited to their environment. He called this 'the survival of the fittest' or 'natural selection'. His idea was that in any environment, living things from the same species show natural differences in their characteristics. Darwin suggested that the living things that were best suited to their environment were most likely to survive and pass on their characteristics to their offspring. Over a long period of time, these characteristics can be seen in every animal.



Gregor Mendel

Gregor Mendel was an Austrian monk. In 1845, while working in the monastery garden, he experimented with pea plants. He discovered that particular features of each plant were passed on to their offspring. This supported Darwin's idea that characteristics were passed on from one generation to the next. Mendel put forward the idea that an offspring receives one unit of inheritance from each parent. These units are called genes, and Gregor Mendel became known as the father of genetics.

Darwin's timeline

- 1809** Born in Shrewsbury, Shropshire.
-
- 1825** Attends University of Edinburgh Medical School but fails to become a doctor.
-
- 1827** Attends Cambridge University in the hope of becoming an Anglican priest.
-
- 1831** Sets sail on HMS *Beagle* for a voyage around the world.
-
- 1835** Visits the Galápagos Islands, where he observes many species of plants and animals.
-
- 1836** Returns to England on HMS *Beagle*.
-
- 1839** **January** Elected a Fellow of the Royal Society, a group of the world's leading scientists.
May Publishes an account of his travels and discoveries on HMS *Beagle*.
-
- 1842** Moves to Down House in Kent, where many of his observations and experiments are carried out.
-
- 1859** Publishes his theory of evolution in *On the Origin of Species by Means of Natural Selection*.
-
- 1871** Publishes *The Descent of Man* that describes the evolution of humans.
-
- 1872** Publishes *The Expression of the Emotions in Man and Animals* that explains how humans and animals express their feelings in similar ways.
-
- 1882** Dies at Down House and is later buried in Westminster Abbey.

Fossils

The only way information can be obtained about evolution and animals and plants that are now extinct, is to examine fossils. Fossils are the preserved remains or traces of ancient plants and animals. They develop over millions of years, as the soft tissues of a dead animal or plant are slowly replaced with minerals from underground water. These minerals gradually harden to stone and the mud and sand surrounding the body slowly turn to rock.



Love to Investigate!

How have Eyes evolved?

The eye has evolved from simple light-sensitive eyespots into the intricate, complex structure seen today in humans and other vertebrates. Fossils and living animals have helped scientists understand the evolution of the eye. The vertebrate eye includes the cornea, lens and retina, which collect and focus light and send it to the brain to enable us to see.

Key vocabulary

blind spot, cornea, evolution, eye, iris, lens, optic nerve, pupil, retina, sclera

Where do wild plants grow?

Plants only grow in places and environments that they are suited to. Some plants can tolerate and adapt to differences or changes in their environment and some cannot.

Key vocabulary

Adaptation, distribution, environment, plants, quadrat, sampling

Glossary

- adaptation** A characteristic of a living thing that makes it suited to its environment.
-
- ancestry** The line of relatives from which someone is descended.
-
- evolution** The process by which living things gradually change over time.
-
- extinct** An animal or plant species that has died out and is no longer present in the world population, such as dinosaurs.
-
- fossil** The remains of a once-living organism preserved as rock.
-
- inheritance** The process of passing on characteristics, such as eye colour, from parents to their offspring.
-
- naturalist** A person who studies the natural world.
-
- natural selection** The process where organisms that are most suited to their environment are more likely to reproduce, and in doing so, pass on these adaptations to the next generation.
-
- natural world** The animals and plants that exist in nature and are not made or caused by people.
-
- species** A group of organisms that have common characteristics and can breed.
-
- variation** Natural differences between living things in a species.