

Here's how Darwin solved the planet's biggest puzzle...

The MYSTERY of LIFE... REVEALED!

Did you know...?
You can visit Darwin's home – Down House in Kent – and see the study where he wrote *On The Origin Of Species*!

Voyage of discovery

In 1831, the young naturalist, Charles Darwin, boarded the HMS Beagle ship and set out on a fantastic five-year voyage around the world to study and collect animal, plant and rock specimens. It was the start of a great adventure that gave Darwin the chance to see many exotic creatures – he was amazed at the variety of species!

The Beagle visited the remote Galapagos Islands off the coast of Ecuador, and here Darwin saw animals, collected specimens and made notes that would change the way people thought about the world!

Creature clues

While studying the specimens from the Galapagos, Darwin noticed that



When Darwin stepped onto the HMS Beagle, it was the start of a huge adventure!

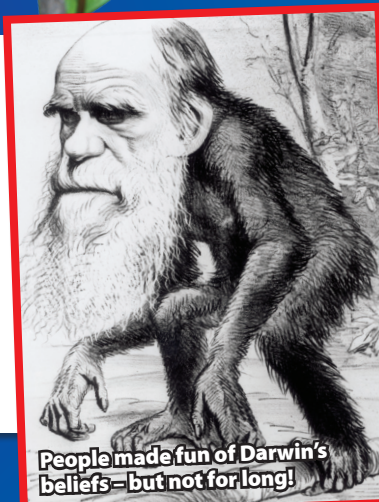
although the different islands had similar creatures and plants, many seemed to have adapted to suit their local environments. So, for example, the finches on each island had uniquely shaped beaks – each one suited to eating the different seeds on the various islands! Darwin wondered why these animals varied from place to place. So, when he returned to England, he devoted his time to trying to figure out the answer!



Darwin studied the islands' finches

HUMANS GO APE!

In another of his books, *The Descent Of Man*, Darwin explained how humans had evolved from ape-like creatures. At the time, there was little evidence to prove this, as only a few fossils of human ancestors existed. But later fossil finds in Africa proved that Darwin's theory was right! Check out your NG Kids *The Amazing Human Race* poster to find out more!

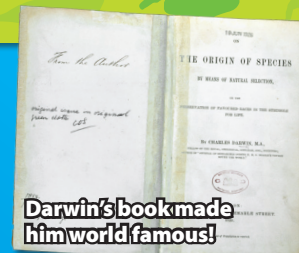


People made fun of Darwin's beliefs – but not for long!

Evolution solution

About 20 years later, in 1859, Darwin published his book *On The Origin Of Species*.

The book revealed how species adapt to survive in their environment and how new species can evolve (change or develop) over time through a process he called *natural selection*. This shocked everyone, as until then, it was widely believed that all the animals on the planet had been made at the same time, by one creator. With his book, Darwin scientifically proved that all the species on the Earth had evolved from earlier species – he had discovered how evolution works!



Darwin's book made him world famous!

What's the BIG idea?

Here's Darwin's theory of evolution...

1 No two creatures are ever exactly the same – even if they are the same species, there will always be differences. So, in a litter of puppies, perhaps one will have better hearing, or one will be able to run faster. These differences are called *variations*.

2 Variations can be passed on from parents to offspring. You can see it in animal and human families. You won't be an exact copy of your mum or dad, but there will be similarities. So, if your parents are tall, it's likely that you'll be tall, too. This is called *heritability*.

3 There's a fight for survival in the natural world, as more offspring are always born than can survive. So, creatures with variations that help them survive (like having thicker fur to keep warm) will live longer and have more offspring than others with less useful variations.

4 Survivors pass on their variations over generations until, eventually, the variations become common features in a species! Creatures can also adapt to their environments over time, to help them survive.

5 Some creatures can accumulate so many changes over time, that they can become a new species. They will be similar, but there will be some distinct differences from the original species. Wow!

6 Darwin concluded that all species on Earth had evolved in this way, and so every single species is related. How incredible is that?!

FOSSIL FINDS

The bones of extinct creatures – like the giant armadillo fossil Darwin found in South America – lead him to believe that, over time, animals can change to suit their environment. The giant armadillo kept growing smaller until it looked like the modern armadillo we know today! But fossils of some creatures show that they haven't evolved for millions of years. This is because their environments haven't changed much in that time!



The giant armadillo shrank over millions of years

IN DARWIN'S FOOTSTEPS

NG Kids caught up with our favourite naturalist, Sir David Attenborough, to find out more about his hero, Darwin...



Darwin made a BIG impression on David!

NG Kids Hi David! Can you tell us why Darwin is so important?

Sir David Attenborough Well, most of what we now know about the natural world comes from his theories. Darwin's ideas have helped

us understand how nature works – from plants to animal behaviour.

NG Kids Darwin's ideas made a really big impression, didn't they?

David Definitely! He changed the way in which

we look at the world. In Darwin's time, people believed plants and animals were only there for humans to use as they wished – for shelter, clothing and food. Darwin kicked off a new way of thinking – that the planet and its creatures aren't just there for our purposes.

NG Kids Is there more to discover about how evolution works?

David Yes, lots! There is still so much about the planet, its animals and plants that we don't understand, so scientists have a lot of research to do!

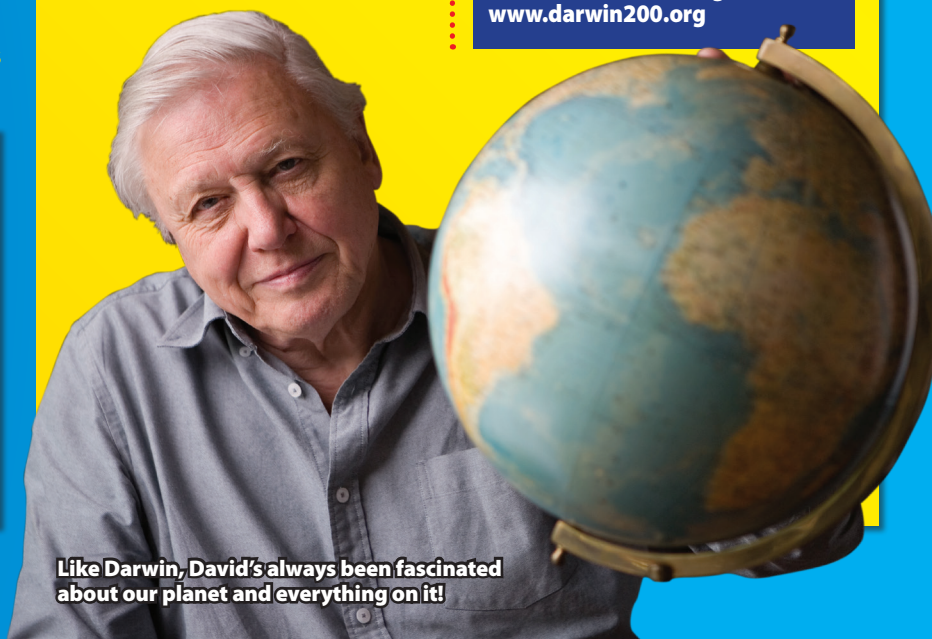
NG Kids Are humans having an effect on how animals evolve now?

David Sadly, yes. Humans are responsible for wiping out a lot of species through hunting and habitat destruction. We're also endangering many animals' survival, as their environment is being affected so much by climate change, they can't naturally adapt to survive in time.

NG Kids How do you think us humans will evolve in the future?

David Well, Darwin's idea about the survival of the fittest doesn't really apply to humans any more – our doctors are now able to keep many people alive for longer than is natural. But where we are evolving is in our brains – we learn and absorb more information than ever before. I think Darwin would be amazed to see that!

Look out for David Attenborough's fascinating programme, *Charles Darwin And The Tree Of Life*, on BBC One in February. Check out the *Darwin: Big Idea Big Exhibition* at the Natural History Museum, London, until 19 April. Go to www.nhm.ac.uk for more info. Darwin was born 200 years ago on 12 February! To find out about Darwin events, go to www.darwin200.org



Like Darwin, David's always been fascinated about our planet and everything on it!

HMS Beagle. On The Origin Of Species book: The Natural History Museum. David Attenborough (both) © BBC. Chimp: Illustration of Darwin, armadillo, finch, flower © Getty Images UK.