

WORDSEARCH

Find the following words in the puzzle.
Words are hidden horizontally, vertically and diagonally.

N V A R F I N C H E S A
G A L A P A G O S X X E
S A D A R W I N U X T V
E A L A O A B V R F O O
L N L A L A E O V O R L
E N A T U R A L I S T U
C A L T T A G U V S O T
T A L A U A L T A I I I
I A L A O R E I L L S O
O S P E C I E S S X E N
N V A R I A T I O N X X

BEAGLE
DARWIN
EVOLUTION

FINCHES
FOSSIL

GALAPAGOS
NATURALIST
NATURE

SELECTION
SPECIES

SURVIVAL
TORTOISE
VARIATION



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Charles Darwin's
**ON THE ORIGIN
OF SPECIES**



WRITING PROMPT

“The voyage of the Beagle has been by far the most important event of my life”.

Darwin sailed around the world on a journey that lasted five years. He wrote detailed notes on everything he saw and kept samples to take home with him. He then spent the rest of his life reviewing these notes and making links between what he saw and his theory of evolution.

Next time you go outside, take a notebook with you to make notes about the plants, animals and nature you see and hear around you. Pick up any fallen leaves, feathers, shells or maybe even fossils and bring them home. Then, like Darwin did, try and make links between what you saw and the environment you found them in.

Do the trees and plants vary in different areas?

Do the colours of the leaves or type of feathers you find relate to the time of year?

Did you see, or not see, certain animals because of time of day or weather or location?

By doing this you are using your evidence to prove what we know about the natural world.



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DARWIN'S THEORIES IN ACTION

Darwin's theory of evolution is based on the idea that members of a species share a common ancestor, and that species develop over time due to the natural selection of beneficial variations. Darwin's observations of the natural world provided the evidence for his ideas.

**THEORY:
INDIVIDUALS WITH
PREFERABLE VARIATIONS ARE
LIKELY TO SURVIVE FOR LONGER AND
PASS THEIR TRAITS ONTO OFFSPRING**

Evidence: In 19th Century Britain, peppered moths were white with black speckles on their wings. This meant they were camouflaged on the tree trunks they sat on. But as pollution from the Industrial Revolution turned trees black with soot, those moths born with a dark-wing variation suddenly became more likely to survive. Nature 'selected' the individuals with the best camouflage and soon the dark-winged peppered moths became more common.

**THEORY: NATURE ALSO STRUGGLES
WITH THE ENVIRONMENT**

Evidence: Darwin knew that animals became extinct due to evidence found in the fossil record. One example is the woolly mammoth, which had thick hides and fur to help it survive the freezing temperatures of the Ice Age. But once the climate warmed up, they were not suited to the new conditions and eventually became extinct. Individuals with variations better suited to the warm conditions evolved into the elephant we see today.

**THEORY: THERE ARE ALWAYS
SMALL VARIATIONS BETWEEN
INDIVIDUALS IN A SPECIES**

Evidence: Darwin noticed a huge amount of variation between the groups of animals he saw on his travels around the world. Back at home, he spent many years breeding pigeons to test this theory. Individual types of pigeon have different beak shapes, neck lengths and feather types but yet they all belong to the same species as they can all breed together.

**THEORY:
VARIATIONS THAT
HELP A SPECIES BETTER
SURVIVE IN THEIR
ENVIRONMENT ARE PREFERABLE**

Evidence: The animals Darwin saw when he visited the Galápagos islands inspired him. The finches on each island had different shaped beaks to suit the food available to them – seeds, berries or insects. The tortoises on the islands with less food available had evolved a shell that rose up at the front to allow them to raise their neck up to reach higher leaves.



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THEORY: VARIATIONS CAN BE PASSED FROM PARENT TO CHILD

Evidence: Darwin understood that variations could be passed down through generations as it had been demonstrated in farming for centuries. For example, farmers would naturally prefer cows that produced more milk. They would choose these cows to breed from to ensure the next generation also produced more milk.

THEORY: EVOLUTION TAKES TIME

Evidence: Before Darwin's time, people used the Bible to calculate the age of the Earth. They believed it was 6,000 years old. But by studying the fossil record, and looking at the diversity of life around him, Darwin couldn't accept this and suggested 300 million years had passed. Even without solid evidence, he trusted his instinct and was on the right track. We now know it is 4.5 billion years old!

THEORY: NATURE ADAPTS TO SURVIVE IN ITS ENVIRONMENT

Evidence: Darwin explored the hot and humid Amazon rainforest in South America on his travels and saw how it provided perfect conditions for plants to thrive. But as huge numbers of rainforest plants struggled against each other for space and light, he noticed that some, like the Venus flytrap, had unique variations to make them better suited to surviving in such a crowded habitat.

THEORY: ONE PARENT SPECIES CAN MODIFY INTO NUMEROUS NEW SPECIES

Evidence: The evolution of the horse and its hoof is the example Darwin focused on. Eohippus, which lived 50 million years ago, had four toes on its front feet. Then came Miohippus with two toes either side of a hoof. Later, Merychippus had two short toes either side of the main hoof. And today's horses, which appeared from the species Equus around 4 million years ago, all have a single hoof which is suited to its body size and grassland habitat.



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TIMELINE

1829

Darwin's friend and cousin, William Fox, introduces him to the hobby of collecting beetles and he builds up an impressive collection.

1828

Darwin begins his studies at the University of Cambridge on a path to become a clergyman. But he loses interest in this and instead spends much of his time developing his interest in nature.

12 February 1809

Charles Robert Darwin was born in Shrewsbury, England, to parents Robert and Susannah.

1825

Darwin heads off to study medicine at the University of Edinburgh, like his father and grandfather did before him, but he doesn't enjoy it and leaves the course.

1832-1834

Darwin and the HMS *Beagle* survey the east coast of South America. Darwin is fascinated by the rainforest and diversity of species found there.

January 1831

Darwin gains his BA from Christ's College at the University of Cambridge.

December 1831

Darwin's tutor at Cambridge recommends he join the crew on the HMS *Beagle* as a naturalist and they set sail from Plymouth, England on a five-year journey around the world.

October 1836

Darwin and the HMS *Beagle* return to England and he begins to write up his notes from the voyage.

December 1836

Darwin becomes a fellow of the Geological Society in London.

1839

Darwin marries his first cousin, Emma Wedgwood.

1837

Darwin presents his collection of Galápagos finches to the Zoological Society in London and John Gould identifies them as an entirely new group of species.

February 1835

Darwin experiences an earthquake in Chile and discovers signs that the land had been raised up by previous tremors. This encourages him to agree with the geological idea that Earth's surface is constantly moving.

September 1835

The ship reaches the Galápagos Islands and Darwin is amazed by the variety of wildlife. He collects samples of the finches found on the different islands and sends them back to England so they can be studied.

1858

Darwin exchanges his ideas about evolution with Alfred Wallace and both scientists present their theories together at a meeting of the Linnean Society of London.

1859

Darwin's book, *On the Origin of Species*, is published and it becomes a bestseller. His supporter, Thomas Huxley, champions the book in public as Darwin takes a back-seat due to ill health.

1871

Darwin's second book, *The Descent of Man*, is published and he is frequently mocked for his ideas that humans and apes share a common ancestor.

1842

Darwin and his family move to Down House, outside London, where he spends the rest of his life working on his theories about evolution by the process of natural selection.

1877

He receives an honorary doctorate from the University of Cambridge.

19 April 1882

Darwin dies and is given a ceremonial funeral and buried in Westminster Abbey - a great honour to recognise the importance of his life's work.

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