

# EXTINCT

## MEGALODON

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**Ben Garrod**

**Illustrated by Gabriel Ugueto**

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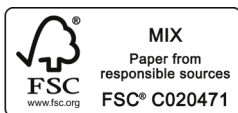
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Head of Zeus Ltd  
5–8 Hardwick Street  
London EC1R 4RG  
[WWW.HEADOFZEUS.COM](http://WWW.HEADOFZEUS.COM)

# WHY DO SPECIES GO EXTINCT?

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I **REALLY LOVE** spicy food. I love chilli so much that sometimes I even have it for breakfast. Weird, I know. But I also like growing chilli plants. I take the seeds from especially tasty and hot chillies, dry them and plant them in the spring, hoping for lots of plants to grow. But if I plant 20 seeds, only 10 little seedlings might appear after a few weeks. This isn't because I'm rubbish at growing chillies, but because not every seed is the same.

It's the key to the success of any species of animal, plant or any other type of organism. If every one of those chillies was exactly the same, they'd be genetic clones.



OK, there would still be differences, based on how much sun or water each gets, but at the level of their genes, their DNA would be identical. This isn't how nature usually works. Instead, every single individual is slightly different (even if they look the same) and each has a slightly different DNA *recipe*. It's this tiny variation that means species avoid going extinct every day. If something in the environment suddenly changes – making it harder to survive – that has a devastating impact on every individual.

Imagine if the temperature suddenly increases, or the levels of oxygen drop dangerously, or certain types of food that are regularly eaten disappear, then any individual within that population which, through random chance, is able to tolerate such a change stands a slightly higher chance of surviving. They're the ones that will pass on their genes and, over time, the entire population will bounce back. When there isn't enough individuality to survive such a change, or when that change is just too big to survive, then the species is likely to slip into extinction.



There are almost limitless reasons which might lead to extinction but they have one thing in common. They all focus on change. These changes can be either in the species' physical environment, such as the actual destruction of a habitat, flooding or drought. The change might be in its 'biological environment', such as the arrival of a new predator or the development of a new deadly disease. If the species does not have enough time to change or simply cannot change, it will die out and become extinct. There are a variety of general causes that can lead, directly or indirectly, to the extinction of a species or group of species.

## **DISEASES, PREDATION AND COMPETITION**



Diseases are often linked to extinction. Practically every species alive has its own set of diseases and those which it can pick up from other species. Back in 1999, New York City became the centre of a new disease outbreak. People became sick and ended up in hospital and, at the same

time, birds started dying in the city's zoo. Both humans and birds had fallen victim to West Nile virus, which is transmitted by mosquitoes. This was the first time the disease had been recorded in the USA and before long, millions of birds, from around 250 species, across the US, Mexico and Canada were either infected or dead.

In some areas, species numbers dropped rapidly by nearly 50 per cent. The risk was so great for some species, such as the critically endangered California condors, that scientists and conservationists developed vaccines to protect them from the disease and help prevent them from going extinct.





Usually, predators and prey live in some sort of balance. They have evolved side by side for hundreds of thousands, if not millions, of years. This is what we call coevolution, where the evolution of two species is closely tied together. But when a predator is suddenly introduced to an environment, the prey has no time to evolve to avoid being eaten. Once a predator is introduced into a new environment, there is often little that can be done to prevent the consequences.

Located in the middle of the Atlantic Ocean, 2,800km from South Africa and 3,200km from South America, Gough Island is among the most remote islands in the world. It is home to 22 species of seabirds and was always free from predators. However, house mice were accidentally introduced there by sailors during the 19th century and the mouse population then quickly exploded. Without pressure from their own predators, the mice evolved to become twice the size of their relatives on the mainland. And then they turned predatory.

When house mice were introduced onto the remote Gough Island in the Atlantic Ocean, they turned their attention to the seabirds that nest and raise their young there. Every year, the mice kill 1.7 million Tristan albatross chicks.





At night, they hunted nesting chicks which were not able to escape. Scientists estimate that each year, 1.7 million chicks are killed by the mice. Despite weighing around 10kg, almost a hundred times more than the mice, the Tristan albatross chicks are unable to defend themselves and are eaten alive.

So that the Tristan albatrosses are not pushed into extinction, conservationists have developed a huge programme in which poison is dropped across the island to kill the mice. Although some people don't like the thought of this, every single mouse needs to be removed if the birds are to have a chance. This will take a *lot* of time and a *lot* of money, but if we are to stop rare species from going extinct, then each situation needs to be dealt with in a different way. Sadly, we won't always love the ways we need to act to save different species.

Nature works in balance, where each environment evolves to have just the right combination of herbivores, carnivores and omnivores, predators and prey, and different types of plants, fungi and other organisms. It's like a big nature recipe and, as with any meal, too much of



any one of the ingredients can completely ruin the taste. Similarly, if an environment has too much of any one thing, then problems begin and, in the worst cases, species can be driven into extinction.

This can happen even with small organisms. Harlequin ladybirds first arrived in the UK in 2004 from Japan and became one of the most common ladybirds in the country. These 8–10mm-long beetles are one of the largest of the 40 or so species of UK ladybirds. The harlequin ladybird is able to outcompete the native UK species for their aphid and greenfly prey and is able to have multiple broods of young throughout the spring, summer and autumn, giving them an extra competitive edge.

When it comes to competition, resources in ecosystems such as food and shelter might be limited and cause species to be in direct competition with one another. If a species cannot compete, it's possible it may be driven into extinction.

