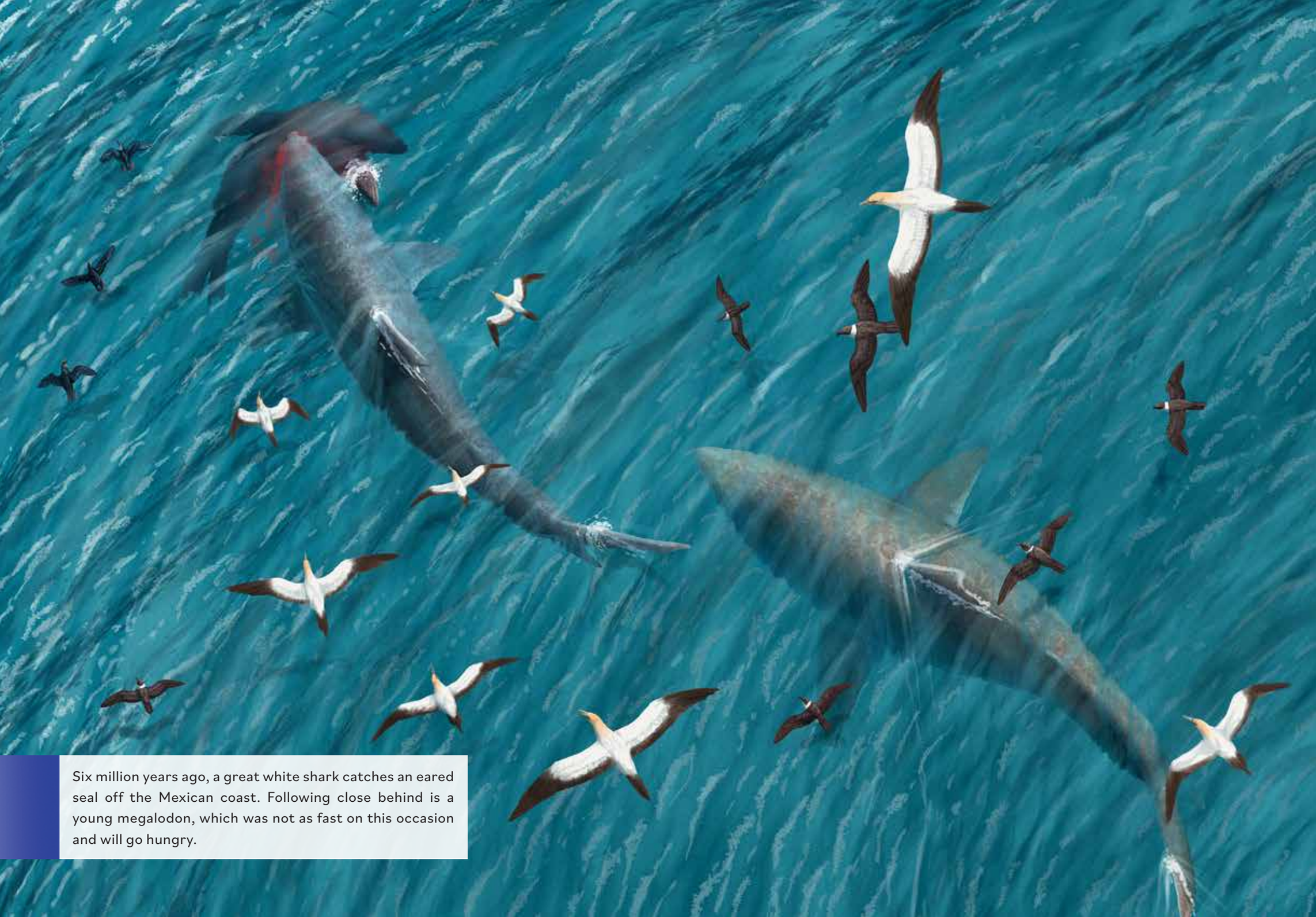
The 1.5m-long predatory mammal *Arctodictis* discovers a large dead *Nesodon*, but a male *Phorusrhacos* has found it first and does not plan to share. These giant flightless terror birds were among the dominant land predators in South America during the Miocene.



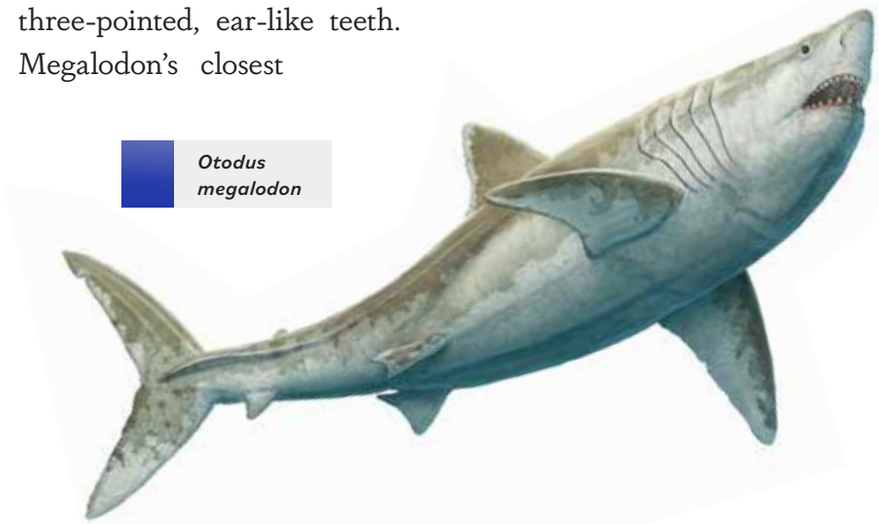
Six million years ago, a great white shark catches an eared seal off the Mexican coast. Following close behind is a young megalodon, which was not as fast on this occasion and will go hungry.

Cretalamna appendiculata

great white shark has not evolved from megalodon. In fact, the last ancestor they shared was well over 100 million years ago. In comparison, *you* share a common ancestor with a chimpanzee dating from five to seven million years ago.

The *Otodus* (O-tow duss) sharks get their name from the shape of their teeth. The name comes from the Ancient Greek words for 'ear' and 'tooth' because they looked (only very slightly) like sharp little ears, and although megalodon teeth definitely didn't look like ears at all, its closest relative and many of its ancestors did have distinctive, three-pointed, ear-like teeth. Megalodon's closest

Otodus megalodon



relative was *Otodus obliquus* (O-tow duss O-BLEEK uss). It lived 60–45 million years ago and was the largest shark around at that time, at about 9–10m in length.

Let's go slightly further back to what we now think is the direct family line for megalodon. Before *Otodus obliquus* there was *Cretalamna appendiculata* (CREE-ta lam-na a-pen-dik U-lar-ta), which gets the first part of its name from the Latin word for 'chalk' and the ancient Greek word for 'shark', because many of its fossils have been found in chalky areas. This ancestor of megalodon was smaller, at approximately 2–3m long, and lived around 105 million years ago, during the Late Cretaceous.

Understanding classification is never easy and it's a lot more difficult when we are looking at extinct organisms. When all that is left of those organisms is teeth, unravelling that classification can seem like some sort of fascinating but almost impossible piece of detective work! But we can look through the palaeontological record and see just how far back sharks go.

Otodus obliquus

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.

MEGALODON

WE LOVE LISTS! Whether we put things in order of the tallest, biggest or oldest, we seem to like putting things in groups and in some sort of order. With that in mind, what would you say is the ultimate prehistoric predator? Maybe the planet's first superpredator, *Dunkleosteus*, with its milliseconds-fast snapping jaws? Or a sabre-toothed cat like the giant *Smilodon*, with its long, deadly canines? Maybe you've gone with most people's favourite natural killer and you're imagining *Tyrannosaurus rex*, with her bone-crushing bite? We all have our favourites and it's actually really hard to compare predators that lived underwater, like pliosaurs, ichthyosaurs and other aquatic hunters such as *Dunkleosteus*, with land-dwelling killers such as *Spinosaurus*, *Velociraptor* and, of course, *T. rex*. And with