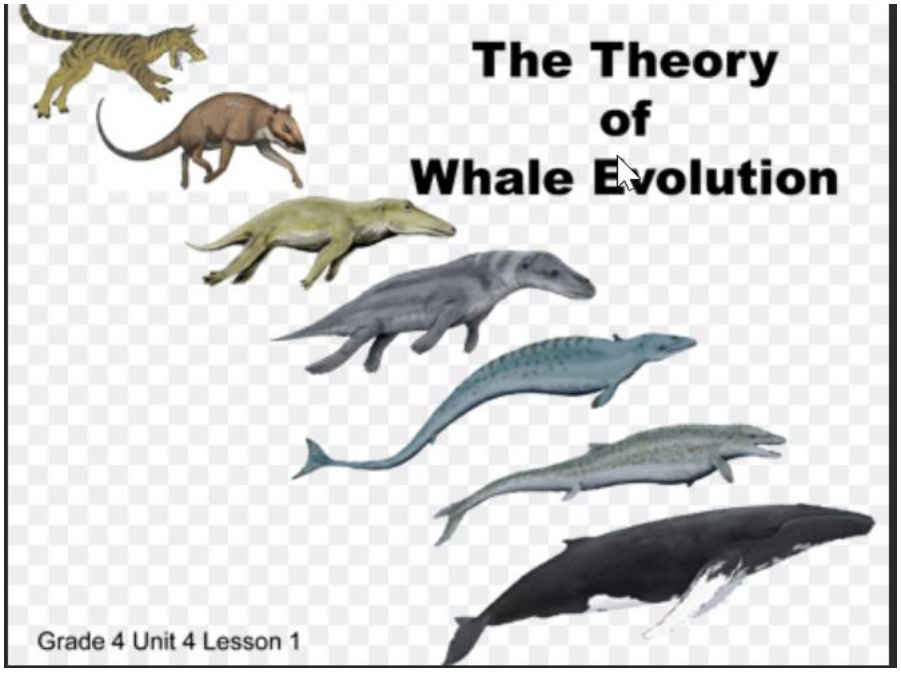
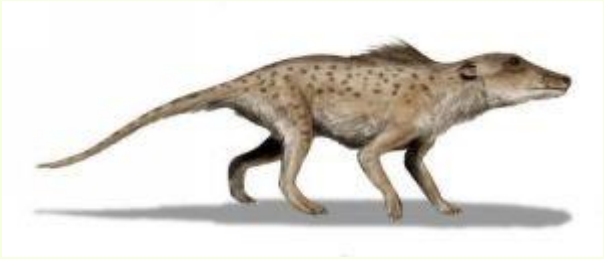
EVOLUTION OF THE WHALE

Whale evolution is one of the most fascinating examples of evolution that there is. Whales, like all mammals, evolved from reptiles, amphibians, and fish. Thus, over hundreds of millions of years they left the sea, grew legs, grew fur, and evolved lungs.



The Pakicetids



53 Million Years Ago

The pakicetids are a family of mammals that looked something like dogs with hooves. The feature that pakicetus shares in common with modern whales is their ears. Cetaceans have an ear structure that is unique to their order.

There is some resemblance in the teeth as well.

Pakicetids are land animals, and they begin the series of fossils that are believed to be the direct ancestors of whales.

Ambulocetids

Ambulocetus was like hitting the mother lode in whale evolution. It was the perfect intermediate between land mammals and sea mammals.

The ambulocetids have the cetacean ear structure. They have hind legs, but they are better adapted for swimming than for walking. They have an adaptation to their nostril that allows them to swallow underwater, and their ears are not external. They likely had to set their head on the ground to feel for vibrations in order to hear on land.

It's thought that they would lurk near the water's edge and snatch victims when they came to drink. It was about 9 feet long, and it lived 50 to 49 million years ago.

Kutchicetids

This lived about 46 million years ago. It was only about the size of a sea otter. We have the first development of mechanisms for transmitting sounds under water, which may have been used for some sort of communication, but, more importantly, lays the foundation for the later echolocation (sonar) systems known to be in dolphins and many modern whales.

Rodhocetids

A family of protocetids. It was the first aquatic whale, dating from 47 million years ago. It had large rear feet to paddle through the water with.

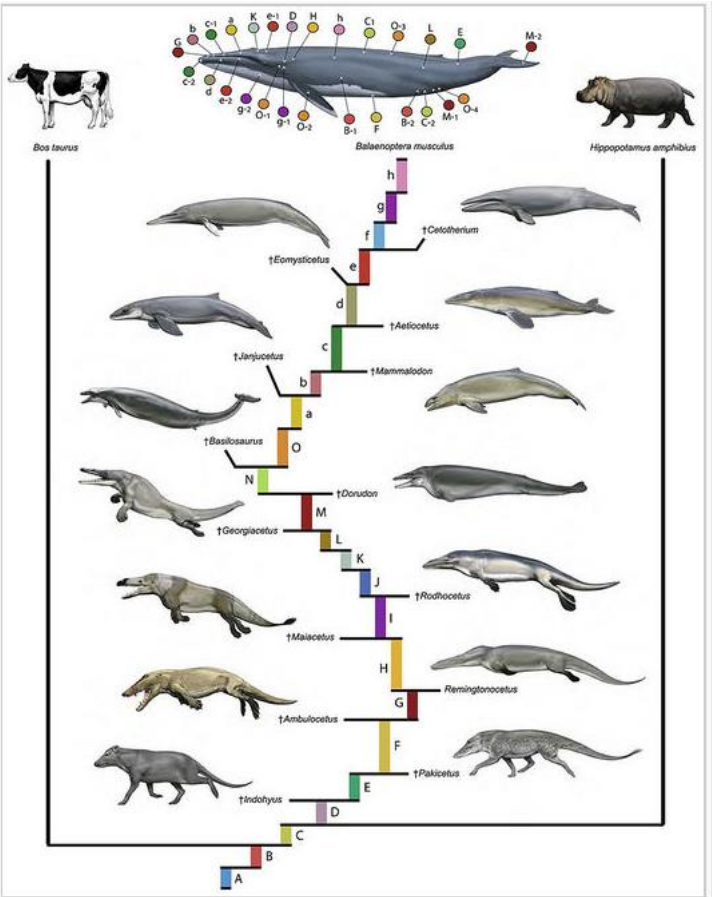
Rodhocetus and the protocetids represent a major advance in whale evolution.

Basilosaurus

Basilosaurus starts to resemble modern whales. It's quite large, up to 60 ft. long, and its pelvis is no longer attached to the vertebral column. All ability to support itself on its hind legs, which it still had, is gone.

It lived 40 to 34 million years ago.

This series of fossils takes us from a hoofed land animal to a marine animal with back legs that cannot support it in just a few million years. The spine has changed, the limbs have shortened, the nostrils have moved, the skull has changed in shape, and the brain has changed in its function.



TODAY

There are currently 90 recognised species of whales, dolphins and porpoises; they are collectively known as ‘cetaceans’ or simply ‘whales’**.** There are 14 baleen whales, 3 sperm whales, 22 beaked whales, 2 monodontidae (narwhal and beluga), 38 oceanic dolphins, 4 river dolphins and 7 porpoises.

Cetaceans are broadly divided into two groups, depending on whether they have teeth (odontocetes) or baleen (mysticetes).

Baleen whales, such as the blue whale, are sometimes called the ‘great whales’ due to their overall larger size. There are 14 baleen whales altogether: these whales have baleen plates in their mouths to sift their food - plankton, krill (little shrimps) and small fish - from seawater.

Whales are social, air breathing mammals, they feed their babies with their own milk, and they take extraordinarily good care of their young and teach them life skills.

Toothed whales account for all the remaining 76 species of whales, dolphins and porpoises and they all have varying numbers of teeth. Toothed whales eat mainly larger fish, squid, octopus and at times, other marine mammals.

So which cetaceans do we call ‘whales’? It isn’t very scientific but whales include all the baleen whales and the larger toothed whales such as the sperm whale, beluga, narwhal, and the beaked whales.