

WHALE HUNT: SEARCHING FOR WHALE FOSSILS: a SHORTER NARRATIVE More Suitable for Teacher-Directed “Whale Hunt”

1. We have NO fossils of **modern** whales earlier than about 25 million years ago (mya). However, for many years, we have been finding a number of fossils of various **primitive whales (archaeocetes)** between 25 and 45 million years old, and somewhat different from modern whales, e.g. with very **distinctive teeth**. An example of these early whales would be **Dorudon**. Place the **fossil picture strip of Dorudon** at about 36 mya on your timeline (actual range about 39-36 mya); (“mya”= millions of years ago).
2. As more fossils have been discovered from the early Eocene (55 to 34 mya), we searched for a land mammal from which whales most likely evolved. The group of animals that had features like those **distinctive teeth** that are also found in the earliest primitive whales, was called the **Mesonychids**. A typical example of these animals was *Pachyaena*. Mesonychids also had **hooves**, suggesting that whales may be related to other animals with hooves, like cows, horses, deer and pigs. **Place the Pachyaena strip** at about the 55 mya level on your timeline. Mesonychids lived from 58-34 mya.
3. In 1983, all we had were these primitive whales and mesonychids, with a big gap in between. This year, paleontologist Philip **Gingerich** was searching in **Eocene** deposits in **Pakistan**, and found the skull of an amazing fossil. It had teeth like the *Dorudon* whale, with whale-like **ear bones** and other features, but it was much older (50 mya), and there were indications that it had four legs. He called this *Pakicetus*, so **place your Pakicetus strip** on your timeline at 50 mya. Later, more complete fossils confirmed that it had 4 walking legs, with tiny **hooves!**
4. In 1990, in **Egypt**, **Gingerich’s** team found the tiny hind limb bones of *Basilosaurus*. There were lots of *Basilosaurus* skeletons there (once covered by the Mediterranean). *Basilosaurus* had first been discovered in the Appalachians of America. These new leg fossils were about 37 my old, so **place the Basilosaurus strip** at 37 mya on your time line. The legs were about 2 feet long, and useless for carrying the animal on land.
5. In early 1994, **Gingerich** was hunting in Pakistan again, in Eocene sediments, and found the fossil remains of a 4-legged early whale that was more recent than *Pakicetus*, and with more aquatic features (shorter legs, whale-like **ear bones**, skull with nostril between eyes and tip of nose). He called it **Rodhocetus**. **Place the Rodhocetus strip** at 46 mya. *Rodhocetus* also had tiny **hooves** on its toes!
6. NOW, notice the gap between the very terrestrial *Pakicetus* at 50 mya and the clearly more aquatic *Rodhocetus* at 46 mya. Talk with your partners about what you think an animal intermediate between *Pakicetus* and *Rodhocetus* might look like, and where you would most likely find that animal. Make a sketch of what you think it would look like.
7. After most of you have “made your predictions” (shown your drawings to your teacher), you will be shown the next discovery...
8. In late 1994, Hans **Thewissen** (one of Gingerich’s students) was searchingwhere?.....[right, **Pakistan**]... in 49 my old deposits, and found a nearly complete fossil of what he called “The Walking Whale” - *Ambulocetus*. **Place the Ambulocetus strip** at 49 mya years ago, between *Pakicetus* and *Rodhocetus*. It was about the size of a large sea lion, and with its huge hind feet, probably swam like an otter. It also had whale-like **ear-bones** and little **hooves** on its toes!