**ICHTHYOSAURS**

Mary Anning (1799 – 1847) was an English fossil collector, dealer, and paleontologist. She is known for important finds along the English Channel at Lyme Regis in Southwest England. Her discoveries included the first ichthyosaur skeleton correctly identified and the first two plesiosaur skeletons found. Her family was poor. Even as a young girl she worked to help support them. Despite this, she became well known in geological circles in Britain, Europe, and America. Nonetheless, as a woman, she was not eligible to join the Geological Society of London and she did not always receive full credits for her scientific contributions. Finally, in 2010, one hundred and sixty-three years after her death, the Royal Society included Anning in a list of the ten British women who have most influenced the history of science.

Ichthyosaurs (Greek for “fish lizard”) were large marine reptiles that thrived during much of the Mesozoic era; based on fossil evidence, they first appeared approximately 250 million years ago (MYA) and at least one species survived until about ninety MYA, into the Late Cretaceous.

There are more than 50 Ichthyosaur genera and they varied in size from 3 to over 55 feet in length. (Genera is a way biologists group similar species together. It is the first part of a species name. The picture to the left shows three different species, but they are all of the genus *Ichthyosaurus*.)

During the early Triassic Period, ichthyosaurs evolved from a group of unidentified land reptiles that returned to the sea, in a development parallel to that of the ancestors of modern-day dolphins and whales. They were particularly abundant in the later Triassic and early Jurassic Period, until they were replaced as the top aquatic predators by another marine reptilian group, the plesiosaurs in the later Jurassic and Cretaceous Period. In the Late Cretaceous ichthyosaurs became extinct for unknown reasons.¹

The ultimate resemblance of ichthyosaurs to dolphins and whales is a clear case of convergent evolution, the independent evolution of similar features in species of different animals. Convergent evolution creates structures with similar form or function, but that were not present in the last common ancestor of those groups.²

**Flippers**

Ichthyosaurs probably used their forefins (front flippers) to maneuver during swimming, as in living fishes, dolphins and whales. The limb skeletons went through a drastic modification as ichthyosaurs evolved. You can clearly see it by plotting the shape of the forefin skeleton along the family tree of ichthyosaurs, as in the figure below.

- **Platypertigius**
- **Petrolacosaurus**
- **Mixosaurus**
- **Margaraisia**
- **Brachypterygius**

We can make the following observations about the evolution of forefin skeletons in ichthyosaurs: (1) The lower arm bones became shorter and shorter along the family tree, although there are exceptions; (2) The finger bones also became shorter and shorter, and eventually became disk-shaped; (3) The number of finger bones increased early in the evolution; (4) The thumb disappeared at one point, and then additional digits (light blue) appeared on both sides of the remaining fingers.³

**Relative Body Size**

- Human
- Dolphin
- Elephant
- Squid
- Blue Whale
- Ophthalamosaurus
- Giant Squid
- Temnodontosaurus

**Relative Eye Size**

- Horse
- Elephant
- Blue Whale
- Ophthalamosaurus

**Huge Eyes**

At up to 40 feet in length, *Temnodontosaurus* had eyes 10 inches in diameter – the largest known eyes in the history of life. Their huge eyes allowed them to pursue prey in ocean’s dark depths.⁴

**Convergence**

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**Ichthyosaur Poster**

Ichthyosaurs became extinct for unknown reasons. Ichthyosaur parts including vertebrae and teeth have even been found in Travis County. They lived in Texas during the early Cretaceous Period, around 100-110 million years ago.

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