

Basilosaurus cetoides

What is it?

The *Basilosaurus* is an extinct, ancestral whale. Whales are mammals, and like other mammals, they suckle their young and have a large brain, a single jawbone, three ear bones, specialized teeth (one baby and one adult set) with double roots, and a secondary palate that allows them to breathe while eating (they eat a lot to fuel their “warm-blooded” metabolism).

The *Basilosaurus* probably utilized the Mississippi Embayment as a breeding ground. As with modern whales that migrate seasonally for breeding purposes, bulls sometimes get injured or killed as they battle for mates. Females sometimes die giving birth or from exhaustion or overheating while trying to save a sick or dying calf. Those that died would have been buried quickly and preserved in the soft ooze known as “Pachuta marl” that covered the sea floor in this area. The fossil remains of a calf have been found in this area.

Even though this species has been found in more than a dozen areas around the world (including Pakistan and Egypt), they are abundant in the state of Mississippi. Our Legislature has proclaimed the *Basilosaurus* to be the official state fossil.

Where did it come from?

The specimen on display is a composite of two individuals, both of which were discovered in Jasper County, Mississippi (only 80 miles from Hattiesburg). One was found by a farmer who was having a lake built on his land; it was excavated in March 1970, by a team from The University of Southern Mississippi. However, by the time the excavation began, curiosity seekers had taken many of the vertebrae. The bulldozer operator who had dug the lake claimed to have had 23 vertebrae in his garage. Unfortunately, they mysteriously disappeared after he said he would donate them to the museum. The other individual was located in an effort to assemble a complete specimen in the Museum of Natural History. Dr. Bobby Irby, then chairman of the Department of Science Education, and two doctoral candidates, Ted Wesley Reel and Edgar Gibson, excavated and prepared these specimens. Ted Reel processed and articulated the specimens. His dissertation describes the extensive work that went into preparing this display.

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Biological Sciences Learning Center

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Today, you cannot scan a newspaper or tune into a news broadcast without reading or hearing about biology and its impact on our lives. Over the last half century, we have witnessed unprecedented breakthroughs in genetics, molecular biology, and neuroscience, as well as significant advances in understanding the environment around us. Clearly, public understanding of the life sciences is critical to responsible decision making in our society, both public and private.

Created in 1997, the Biological Sciences Learning Center, formerly the Frazier Museum of Natural Science, is a focal point for the University's biology program. We are building a multipurpose Center that plays an important role in undergraduate instruction, teacher training in the life sciences, and outreach to the community.

The Center's experience-based learning environment incorporates an interactive, dynamic museum and modern instructional technology, including Web-based instruction. Biological Sciences is one of the University's largest academic units with nearly 800 majors. Most of the University's undergraduates satisfy their General Education Core laboratory science requirement by enrolling in our introductory biology courses, and virtually all of them pass through our Center – literally hundreds of students each semester. The National Science

Foundation has awarded the University and Department of Biological Sciences funds to adopt an investigative, inquiry-based curriculum for our introductory laboratory courses.

Our Center is an integral part of teacher preparation in the life sciences. The University enjoys a proud tradition of teacher education, and preparation of biology teachers is an essential activity of the Department of Biological Sciences. The National Science Foundation has funded instructional technology in our Center, supported teacher enhancement workshops, and provided support for experience-based laboratory curriculum.

We reach out to the community to improve biology education and scientific literacy through Center programs designed for all ages. Last year alone, faculty and graduate students working within the Center welcomed several hundred school-age youth plus their teachers and parents, several church youth groups, cub scouts, adult learners, and provided informal science education for all of our guests.

Welcome to our Biological Sciences Learning Center. Ask about our Biology Trail, interact with the displays, and see the fossil remains of a giant, the *Basilosaurus*....

Basilosaurus cetoides

When did it live?

When a mass extinction at the end of the Cretaceous Period swept away the dinosaurs, many small mammals were fortunate enough to survive. With the oppressive dinosaurs gone, the surviving mammals evolved rapidly, producing the great diversity of mammals in the modern world. The climate was warm (England was covered by a tropical jungle!), sea level was much higher than it is now, and the Gulf of Mexico extended as far north as Memphis, Tennessee, in what is called the "Mississippi Embayment." The state of Florida was completely submerged. The most distinctive marine organisms of the Eocene Epoch (which lasted from 57 to 34 million years ago) were the whales, which evolved from carnivorous land mammals and quickly achieved success as large marine predators, filling the niche left by the extinct giant swimming reptiles such as the mosasaurs and the ichthyosaurs before them.

How did it get its name?

Even though the name means "king of the lizards and reptiles," *Basilosaurus* was not a reptile. The physician/naturalist who named this animal, Dr. Richard Harlan, had been sent by a Louisiana judge only one vertebra to examine. He thought that the bone must have come from some type of giant, extinct marine reptile. After reading Dr. Harlan's report, an Alabama judge sent him more of the same kind of vertebrae. Three years later, in 1835, Dr. Harlan met with the celebrated anatomist and paleontologist, Sir Richard Owen, in London, England. After careful examination, Owen identified the animal as a primitive whale that exceeded 60 feet in length and suggested the more descriptive name *Zeuglodon cetoides*, which indicated the yokelike appearance of the cheek teeth and its whalelike structure (whales belong to the order Cetacea). However, the rule of taxonomy, stating that the first scientific name published shall be the only correct name, has prevailed. Therefore, the name *Basilosaurus cetoides* remains the official name.