



WHALES

WONDERS OF THE OCEAN

WHALES: WONDERS OF THE OCEAN TRAVELING EXHIBIT

Whales, the gentle giants of the sea, are one of the world's most magnificent and amazing creatures. Like you and me they are mammals and their ancestors once lived on land. Vertebrate evolution has always been known to be from the sea to land, however the origin of whales involved a transition from a terrestrial to an aquatic way of life. So how did they come to live in the sea? This astonishing 54 million year old story is told in Wonderwork's new traveling exhibition:

Whales: Wonders of the Ocean.

Cetaceans, or whales (a group which includes the animals commonly known as dolphins and porpoises) are unique from an evolutionary perspective because they are so different from their ancestors. The ancestors of whales were fur-covered land mammals that rarely entered the water, whereas whales today are fully aquatic and thrive in the oceans and seas. The ancestors were four-footed and hoofed for running on land, whereas whales today have forelimbs modified as flippers, lack external hind limbs, and move by pushing themselves through water using a powerfully muscled tail with a broad terminal water-foil called a fluke. The ancestors were omnivorous to herbivorous; in contrast, whales today are piscivorous (fish eating) and planktivorous (plankton-eating). The ancestors perceived their surroundings using their eyes and noses; however, whales today "see" their surroundings with their ears.

The exhibition is divided under four main themes:

1. Whale Evolution
2. Whale Biology & Anatomy
3. Modern Day Whales
4. Family Fun Area

SIZE

Minimum of
5,000 sq. ft. (450 meters)
Minimum ceiling height
of 12 feet (3.66 meters)

RENTAL FEE

\$100,000 USD
Three-month rental period
Plus inbound shipping
cost for 3 trucks

AVAILABILITY

Spring 2011
through Fall 2017

ADDITIONAL MATERIALS

Educational materials
Marketing materials
Operations manual



WHALE EVOLUTION

The remarkable story of whale evolution is told using a collection of fossil cast replicas suspended in front of a detailed wall mural. The mural depicts the striking changes that were transforming the landscapes and oceans starting shortly after the extinction of the dinosaurs, about 55 million years ago when Pakicetus walked the shores of the Tethys Sea. The mural cumulates with the Basilosaurids which were the first ancient whale to spread to all the oceans of the world some 35 to 40 million years ago. The mural shows the transformation of the ancient whales which has been skillfully woven into the tapestry of the mural itself providing the viewer with a feeling for the forces that shaped the outcome of this vast evolutionary drama. The ancient whale casts include:

Pakicetus - The Grandfather Of Whales

Pakicetus attockii lived on the margins of a large shallow ocean, the Tethys Sea, around 50 million years ago. Ear bones from Pakicetus show a feature that is unique to whales, placing it as the earliest known ancestor to modern whales. Although Pakicetus had a land animal's body, its head had the distinctive shape of a whale's.

Ambulocetus - Walking Whales

Ambulocetus natans means "walking whale that swims", referring to its lifestyle both in water and on land. It probably swam by paddling with its legs, and dived by tucking in its forelimbs and giving powerful kicks with its hind limbs. Ambulocetus lived in near-shore environments such as estuaries and probably came ashore to breed. It had thick, splayed-out legs, four-toed feet and a small hoof at the end of each toe and was about the size of a large sea lion.

Kutchicetus - Back To The Sea

Kutchicetus minimus, with its small otter-like skeleton, lived between 43 and 46 million years ago. Like other early whales, Kutchicetus lived in tropical seas. Its fossils are found in sediment that formed in shallow seas sheltered by barrier islands. Kutchicetus probably spent more time diving than Pakicetus. Hair was no longer needed, blubber gave insulation and helped with body streamlining, which in turn aided swimming.

Dorudon - Conquering The Seas

Dorudon lived between 34 and 40 million years ago and represents a group of whales called basilosaurids. The nostrils, or blowhole, had moved towards the top of the head. The structure of the ear bones suggests that basilosaurids could hear well under water. Forelimbs had become paddle-like flippers, while hind limbs were rudimentary. This kind of whale came to inhabit all the oceans of the world.

DID YOU KNOW?

Sperm whales can potentially live to 60 or 70 years of age. Males reach their physical maturity at 45, while females reach maturity at age 30.



WHALE BIOLOGY & ANATOMY

In this section of the exhibit visitors can explore the anatomy and biology of whales and learn about their extraordinary lifestyles. Themes explored include whale feeding, whale sounds, respiration, diving and size. Hands-on and participatory displays, skeletons and projection screens encourage children, adults and families to discover the beauty and wonder of whales.

Whale Feeding Display

Whales can be divided into two types by the way they feed—baleen whales (Mysticetes) and toothed whales (Odontocetes). Baleen whales are “batch feeders” that use their plates of baleen to filter huge numbers of tiny prey out of the water. Toothed whales hunt their prey one by one and use echolocation to find and usually swallow it whole. This display features cast specimens to illustrate different types of whales feeding.

Whale Sounds

The ability to produce and perceive sound is important for whales to navigate, find food and communicate. Visitors enter a sound chamber and can dial and tune in the voices of eight different whale species. Each whale makes a variety of sounds, throaty rumbles, melodious phrases, squeaks, whistles clicks and buzzes.

Life-Size Blue Whale Heart

Visitors can crawl through a life-size model of a heart of the largest animal to have ever lived, the blue whale. Inside the heart visitors will find colorful graphics and text panels describing the enormous size and weight of a blue whale; hear what a blue whale sounds like.

Please Touch Table

At the “Touch Table” visitors can touch a model of a sperm whale tooth, a rib of a gray whale, a narwhal tusk and baleen from a blue whale.

Sperm Whale Head Interactive

Visitors can view a life-size replica of a sperm whale head which is cut-away on one side and fleshed out on the other. The head shows that the whale’s nose was not for smelling but for breathing and controlling buoyancy while diving to nearly 10,000 feet and staying submerged for over an hour. The joy-stick controlled whale head allows visitors to make the whale breathe, dive and eat.

Northern Right Whale Head Interactive

The largest whales do not have teeth; they have enormous numbers of long flat strips of baleen organized to filter out shrimp-sized animals from the water. This display is a northern right whale head which is cut-away on one side and fleshed out on the other and shows how the whale opens its mouth while it swims through swarms of their “prey” while filtering. Visitors can make the whale filter feed and breath.

DID YOU KNOW?

The blue whale heart is the size of a small car, and a small child can stand in the major arteries leading from the heart.

MODERN DAY WHALES

This section of the exhibition discusses the amazing diversity and size of modern day whales. It provides information on all the world's whale species and explains why they are divided into two main groups: baleen and toothed whales. Static scaled models, fossil cast replicas and full-size robotic whales help convey the size variations and majesty of these wonders of the ocean.

Whale Diversity Graphic Panel

This graphic wall panel display features a large-scale graphic of all whale species. It focuses on whale diversity shows how whales are divided into two main groups, the baleen and toothed whales, and then further classifies them into individual species.

Whale Scale Model Case

Whales come in diverse sizes and shapes, from the blue whale, the largest animal on earth, to Hector's dolphin the smallest member of the whale family. This display contains six scaled 1:15 models of whales and helps visitors to visualize the huge range of size and shapes of modern day whales, as compared to a scale model of a human. Whales included are:

- Blue whale
- Sperm whale
- Humpback whale
- Gray whale
- Orca whale
- Hector's dolphin

Life-size Robotic Whales

In this area visitors will come face to face with three life-size robotic modern day whales. Graphic text panels, touch-screen displays and projection screens offer visitors a sense of the underwater environment these creatures live in. Visitors will experience the scale and movement of these incredible marine mammals filmed in their own world.

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DID YOU KNOW?

The longest humpback whale ever accurately measured was 57 feet long. Most are 40-50 feet in length.





DID YOU KNOW?

Beluga whales are, in fact, the smartest animals on earth with an average I.Q. of 155, a level that would be considered near genius in humans.

Gray Whale

The gray whale is one of the animal kingdom's great migrators. Traveling in groups called pods, some of these giants swim 12,430 miles (20,000 kilometers) round-trip from their summer home in Alaskan waters to the warmer waters off the Mexican coast. Gray whales are often covered with parasites and other organisms that make their snouts and backs look like a crusty ocean rock. The whale uses its snout to forage by dislodging tiny creatures from the seafloor. It then filters these morsels with its baleen — a comb like strainer of plates in the upper jaw.

Orca

Orcas, or killer whales, are the largest of the dolphins and one of the world's most powerful predators. They feast on marine mammals such as seals, sea lions, and even whales, employing teeth that can be four inches (ten centimeters) long. They are known to grab seals right off the ice. They also eat fish, squid, and seabirds. Killer whales hunt in deadly pods, family groups of up to 40 individuals. Though they often frequent cold, coastal waters, orcas can be found from the Polar Regions to the Equator.

Humpback

Humpback whales are known for their magical songs, which travel for great distances through the world's oceans. These sequences of moans, howls, cries, and other noises are quite complex and often continue for hours on end. It is most likely that humpbacks sing to communicate with others and to attract potential mates. Humpbacks are powerful swimmers, and they use their massive tail fin, called a fluke, to propel themselves through the water and sometimes completely out of it.

FAMILY FUN AREA

This area of the exhibit is made especially for children and family activities. The area includes: Whale Watcher Stamp Stations, a Whale Theater, a visitor controlled robotic baby whale, a whale photo opportunity and a "Whale-Tales" area where children can read about and pretend to be a whales.

Note: The exhibition is under development and content may changed or be added to. Please contact Wonderworks for current information about the exhibit.

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