Tylosaurus

Tylosaurus dypterus
Squamata • Reptilia • Chordata

Tylosaurus (tie-lah-soor-us) was a marine lizard of the Cretaceous period, 100 million years ago, that grew up to 45 feet long. A recently discovered close relative may have been 56 feet long. Tylosaurus was one of the largest mosasaurs, or sea lizards, related more closely to present-day lizards than to the plesiosaurs they resembled or to any of the dinosaurs.

Tylosaurus's body and tail were flattened from side to side and it swam by making back-and-forth undulations like a sea snake. The thin, webbed flippers were small and were used only for steering. Tylosaurus had large, conical teeth for catching fish and crushing shelled sea creatures. The lower jaw had an extra joint midway down its length, enabling Tylosaurus to open its jaws extra wide. Its nostrils were situated on top of its head, like a whale's, enabling Tylosaurus to breathe while remaining almost completely submerged. Fossils have been found in northern Europe and Kansas.
Steller’s Sea Cow

Rhytina stelleri
Sirenia • Mammalia • Chordata

Once found only in the frigid waters around islands in the Bering Strait between Alaska and the Soviet Union, Steller’s sea cow was the largest of the Sirenia, plant-eating mammals probably related more closely to elephants than to the seals, walruses, and whales they resemble. From 28 to 35 feet long, Steller’s sea cow, like its smaller cousins the manatee and dugong, had a front like a walrus’s and a tail like a whale’s. The head held two tiny eyes, almost hidden among the wrinkles and rolls of blubber. Its huge, split upper lip, studded with long, strong bristles, was used to nip off seaweed. It was always eating to support its huge bulk. Steller’s sea cows lived in herds. They were often seen to float vertically with their heads held high out of the water.

In 1742, Georg Wilhelm Steller, a German doctor with the first Russian expedition to the area, became the only trained scientist ever to see a Steller’s sea cow alive. There may have been as few as 1,500 individuals left at the time. By 1770 the peaceful sea cows had been slaughtered to extinction for their meat.
**Sea Scorpion**

Pterygotus buffalokensis  [extinct]
Eurypterida • Chelicerata • Arthropoda

The sea scorpion, a meat-eating underwater relative of the modern horseshoe crab, grew up to 9 feet long. It lived in coastal lagoons 500 to 360 million years ago, from the Ordovician through the Devonian period. It probably preyed on the very first vertebrates, seeking them with its many-faced eyes and snatching them with huge pincers called chelicerae, which were not limbs but extended mouth parts positioned in front of the first pair of limbs. Scientists believe that the sea scorpion crawled rightside up but swam upside down. Like the horseshoe crab, its paddle-shaped rear limbs moved like oars and the plates on its belly fanned the water. Its flattened tail could have been flapped for rapid acceleration toward prey or away from predators. Fossils have been found in North America, Australia, and Europe.

**Dinichthys**

Dinichthys terrelli  [extinct]
Arthrodira • Placodermi • Chordata

Dinichthys (die-kish-thiss) was one of the largest of the placoderms, prehistoric fish that had bony armor protecting the forward parts of the head and body. The largest Dinichthys grew up to 30 feet long and was one of the biggest animals of the Devonian period, some 350 million years ago. Dinichthys was a ferocious predator that ate primitive sharks and armored fish. Its powerful jaws could crack their armor. Dinichthys had no true teeth. Instead, fingerlike projections of sharp bone jutted out from its jaws to serve the same purpose. Bone enveloped its head and the forward portions of its back, and a flattened chest plate protected it underneath. Even its large eyes were protected by a ring of bone. The rest of its body was without armor. Dinichthys swam with side-to-side sweeping movements of its long tail and used its fins for steering. Fossils have been found in Europe and North America.

**Giant Spider Crab**

Macrura kempferi
Decapoda • Crustacea • Arthropoda

Sometimes called the stilt crab, the giant spider crab is the largest living arthropod, cold-blooded animals with hard coverings of chitin over their segmented bodies and many-jointed legs. The crab’s body is only 12 to 14 inches long, but the span from pincer to pincer can measure up to 12 feet, and unconfirmed measurements of 19 feet have been reported. The giant spider crab can weigh up to 41 pounds.

Found in the deep seas surrounding Japan, the giant spider crab has small, 5-inch pincers at the ends of its enormously long arms. They are used in fighting, digging burrows, and catching fish. The crab’s long legs help it to walk through the soft ooze of the deep-sea bottom.

**Archelon**

Archelon ischyrs  [extinct]
Chelonia • Reptilia • Chordata

Archelon (ark-uh-lon), a giant marine turtle of the Cretaceous period 70 million years ago, was the largest turtle ever, measuring up to 14 feet long and weighing up to 4,000 pounds. The largest living sea turtle, the leatherback, measures up to 8 feet 4 inches long and weighs up to 1,908 pounds.

The ancestors of Archelon were land turtles, which evolved flippers as they became seagoing reptiles. Like that of the leatherback, Archelon’s back consisted of a framework, not a solid mass, of widened ribs and backbone, and its “shell” was a tough layer of skin, in place of the horny shell of enlarged scales present on most other turtles. Like all turtles, Archelon had no teeth, but its jaws were powerful and sharp, with hooked tips. It ate shellfish, fish, and some plants. Archelon had to surface periodically to breathe and probably came ashore only to lay eggs, like a modern sea turtle.
Arctic Lion’s Mane Jellyfish

*Cephea capillata arctica
Semaeostomeae • Scyphozoa • Coelenterata

Found in all northern waters and named for its dusky yellow fringe of tentacles, the Arctic lion’s mane jellyfish is by far the largest jellyfish in the world. The bell of this giant can be 7½ feet wide, and the streaming tentacles can extend for 120 feet. There are reports of specimens with tentacles 273 feet long, but these are considered unreliable. Typically the Arctic lion’s mane jellyfish has a bell 3 feet wide, and its 1,200 tentacles may reach 75 feet in length. It is futile to remove a giant jellyfish from the water to weigh or measure it. Only two layers of cells make up the body, and it disintegrates without the support of water all around.

This jellyfish swims by drawing its body together and expelling the water within the bell. Both food and waste materials pass through the mouth, the only opening in the body, located beneath the central umbrella. The Arctic lion’s mane jellyfish eats any small marine organism that swims too close to the poisonous stinging cells on its long tentacles, which may be fatal to human swimmers as well. To capture prey, this giant jellyfish sinks slowly with its tentacles spread out in a wide net covering over 500 square yards. On contact, a stinging tentacle contracts to ¾ its size in less than a second, bringing the prey within reach of curtainlike oral arms. These draw the victim up to the mouth to be digested.

Jellyfish are among the most ancient of animals, leaving fossil impressions that date from some 750 million years ago.

Giant Squid

Architeuthis dux
Decapoda • Cephalopoda • Mollusca

The giant squid may reach a length of 55 feet, including its 35-foot tentacles, and may weigh up to 4,480 pounds. Giant specimens are rare; 6½ footers are the common variety. Giant squids are found in all the oceans, but the largest live at the extreme depths of the North Atlantic, where light cannot penetrate and humans rarely venture.

The giant squid has eight thick arms and two slender tentacles. The arms are double-lined with sucking disks for seizing and holding prey. The tentacles, with sucking disks clustered at the enlarged ends, are used to shoot out and grab prey, pulling it back within range of the arms. The giant squid has a horny, parrotlike, beak-shaped mouth in the center of its arms and a rasping tongue called a radula. Its eyes, among the most advanced of invertebrates, may measure up to 9 inches across.

The giant squid’s rocket-shaped body has fins on the back end and is softened by an internal layer of horny material. The animal swims slowly, with rippling movements of its fins, but it may jet away with incredible acceleration by forcibly ejecting water out a mobile funnel below the head. The funnel is flexible so that the squid can accelerate in any direction and make sharp turns as well. The giant squid may also eject a foul, inky fluid that acts as a smoke screen to confuse its enemy, the sperm whale, which often bears circular scars left by the squid’s sawtooth-edged suckers.
GLOSSARY

amphibious Cold-blooded backboned animals that breathe with gills underwater until maturity and breathe air as adults; includes frogs and salamanders.

arthropods Cold-blooded backboned animals with a shell and jointed legs, such as insects, shrimp, and crabs.

dachsen Teeth that hang from a whale's jaws in large sheets to form a sieve for filtering food from seawater.

canine teeth The large pointed teeth between the front teeth (incisors) and back teeth (molars) in mammals.

carnivores Meat-eating mammals.

carrion Dead and decaying flesh.

carriage Whirls, tough yet flexible tissue that supports and shapes many parts of the body, but is not as rigid as bone.

cilia A hairlike substance that forms the walls of intestines, crabs, and other arthropods.

coealcanus Animals that breathe with gills or lungs and also have a spinal cord, perhaps with a backbone to protect it.

cocelouresa Simple backboned animals consisting of little more than skin, tentacles, mouth, and stomach; includes jellyfish.

cold-blooded Any animal whose body temperature rises or falls along with the temperature of its surroundings.

crustaceans Arthropods with many jointed legs and two pairs of antennae, such as crabs.

depth perception The ability to judge the distance of objects from oneself.

dinosaurs Extinct land reptiles, usually large, with legs placed directly under their bodies instead of outspread to the sides.

dorsal fin A fin on the back of an animal, usually an aquatic one.

echoolocation See sonar.

embryo An unborn animal during the earliest stages of its development.

evolution The history of the gradual change and development of different species.

extensible jaws A mouth with special joints that let it open very wide to take in food.

extinct No longer existing; specifically, when all of the individuals of a particular species are presumed to be extinct.

fossil The remains of a living thing that has turned to stone.

gestation The gradual development of the young within the body of the mother before birth.

gills The blood-filled organs that most fish and young amphibians use to obtain oxygen from water for breathing.

incubate To keep an egg warm so it will hatch.

insulation A covering like feathers, hair, or blubber that keeps an animal warm.

invertebrates Animals without a backbone.

mammals Warm-blooded backboned animals that feed their young with milk from the mother's body, such as humans, bears, and whales.

marsupials Mammals whose females have an external pouch for carrying the underdeveloped young, which includes kangaroos.

mollusks Cold-blooded backboned animals with soft bodies that are usually enclosed in a hard shell, such as clams, snails, and (shell-less) squids.

necrotical Active at night.

nympha Immature insect young, usually without wings.

plankton Small-to-microscopic-size plants and animals that float in water.

predator An animal that kills other animals for food.

prehensile An organ, such as a hand, that can grasp or wrap around an object.

prehistoric The time before written languages existed.

primates Mammals with nails, not claws; forward-looking eyes, prehensile hands, and sometimes prehensile feet and tails.

reptiles Cold-blooded air-breathing backboned animals that are usually covered with scales, such as snakes and lizards.

resonating chamber A space inside an animal that amplifies sounds, usually for mating calls.

scavenger An animal that feeds on animals it finds already dead.

serrated Having tiny saw-like teeth on an edge for improved cutting.

sexual maturity The age when male and female animals develop the ability to mate and produce young.

sonar A way of detecting objects by sending out a series of sounds and then listening for the echoes reflecting off the object.

species A group of animals or plants with similar characteristics and the ability to breed with one another and reproduce themselves; the basic unit of scientific classification.

vertebrate The bones of the backbone, from the neck bones to the tail bones.

vertebrates Animals with a backbone made of bone or cartilage.

vestigial digit A finger or toe that is so small and poorly developed that it is of practically no use.

warm-blooded Animals with the ability to create and maintain body heat regardless of the temperature of their surroundings.

Giant Squid (left)
David Peters is a St. Louis–based freelance commercial artist who is self-taught. He graduated from the School of Journalism at the University of Missouri in Columbia. Like many children, he had an early interest in dinosaurs, whales, and sharks, and at the age of 31 expressed his interest in this, his first book.
Run past a dinosaur...

swim alongside a whale...

dodge a giant dragonfly or snake...

Find out just how big the giants of yesterday and today really are. Seventy-one of the largest animals of all time are compared to us and to each other in stunning full-color paintings, all drawn to the same scale. Fold-out sections open to show the biggest of the big...stretching out for page after page after page. A capsule biography of each giant describes its life—and fate—on earth.