

Important Dates and Cool Creatures in Earth History



Numbers shown for eons, periods, and epochs in the following list are in millions of years before the present, and are based on the [International Stratigraphic Commission's 2003 time chart](#). Eons are the largest subdivisions of time, then periods, then epochs. Relative ages of important dates and creatures are also in millions of years before the present.

List compiled by Stephen Greb, Kentucky Geological Survey

Hadean time

(beginning of Precambrian time)

- 4,600 Beginning of the Earth based on data from meteorites.

Archean Eon (From oldest rocks on earth to 2,500 million years ago)

- 3,800 Oldest age-dated rocks on the present surface of the Earth.
- 3,500 Fossil evidence of cyanobacteria, also called blue-green algae. These cellular organisms lived in large mounds, called stromatolites. Stromatolites dominated the world for the next 2 and a half billion years.

Proterozoic Eon (2,500 to 542 million years ago)

(Latter part of Precambrian time)

- 1,750 Oldest fossil evidence of single-celled life with a nucleus (eukaryotes).
- 1,500 Oldest fossil multi-celled (metazoan) organisms, algae.
- 670 Oldest fossil jellyfish and marine worms.

Phanerozoic Eon (542 million years ago to the present)

Paleozoic Era (542 million to 245 million years ago)

Cambrian Period (542 to 488 million years ago)

- 542 The “Cambrian Explosion.” Appearance of brachiopods, and trilobites.
- 530 Oldest fossil vertebrates, also the oldest fossil fish.

Ordovician Period (488 to 443 million years ago)

- 470 Oldest fossil evidence of land plants. The first plants looked like lichen.
- 440 End-Ordovician mass extinction.

Silurian Period (443 to 416 million years ago)

- 428 Oldest fossil evidence of vascular land plants, *Cooksonia* .
- 428 Oldest fossil evidence of land animals, *Pneumodesmus*, a small millipede.

Devonian Period (416 to 359 million years ago)

- 412 Oldest fossil insect, *Rhyniognatha* .
- 412 Oldest fossil lungfish, *Youngolepis* and *Diabolepis*.
- 409 Oldest fossil shark, *Doliodus* .
- 380 Oldest fossil large trees, *Eospermatopteris* (gymnosperms).
- 375 Oldest fossil amphibian, *Acanthostega* .
- 375 Oldest fossil trees with bark (woody tissue) and leaves, *Archaeopteris*.
- 360 End-Devonian mass extinction.

Carboniferous Period (European term which equals the combined Mississippian and Pennsylvanian Periods in the United States)

Mississippian Period (359 to 318 million years ago)

- 330 Oldest fossil evidence of conifers, seed-bearing plants with cones.

Pennsylvanian Period (318 to 299 million years ago)

- 320 Oldest fossil evidence of reptiles, *Hylonomus*.
- 320 Largest land arthropod of all time, *Arthropleura* .
- 315 Oldest fossil evidence of flying insects, and therefore natural flight.

Permian Period (299 to 251 million years ago)

- 299 Sail-backed, mammal-like reptiles (synapsids), like *Dimetrodon* .
- 251 The End-Permian, also called the End-Paleozoic Extinction. The greatest mass extinction of all time.

Mesozoic Era "Age of Reptiles" (251 to 65.5 million years ago)

Triassic Period (251 to 199 million years ago)

- 228 Oldest dinosaur fossil, *Eoraptor* .
- 221 Oldest mammal fossils (they looked like shrews).
- 210 Oldest turtle fossil, *Proganochelys* .
- 199 End-Triassic mass extinction.

Jurassic Period (199 to 145.5 million years ago)

- 155 Oldest fossil bird, *Archeopteryx* .
- 150 *Seismosaurus* , possibly the longest land animal of all time.

- 149 *Liopleurodon* , the largest carnivorous (meat-eating) animal of all time.

Cretaceous Period (145.5 to 65.5 million years ago)

- 142 Oldest flowering plants (angiosperms), *Archaeofructus*.
- 110 *Sauroposeidon* , perhaps the tallest dinosaur and land animal of all time.
- 105 *Argentinosaurus* , perhaps the longest dinosaur and land animal of all time
- 75 Two of the longest, tallest, and heaviest, meat-eating dinosaurs of all time, *Tyrannosaurus rex* and *Giganotosaurus* .
- 70 Largest turtle of all time, the marine soft-shelled turtle, *Archelon* .
- 65 Largest flying animal of all time, the pterosaur *Quetzalcoatlus*.
- 65.5 End-Cretaceous mass extinction.

Cenozoic Era "Age of Mammals" (65.5 million years ago to the present)

Tertiary Period (65.5 to 1.81 million years ago). *In Europe the beginning of the Cenozoic Era is called the Paleogene Period (65.5 to 23.03 million years ago)*

Paleocene Epoch (65.5 to 55.8 million years ago)

- 60 Oldest fossil rodents
- 57 Oldest hooved mammals, the condylarths, from North America .

Eocene Epoch (55.8 to 33.9 million years ago)

- 55 Oldest fossil primates, *Teilhardina*.
- 55 Oldest fossil horse, *Hyracotherium* .
- 52 Oldest fossil whale, *Pakicetus*, from India .
- 50 Oldest fossil elephant, an unnamed fossil from Algeria .
- 49 Giant flightless birds, like *Diatryma* and *Gastornis* .
- 37 Oldest fossil dog, *Hesperocyon* .

Oligocene Epoch (33.9 to 23.03 million years ago)

- 30 *Indricotherium* , the largest land mammal of all time
- 25 Oldest fossil cat, *Proailurus*.

In Europe , the latter part of the Cenozoic is called the Neogene Period (23.03 to the present)

Miocene Epoch (23.03 to 5.33 million years ago)

- 20 Grasslands become widespread
- 15 The largest shark of all time, *Carcharodon megalodon*.

Pliocene Epoch (5.33 to 1.81 million years ago)

- 4 *Australopithecus* , the oldest hominid (human-like ancestors) fossils from Africa . Many different species from 4 million to 1.1 million years ago.
- 2.5 to 1.5 *Homo habilis* , a hominid from Africa that made crude spear points.
- 2.4 Marks the beginning of what archeologists call the Paleolithic Age

Quaternary Period (1.81 million years ago to the present)

Pleistocene Epoch (1.81 to 0.015 million years ago)

- 1.2 *Homo erectus* , the oldest evidence of hominids outside of Africa .
- 1.0 First of many ice ages in North America .
- 0.50 Neandertal man, *Homo sapiens neandertalis* .
- 0.09 Cro-Magnon (modern) man, *Homo sapiens sapiens*.
- 0.06 The last of the great North American Ice Ages (Wisconsinan) begins

Holocene Epoch (0.015 million or 15,000 years ago to the present)

- 0.01 Beginning of what archeologists term the Mesolithic Age
- 0.006 Beginning of what archeologists term the Neolithic Age