

# Geologic Year Notes

(if you would like to have a copy of my Excel spreadsheet that breaks down the calendar day by day, please email me at: [kempton@newmexico.com](mailto:kempton@newmexico.com))

Redefine geologic time to fit a calendar year.  
Last 3 geologic Eras: Paleozoic, Mesozoic, Cenozoic.

1 year = 538,800,000 years. Start of the Paleozoic Era.

1 day = ~1.5 million years.

1 hour = ~62,000 years.

1 minute = 1,029 years.

1 second = 17.1 years.

Earth is over 8 years old (~4.6 billion years). Disregard the first 7 years.  
Single-celled life for at least 5 years before the year presented.

5 BIG extinctions during the year.

Each one wiping out at least 50% of life on the planet.

2 recommended books: Great Extinctions. The 6<sup>th</sup> Extinction.

## January (538.8 to 493 million years ago)

- Appearance of modern animal phyla (arthropods, molluscs, annelids, echinoderms, chordates).
- Explosion of multicellular evolution in the oceans and first CaCO<sub>3</sub> shells.
- Trilobites abundant by the end of the month.
- No multicellular animal or plant life on land!

## February (493 to 453 million years ago)

- Diversification of life in the oceans.
- 9 Major phyla established by end of month.
- Plankton, worms, sponges, jellyfish, echinoderms (including crinoids), cephalopods, brachiopods.
- First simple plants and fungi on land.

- Early fish fossils in later part of month (Astrapis) – coming from deposits near Cañon City.

### **March (453 to 407 million years ago)**

- First of 5 Major extinctions occurs on March 6th.
- Trilobites survive but never fully recover.
- First vascular plants on land.
- Fish diversify into 3 groups: Cartilaginous, Bony, Placoderms. Ammonites and nautiloids rise.
- First ferns and trees by end of month.

### **April (407 to 363 million years ago)**

- Land plants diversify – first coastal swamps.
- First winged insects.
- First amphibians (Ichthyostega) evolve.

### **May (363 to 317 million years ago)**

- Major extinction event on May 2<sup>nd</sup>.
- Amphibians diversify, dominate shoreline niches.
- Global swamps and forests.

### **June (317 to 272 million years ago)**

- First reptiles along with the amniotic egg.
- Winged insects.
- Reptiles evolve into Anapsids, Synapsids, Diapsids.

### **July (272 to 226 million years ago)**

- First true mosses.
- 3<sup>rd</sup> Major extinction on July 14th. Great Dying.
- 85% of all species die out. 70% land vertebrates.
- Begin Triassic Period, Mesozoic Era.
- Reptiles begin to diversify on land, water, air.
- First dinosaur at end of the month.

### **August (226 to 180 million years ago)**

- Coelophysis in NM – bipedal.
- 4<sup>th</sup> Major extinction on August 18th.
- Begin the Jurassic period.

### **September (180 to 137 million years ago)**

- Dinosaurs dominate terrestrial niches.
- Great sauropods
- Begin Cretaceous Period on September 25.

### **October (137 to 90 million years ago)**

- Dinosaurs dominate terrestrial niches.
- Ankylosaurs, Early Tyranosaurs, Triceratops, Birds

### **November (90 to 46 million years ago)**

- Dinosaurs continue to dominate.
- Common dinosaurs: T Rex, Triceratops, Ankylosaurs, Duck-billed and Hadrosaurs.
- 5<sup>th</sup> Major extinction on Nov 17th (75% species gone). Asteroid impact near Yucatan.
- All Non-Avian dinosaurs go extinct.

### **December (46 million years ago to present)**

- Mammal families evolve
- Dec 30<sup>th</sup>. Afternoon: Ice Age begins. Homo Erectus leaves Africa.

### **December 31 (last 1.5 million years)**

- At least 8 Ice Age cycles.
- 7:30 pm. The first Homo Sapiens depart Africa. Bad news for the rest of the planet...
- 11:38 pm – Human footprints at Lake Otero, NM.
- 11:40 pm – Peak of last Ice House climate.
- 11:45 pm – Start of Green House climate

- 11:58 pm – BC to AD