

Geologists, as a result of their studies of the strata of sedimentary rocks in the different regions of the world, have classified geologic history into six **eras**.

The oldest era with fossils is the **Archeozoic** (era of primitive life) and this is followed in turn by the **Proterozoic** (era of early life), the **Paleozoic** (era of ancient life), the **Mesozoic** (era of medieval life), and the **Cenozoic** (era of modern life).

The following table of geologic time-table shows the eras and some of their subdivisions, the approximate duration of each era, some of the important geological features, and the characteristic animals and plants.

**TABLE 2.2** Geological Time Scale of Earth

(To be read from below upward, duration of each Epoch and period is in million years)

Eras	Periods	Epoches	Dominant Animal and Plant Groups
1. <b>Coenozoic</b> (Era of modern life)  <b>(Age of Mammals and Angiosperms)</b> (65 million years)	1. <b>Quaternary</b>	<b>Recent</b> (1 million yrs)	Age of mammals: modern man, apes, monkeys and other mammals, birds and insects.
		<b>Pleistocene</b> (2–2.5 million yrs)	Appearance of primitive man; extinction of large mammals.
	2. <b>Tertiary</b>	<b>Pliocene</b> (6–7 million yrs)	Emergence of man; evolution of modern mammals (horse, camel, elephant).
		<b>Miocene</b> (25 million yrs)	Formation of first man-like ape; mammals dominating and at the height of evolution.
		<b>Oligocene</b> (38 million yrs)	Extinction of archaic mammals; rise of first modern mammals
2. <b>Mesozoic</b> (Era of intermediate or medieval life)  <b>(Age of Reptiles and Gymnosperms)</b>	1. <b>Cretaceous</b> (135 million yrs)	<b>Eocene</b> (54 million yrs)	Diversification of <b>placental mammals</b> (Eutherians), carnivores and hoofed forms appeared.
	2. <b>Jurassic</b> (180 million yrs)	<b>Palaeocene</b> (65 million yrs)	Rise of placental mammals and evolution of modern birds.
	3. <b>Triassic</b> (225 million yrs)		Appearance of <b>archaic eutherian mammals</b> ; rise of modern birds and teleost fishes; extinction of giant reptiles and toothed birds. Dwindling of gymnosperms and increase of angiosperms.
3. <b>Plaeozoic</b> (Era of ancient life)	1. <b>Permian</b> (275 million yrs)		Age of <b>gymnosperms and reptiles</b> : dominance of dinosaurs; rise of toothed birds; spread of reptiles. First angiosperm and first bird appeared.
			Rise of first dinosaur and egg laying mammals; extinction of primitive amphibians. Abundance of cycadophytes, gymnosperms
			Abundance of primitive reptiles, decline of amphibians; extinction of many marine invertebrates; <b>rise of modern insects.</b>

(Age of Amphibians)	2. Carboniferous (345 million yrs (Pennsylvanian + Mississippian))		Age of amphibians: Spread of ancient sharks; first reptile appeared; rise of insects.
(Age of Fishes)	3. Devonian (395 million yrs)		Age of fishes: Origin of amphibians; abundance and diversification of fishes.
	4. Silurian (430 million yrs)		Origin of jawed fishes and wingless insects; wide expansion of invertebrate phyla.
(Age of Invertebrates)	5. Ordovician (500 million yrs)		Origin of vertebrates and jawless fishes; corals and trilobites abundant; diversification of molluscs.
	6. Cambrian (600 million yrs)		All invertebrate phyla established; trilobites dominant.
4. Proterozoic (Era of Primitive life)	2000 million yrs	Precambrian Period	Sedimentary rocks; origin of first simple marine invertebrates; shelled protozoans, coelenterates. (fossils scanty)
5. Archaeozoic (Era of dawn of life)	3800 million yrs		Origin of life, fossils of primitive bacteria-like and algae-like forms found (fossils rare).

The fossil of Archaeopteryx shows that birds evolved from reptiles. Huxley called birds as **glorified reptiles**. The presence of a wish-bone (furcula) in the skeleton of a fossil cursorial and carnivorous dinosaur, Velociraptor, shows that birds are closest to dinosaurs and have evolved from them.

#### References:

- Evolutionary Biology by Rastogi
- Cell biology , molecular biology, evolution and ecology by verma and agarwal