



**KAMARAJ IAS ACADEMY**  
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# ‘Anthropocene epoch’ and its significance

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## Why in News:

In a major development that could change the Earth’s official geological timeline, geologists have said sediments at Crawford Lake in Canada’s Ontario have provided evidence of the beginning of the Anthropocene epoch

## Background

Anthropocene epoch — a proposed geological epoch that began when human activity started to have a significant impact on the Earth.

Members of the Anthropocene Working Group (AWG), which has been working since 2009 to make the Anthropocene part of the planet’s time scale, the 35 geologists have estimated that the new epoch started sometime between 1950 and 1954.

They revealed the findings after analysing the lake’s bottom sediments, which have over the years captured the fallouts of large-scale burning of fossil fuels, explosion of nuclear weapons and dumping of plastic and fertilisers on land and in water bodies.

“The data show a clear shift from the mid-20th century, taking Earth’s system beyond the normal bounds of the Holocene (the epoch that started at the end of the last ice age 11,700 years ago)

Notably, not every geologist agrees that the Anthropocene epoch is a reality as there are disagreements within the scientific community regarding when it began, or has it already begun, or if they have enough evidence to prove its advent.

## About Anthropocene epoch

The Anthropocene epoch as a term was first coined by Nobel Prize-winning chemist Paul Crutzen and biology professor Eugene Stoermer in 2000 to denote the present geological time interval, in which the Earth’s ecosystem has gone through radical changes due to human impact, especially since the onset of the Industrial Revolution.

There are numerous phenomena associated with this epoch, such as global warming, sea-level rise, ocean acidification, mass-scale soil erosion, the advent of deadly heat waves, deterioration of the biosphere and other detrimental changes in the environment.

Many of these changes will persist for millennia or longer, and are altering the trajectory of the Earth System, some with permanent effect.

They are being reflected in a distinctive body of geological strata now accumulating, with potential to be preserved into the far future

## About Earth’s geological time division

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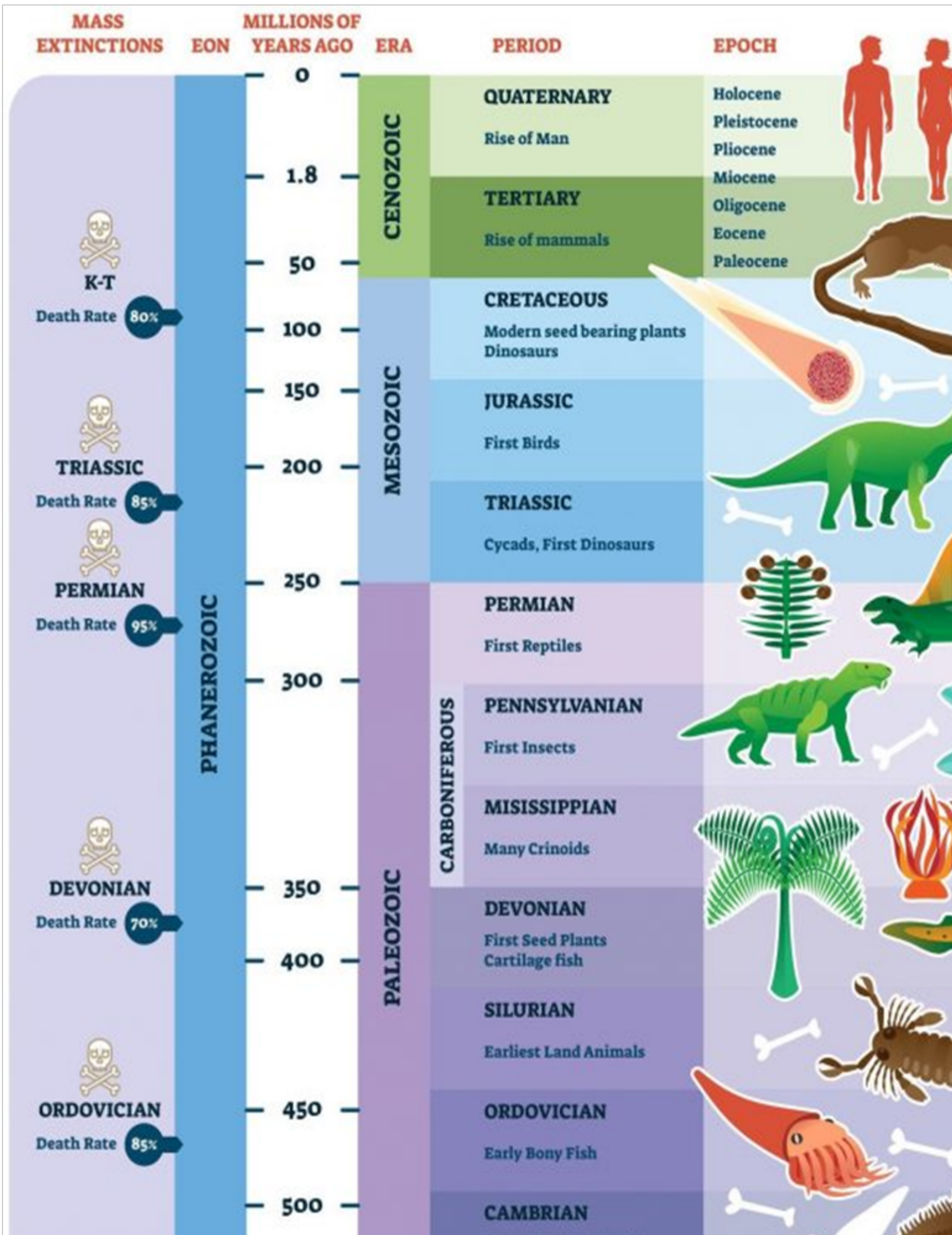
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The planet's geological time scale is divided into five broad categories: eons, eras, periods, epochs and ages. While eon is the broadest category of geological time, age is the smallest category. Each of these categories is further divided into sub-categories. For instance, Earth's history is characterised by four eons, including Hadean (oldest), Archean, Proterozoic, and Phanerozoic (youngest).

Most of the boundaries on the geological time scale correspond to the origination or extinction of particular kinds of fossils

This is also related to something called the principle of faunal succession, which states that different kinds of fossils characterise different intervals of time.

. As of now, we're in the Phanerozoic eon, Cenozoic era, Quaternary period, Holocene epoch and the Meghalayan



## **Geological founding of Scientist**

The 79 feet deep and 25,800 square-foot-wide Crawford Lake was chosen for examination by the geologists over 11 other potential sites as its layers of sediment preserved the annual impact of human activities on the Earth's soil, atmosphere and biology.

There are distinct and multiple signals starting around 1950 in the water body, which showed that “the effects of humans overwhelm the Earth system”.

Presence of plutonium (due to detonation of nuclear weapons) gives us a stark indicator of when humanity became such a dominant force that it could leave a unique global ‘fingerprint’ on our planet

But these findings don't mean that they have proved the advent of the Anthropocene epoch.

## **Conclusion**

In the following months, AWG plans to present a proposal in front of the Subcommittee on Quaternary Stratigraphy (SQS), a constituent body of the International Commission on Stratigraphy (ICS), and if it passes, it will go to the ICS for the next round of approval.

Both SQS and ICS are part of the International Union of Geological Sciences (IUGS), which represents more than 1 million geoscientists across the globe. A final approval might come at the 37th International Geological Congress in Busan, South Korea, which will take place next year