HISTORY OF LIFE ON EARTH CHARTS

In the Extinctions: Past and Present course, I make use of three key charts to help you navigate through our planet’s geological time. I use them in the video lectures and in the accompanying articles – particularly in the first week, but we will refer to them throughout the course. I have also made it possible for you to download and view the charts at various points in the course. In this document, I provide an explanation of each chart that you may find useful to review and come back to as we go through the course.

The three diagrams are:

1. Some major events in the history of life on earth
2. A simplified diagram depicting the major episodes in the development of life on earth
3. The 'big five' extinction events
Chart 1: Some Major Events in the History of Life on Earth

This illustration represents when some of today’s life forms emerged in Earth’s history. It is an amazingly complex story of multi-branched evolution, and we cannot represent the complexity here, but I hope this chart will give you some sense of the origins of some of our modern biodiversity. Note that this chart is a gross over-simplification and represents only when some, but not all, of the life forms emerged, and it does not show the inter-relationships of the various groups. The icons are just an illustration of one of the life forms being discussed, e.g., fungi are represented by a mushroom, but there are many other kinds of fungi.

On the extreme left of the chart, geological time is depicted: The orange-brown bar marks the ‘eons’; while the eras are distinguished in green, and periods in brown. I mainly refer to the periods in this course – such as the Cambrian period, or the Triassic period.

The long vertical bars show when the life forms emerged, and they continue on to today, although you will see that, except for birds, all other dinosaurs die out at the end of the Cretaceous.

If you look at the bottom left of the chart, you can see that bacteria were the earliest life forms emerging during the Archean period, some 3800 million years ago.
By contrast, if you look at the top right-hand corner of the chart, you can see that humans are a relatively new life form, emerging in the most recent quaternary period.

The red dashed horizontal lines across the chart represent the five major extinction events, with the first one, or oldest extinction event being near the bottom, and the fifth or most recent being nearer the top part of the chart.
Chart 2 visualises a highly simplified history of life on Earth over geological time. The columns and rows on the left illustrate the time intervals of Earth’s life history in terms of eons, eras and periods. A simplified time scale shows when the various events occurred.

The red dotted horizontal lines represent the five major extinction events.
Chart 3: The ‘big five’ extinction events

This chart depicts five key pieces of information:

1) The vertical bar on the extreme left represents the **geological time of Earth’s history** in terms of eras and periods.
2) The red horizontal lines indicate **the five mass extinction events**.
3) The green trapezoids between the red lines refer to **the diversity of life forms before and after an extinction event**. You can see that, while fewer organisms exist after an extinction event, recovery of diversity i.e. episodes of radiation occur after each extinction event.
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