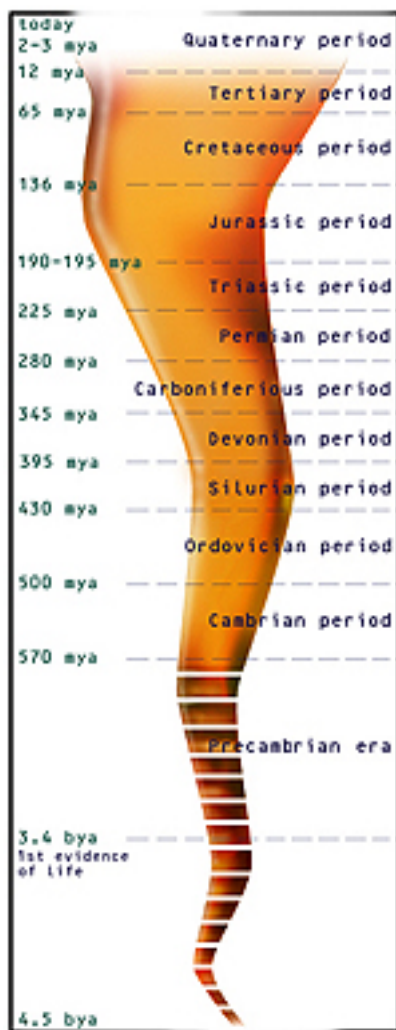


Mass Extinctions in the Past

It is often difficult to determine exactly when mass extinction events have occurred in the Earth's history - the fossil record is not perfect, and the poorer the record for a particular time frame, the more it is open to different interpretations. While we remain unsure of the total number of mass extinctions in earth history, the classical "Big Five" mass extinctions identified by Raup and Sepkoski (1982) are widely agreed upon as some of the most significant. Most scientists also agree that we are currently in the early stages of a human-caused mass extinction, known as the Holocene extinction event.



First major extinction (c. 440 mya) (End Ordovician):

Climate change (relatively severe and sudden global cooling) seems to have been at work at the first of these - the Marine habitats changed drastically as sea levels decreased, causing the first die-off, then another occurred between 500 thousand to a million years later when sea levels rose rapidly. 25% of families lost (a family may consist of a few to thousands of species).

Second major extinction (c. 370 mya) (Late Devonian):

A prolonged series of extinctions led to the elimination of about 70% of all species. This was not a sudden event, with the period of decline lasting perhaps as long as 20 million years. Marine species were more severely affected than those in freshwater. On land, where plants were diversifying and amphibians were beginning their evolution, there seem to be have been far fewer losses. The cause(s) are far from clear. The disproportionate losses amongst warm water species suggest that climate change, in this case a global cooling, was an important factor and it has been suggested that this was associated with (or may even have caused) a drop in the oxygen levels of these shallower waters.

Third major Extinction (c. 245 mya) (End Permian):

This catastrophe was Earth's worst mass extinction, killing 53% of marine families and an estimated 70% of land species (including plants, insects, and vertebrate animals). Many causes have been proposed for the

Permian extinctions - including fluctuations in sea-level, a change in the salinity of the ocean, and volcanic activity. The most important factor seems, once again, to be climate change.

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IDSC 100-01
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2005/11/02

Fourth major extinction (c. 210 mya) (Late Triassic): The event at the end of the Triassic Period, shortly after dinosaurs and mammals had first evolved, eliminated about 20% of all marine families and the last of the large amphibians. The cause(s) of the Triassic extinction are poorly known, perhaps because it has attracted relatively little study, but climate change seems to be important and, in particular, an increase in rainfall.

Fifth major extinction (c. 65 mya) (End Cretaceous): Most famous, perhaps, was the most recent of these events. The Cretaceous-Tertiary (or 'K-T') extinction wiped out the remaining terrestrial dinosaurs and marine ammonites (nautilus), as well as many other species across the phylogenetic spectrum, in all habitats sampled from the fossil record. This extinction is widely believed to have resulted from an asteroid or comet impact event. While other theories suggest volcanic activity, climate change, environmental pollution or even cosmic radiation as causes.

Resources:

http://en.wikipedia.org/wiki/Extinction_event

<http://en.wikipedia.org/wiki/Extinction>

<http://www.bbc.co.uk/education/darwin/exfiles/massintro.htm>

<http://www.actionbioscience.org/newfrontiers/eldredge2.html>