Competition 1: The Fossil Record

A map to evolution

Over 200,000 different viable species of fossil dating back as early as 3.5 billion years ago have been found, yet palaeontologists estimate that this is only a tiny fraction of species who have evolved on Earth to give rise to the species of today. There are many contributing factors to this estimation which need to be considered when analysing this figure and considering why finding fossils of ancient species are such rarities. Evolution, origination and mass extinctions are key aspects in not only the creation of fossils, but the likelihood of finding them.

The principle of Evolution through Natural Selection relies on the gradual adaptation of a species to its environment due to random genetic mutations which then become inherited. This is a lengthy process as an established species will remain prevalent without the presence of a mass extinction or new predator however the adapted organism will require time to pass on its successful genetic. These mutations are gradual, it takes millions of years for a species to unrecognisably adapt. Therefore, we can theorise that over millions of years there have been sub- species as one organism continues their evolutionary journey. Based off these miniscule adaptions and the contribution of discovered fossils in conjunction with radiometric dating, palaeontologists can map out the evolution of a variety of organisms. This can give an estimation of the number of varied species that have been a part of evolution. This, I would say, is the determining factor of the estimation that only 1% of fossils of all the species to have lived, evolved and became extinct over billions of years to have been discovered and recorded so early on into an era of development in the palaeontological world.

Mass Extinctions are just as vital in the evolution of the planet. The mass extinctions that have occurred in the past 4.5 billion years all have special prominence in their own rights when regarding the creation and discovery of species through fossils. With a combination of the Fossil Record and radiometric dating we were able to conclude these mass extinctions and their dates which gave further insight into their causes and the evolution of the various species at the time. Mass extinctions were some of the most momentous events in history as they meant that the survivors would adapt much more effectively, and the populations would prosper. In the Fossil Records context, the ancestral species that died in these mass extinctions and formed a vital part of the evolutionary timeline. However, the overcrowded ecosystems that these species previously belonged to were homes to many diverse and unique animals with varying population successes making it very unrealistic to imagine that all species will have turned into Fossils and been able to be discovered: hence making fossil finding extremely rare.

The Fossil Record is a vital way of mapping out the path of evolution and that path will only become clearer with time and more discovery.