

“Extinction” – the very word has a terrible finality about it. But there have in fact already been five mass extinctions on earth over the past 500 million years. Each has involved a devastating loss of life forms caused by extremes of climate change, but not quite their total obliteration. The most recent took place at the end of the Cretaceous period some 65 million years ago, triggered, it is thought, by the explosive impact of a huge asteroid the size of Manhattan. As every child knows, the most famous victims of this catastrophe were the dinosaurs and pterosaurs, but a high proportion of all mammalian, reptilian, bird and marine life also disappeared from the evolutionary record at this point. Life is resilient, though. Some species survived and adapted and the planet then entered the Cenozoic, the age of “new life” in which we are still living. But do we now face a sixth great extinction, one caused for the first time not by external factors, but by the behaviour of just one dominant species, a weedy but inventive creature calling itself *Homo sapiens*? Many scientists believe that we do, and in this very readable but terrifying survey of the evidence Elizabeth Kolbert explains why.

Two linked stories are told in this cleverly constructed book. First, the author takes us on a worldwide tour visiting the sites both of species already lost in the wild – like the Panamanian golden frogs, the mastodon, the great auk and the ammonites (so named from their “ram’s horn” fossilized shells), or those now seriously threatened – like the corals, the little brown bats of North America, the Sumatran rhino and other charismatic megafauna. She interviews the research scientists working on these species and reconstructs the life (and death) histories. This is all lively and engaging

Old and gone

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THE SIXTH EXTINCTION

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reportage, with lots of anecdotes from the field trips, telling (if frequently harrowing) examples, and striking quotations from the experts (“the history of life consists of long periods of boredom interrupted occasionally by panic”).

But Kolbert also interweaves with this account of extinctions past and pending a second strand, which is a story from the history of ideas. Extinction is itself a concept with a history. Aristotle’s compendious zoological works mention no extinct species, for none was known to him. As late as the Renaissance the word “fossil” just meant something dug up out of the ground (hence “fossil fuels”), and when Linnaeus published his great *Systema Naturae* in 1735, his elaborate classificatory system allowed for only one kind of animal – those that existed then. It was Georges Cuvier, Curator at the Paris Museum of Natural History, who, after inspecting various anomalous “elephant” bones, announced in 1796 that they must have belonged to some unknown *espèces perdues* inhabiting “a world previous to ours”. It was left to Darwin and Wallace to make the next paradigm shift and explain how it was that new organisms could appear and old ones dis-



The Panamanian golden frog (*Atelopus zeteki*)

appear, so that the world came to be populated by different creatures at different times. And the implications of their revolutionary explanation in terms of natural selection, adaptation and evolution are the continuing themes in the later chapters of the book, which reveal the possibility – the probability, in the view of many experts – that we have now entered a new age, the Anthropocene, where one species has evolved to the point that it is master of the planet, with the power of life and death over all its other inhabitants – indeed, a power sufficient to destroy the planet itself if used unwisely.

But despite our eponym, *sapientia* is in short supply as we progressively destroy swathes of natural habitat for “development”, pump

unprecedented volumes of carbon dioxide into the atmosphere, accelerate global warming, pollute and acidify the oceans, and facilitate the worldwide circulation of invasive species, so creating a “New Pangaea” in which the world once again effectively becomes a single, connected continent. The logical conclusion is a “Sixth Extinction”, in which the only species capable of understanding all this will also be the one to have caused it.

Kolbert tells this story well, as you would expect from a former *New York Times* reporter, now a staffer at the *New Yorker*, and the author of an influential earlier work on climate change. Specialists might want to qualify this or that generalization, but few of them would be capable of telling such a narrative with this sweep and persuasive power. Kolbert holds back, however, from asking the larger question of why this all matters. Perhaps she thinks that this should by now be obvious, but there remain many who are sceptical or unmoved; or at least not sufficiently moved to care actively about the state of the world more than two generations hence (the grandchildren horizon) and to contemplate the radical political changes and personal sacrifices that might be necessary to reverse these trends.

Our own evolution may have stopped short in this one crucial respect. The earth may be just the wrong size for our imaginations. It seems to us so large that we cannot believe we can seriously damage it. But it is also so small in cosmic terms that it is in fact very vulnerable. This creates a serious problem of style in a book like this. Elizabeth Kolbert vividly conveys the excitement and fascination of her journey of discovery, but does the horror of her conclusions suggest that the final mood should rather be one of deep, ironic pessimism?