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Earth's biota entering a sixth mass extinction, UN report claims

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Five big extinctions, also called “the big five” by earth scientists, have challenged life on earth in the past 500 million years. It turns out we are now in the middle of the 6th extinction, according to a recent UN report. Up to one million species are now on the brink of extinction. For three years hundreds of scientists have contributed to the project and describe the latest knowledge on biodiversity in the ‘2019 Global Assessment Report on Biodiversity and Ecosystem Services’.

The full six-chapter report will be published later this year by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The study follows the Millennium Ecosystem Assessment (2005), which analysed the consequences of ecosystem change, involving the work of more than 1,000 experts. The present study goes further, investigating species worldwide but also interactions between biodiversity, climate and human well-being.

Human footprint

The 6th of May, the summary for policymakers has already been published, reaching the media in the whole world. Being constantly bombarded by catastrophic news on climate change, the bad news on the state of global biodiversity is now added. “The health of the ecosystems on which we and other species depend is deteriorating more rapidly than ever,” said Robert Watson, the chair of IPBES. Main offenders are industrial agriculture and fisheries. So to feed almost 8 billion people (while I am writing this the precise figure is 7,7 billion, growing by more than 1% yearly), we are destroying our planet.

The report shows that the human footprint has become too large for our planet. Farm fields cover 75% of the usable land, or is covered by concrete or otherwise severely altered. Fish farms have transformed the marine environment and energy production will add to that in the future, when we continue to build the necessary wind farms. Crop and livestock consume large quantities of

freshwater. Nature, which is necessary for our own survival and quality of life, is pushed into a little corner.

Natural causes

What's so different between "the big five" and the current extinction? The big five happened in the geological past, a long time ago, and the amount of species that became extinct then, was much bigger than today. During the biggest of them all, the Permian crisis – also referred to as 'The Big Dying' – more than 96% of life was wiped out. This happened around 251 million years ago; most mammal-like reptiles passed away.

Another big difference between past and present extinctions lays in the pace and its recovery rate. A 'normal' background rate of extinction is 2 mammal extinctions per 10,000 species per 100 years. So we could say that humankind breaks every record in this respect (see figure at the end of the article). Moreover, it takes Mother Earth quite a while to recover from a mass extinction. Palaeontologists figured out that omnivores that are not "picky" are the first to recover, followed by specialist mammals in the long run. But also here, the trend is not on a human timescale.

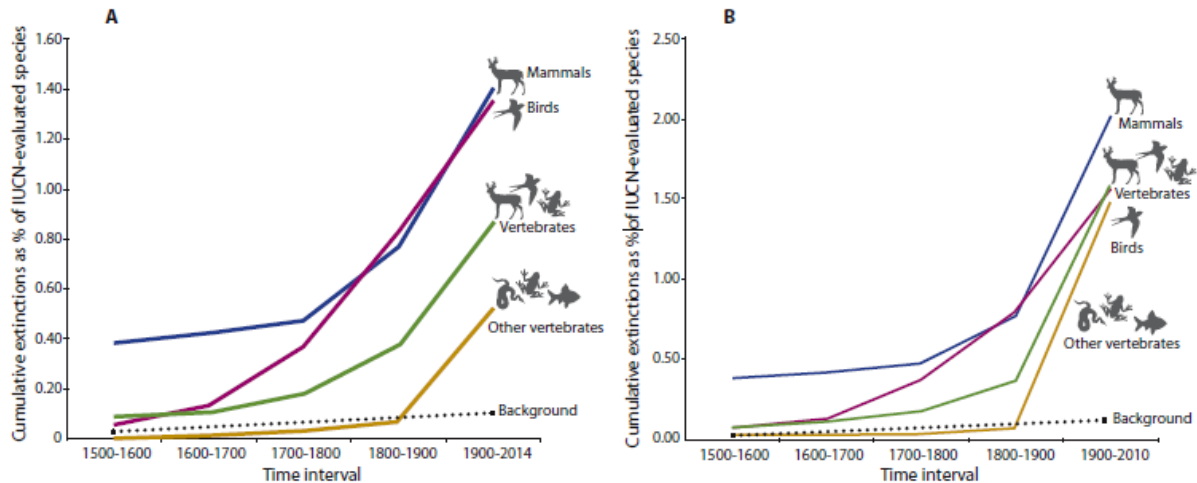
What all five extinctions have in common, is their natural cause. Meteorites, volcanism, acidification or a combination of various causes. The cause for the present "Anthropogenic extinction" is in its name: *Homo sapiens* is the cause.

What next?

The IPBES report proposes solutions that we have heard many times before, but these are not yet implemented on a large scale. For example: "Specific actions include promoting sustainable agricultural practices, such as good agricultural and agro-ecological practices, among others, multifunctional landscape planning and cross-sectoral integrated management, that support the conservation of genetic diversity and associated agricultural biodiversity."

And referring to improvement in fisheries, another main offender of biodiversity: "...ecosystem-based approaches to fisheries management, spatial planning, effective quotas, marine protected areas, protecting and managing key marine biodiversity areas, reducing runoff pollution into oceans and working closely with producers and consumers."

Three years of scientific work shows there are solutions, but changes should be fundamental. The paradigm of unlimited economic growth should be severely discussed, according to IPBES. The world community failed to achieve earlier goals, but the report shows that both loosing and saving biodiversity now plays on a human timescale.



Cumulative extinction rates of vertebrates compared to background extinction (black dotted line below): 2 species per 10,000 species per 100 (or 0,1 % in 500 years). Years. A: Highly conservative estimate; B: Conservative estimate. Source: IUCN in Ceballos et al., Sci. Adv. 2015. (CC BY-NC)

Featured image credit: The dodo, an extinct flightless bird endemic to the island of Mauritius. It is a symbol of human caused extinction. The tame bird went extinct in the 17th century due to the hunt of sailors and/or introduction of invasive species.

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Annemieke van Roekel is a geoscience journalist and chief editor for Gea Magazine, a Dutch magazine published by Stichting GEA, a foundation for amateur-geologists. She started as an environmental science journalist and works now as a geoscience journalist & editor, preferring the fields of palaeontology, volcanism and general geology and landscapes. She also writes reportages while travelling along the Atlantic Coast and that's why she developed an interest in archaeology in coastal areas as well. Further outreach of her activities is focused on educational city walks in Amsterdam, leading small groups along fossil-rich architecture, which hides a great geological story.

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