



MASS EXTINCTION CONFERENCE
May 30th 2024
Institute of Natural Sciences, Brussels, Belgium

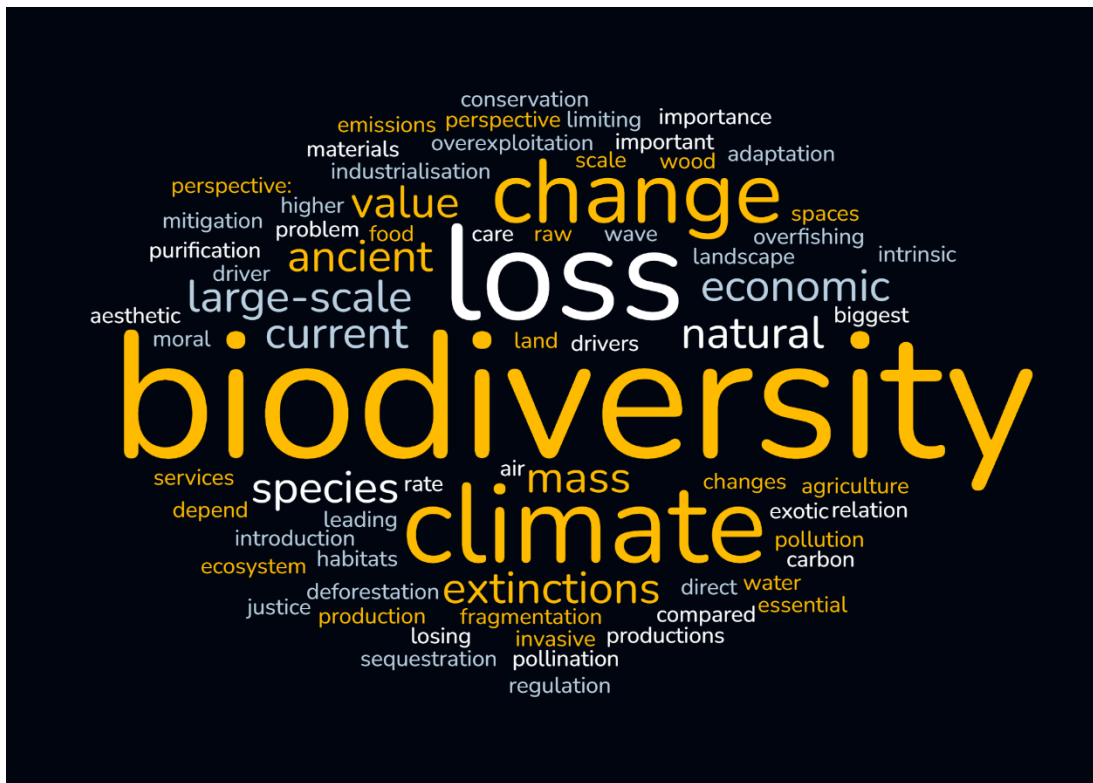


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Overview of the event

The Institute of Natural Sciences and the Federal Public Planning Service Science Policy (BELSPO) took the initiative to organize on May 30th, 2024, a conference dedicated to the current rapid loss of biodiversity, called "Mass Extinction Conference". Four invited high level keynote speakers approached the theme from different perspectives during the morning session. In their presentations, attention was paid to describing the 5 past extinction waves on Planet Earth and the current loss of biodiversity that humankind is experiencing and its causes. We learned about past extinctions and how these could be compared with the current crisis and whether the latter qualifies as a 6th mass extinction. The causes of the current biodiversity crisis once reminded opened the floor to the philosophical question on *why one should care* (from economic, instrumental, moral and justice intrinsic value angles), followed by a more tangible and final discussion on the priorities for action.

In the afternoon, a 5th presentation highlighted the value of natural history collections for understanding biodiversity loss, after which a debate with the speakers and the audience was organized. As the current warming of the climate is one of the main drivers of biodiversity loss, climate change was also often discussed throughout the day.

Around 100 participants attended the conference, mainly representing science, policy and civil society as important stakeholders, and engaged with the speakers in the different sessions. The event was relayed in the media on social networks and in the press, and the keynote speakers were interviewed by the Belgian Television RTL.

Keynote speakers' main messages

The panel featured a diverse group of experts providing a unique opportunity to explore the multifaceted issue of extinction, particularly in the context of the Anthropocene and its biodiversity crisis. The inclusion of specialists from various backgrounds allowed for a comprehensive examination of both the scientific and ethical dimensions of extinction.

- Dr. Frank P. Wesselingh drew on lessons from the geological past, shedding light on how past extinctions can inform our understanding of current biodiversity losses. His work as a molluscan paleontologist could provide insights into resilience and recovery patterns in ecosystems historically impacted by mass extinctions.
- Dr. Benoît Fontaine's discussion around the concept of the sixth extinction has challenged participants to consider whether this idea is a scientifically supported fact, a speculative notion, or a mix of both. His expertise in conservation biology was crucial for exploring the validity of claims surrounding today's biodiversity crisis.
- Dr. Thierry Smith focussed on the Eocene Thermal Maxima, making comparisons to current global warming trends. His insights has been instrumental in understanding the link between climate change and its effects on terrestrial biodiversity, thus contextualizing present challenges within a historical framework.
- Environmental philosopher, Dr. Anna Wienhues elevated the conversation by introducing ethical considerations surrounding species extinction. Her perspectives on moral values and justice has provoked critical reflection about humanity's role and responsibilities towards other species, highlighting the philosophical implications of extinction.
- Dr. Patrick Semal discussed the role of natural history museums in this dialogue, emphasizing their importance as educational and cultural institutions that can communicate the significance of biodiversity and extinction to the public.

The debate in the afternoon was joined by Dr Luc Janssens de Bisthoven - CEBioS, Institute of Natural Sciences. Two convenors facilitated dynamic discussions, allowing audience engagement and addressing diverse viewpoints. By synthesizing scientific, ethical, and communicative approaches, this panel has aimed to deepen our understanding of extinction and inspire actionable solutions to mitigate its impacts. This rich and varied examination has hopefully served as an eye-opener, prompting reflection of our positions and responsibilities towards the natural world in this critical era.

Tangible outputs

The conference had also for goal to provide some more concrete and tangible outputs and ideas for action. From the panellists and their exchanges with the audience throughout the day, some questions and tentative answers could emerge.

What is the role of humans in the current wave of biodiversity loss?

As opposed to the previous extinction waves, that were mainly caused by geological phenomena (e.g. volcanism) leading to drastic environmental changes under which the majority of the existing life forms could not survive (unfavorable temperature – too hot or too cold, unfavorable atmospheric composition, acid rain, oceanic changes, ...), the current biodiversity loss is caused by humanity.

What are the main drivers of current biodiversity loss?

- Large-scale landscape changes, leading to a loss and fragmentation of natural habitats. On land, large-scale industrialisation of agriculture is the biggest problem.
- Direct overexploitation (e.g. deforestation, overfishing, ...)
- Climate Change
- Pollution
- Introduction of invasive exotic species

How does the current wave of biodiversity loss compare to ancient extinctions?

Although the scale of the current biodiversity loss cannot yet be compared to that of ancient extinctions, the rate of biodiversity loss (and of climate change as important driver) is much higher than ever before.

Why should we care about biodiversity loss?

- Economic perspective: We are losing species that provide important ecosystem services on which we depend (e.g. Food productions – for instance through pollination, production of raw materials such as wood, purification of water and air, and many more).
- Biodiversity in relation to climate change: 'Conservation of natural spaces, and the biodiversity they contain, is essential for limiting emissions (mitigation) and adaptation to climate change (through carbon sequestration and therefore climate regulation)
- Moral/justice perspective: To many, biodiversity is not something we should only care for solely for its economic importance, but also because of its intrinsic value (e.g. aesthetic value, or because we relate to it). There were some discussions about whether such arguments will help the debate (esp. When trying to convince policy makers and move to action) but most agreed that this aspect does not get enough attention in the debate.

What ambition should we have, what targets should we aim for?

- Most important: Stop the negative trend of decline of biodiversity!
- Defining targets for restoration. This is done among several international frameworks (e.g. the target to conserve 30% of the world's land and 30% of the ocean by 2030 that was laid down in the Kunming-Montreal Global Biodiversity Framework of the convention for Biological Diversity in 2022, or comparable numerical targets in the EU Nature Restoration Law), with which national action plans should subsequently be aligned. Having targets is key: even if it is impossible to restore nature to a situation of the past (that we may not even properly know as our memories only go back to a time where we already had a negative impact on our environment – hence the importance of natural collections e.g. enabling the study of the species extinct), nothing will happen without targets to work towards to.
- Key is to integrate care for biodiversity and climate in all our policies, as biodiversity and climate problems are heavily interrelated and essentially part of one big crisis.



How can we better translate these messages into action?

- Science, that has been informing on these problems for a long time already, to better liaise with groups that effectively move to action.
- Keep investing in communication to all possible audiences, and in education (not only of youth, but youth is obviously very important as it represents the future).

Concluding remarks

from the General Director of the Institute of Natural Sciences, Dr. Michel Van Camp

Climate-related problems are becoming well-known to the public, primarily because people directly experience their effects: droughts, storms, floods, and more. However, it is more challenging to grasp the topic of “biodiversity loss” or “biodiversity change”, or even to understand what biodiversity truly means. For example, do many citizens understand the difference between the COP climate and COP biodiversity?

Allow us to be somewhat provocative: climate change might be a simpler problem compared to biodiversity loss. It's worth noting that some people believe they can solve the climate issue with engineering methods, like large-scale carbon dioxide storage, stratospheric aerosol injection, or ocean iron fertilization—a seemingly straightforward solution where we already risk playing the sorcerer's apprentice. By the way, it is interesting to note that behind these so-called solutions, there is big business. But, which are the technical solutions to cope with biodiversity loss?

We are becoming increasingly convinced that biodiversity loss, coupled with microplastic pollution and other environmental challenges, alongside the urbanization of our landscapes, represent sources of concern that are at least as significant, if not more, than climate change. Why should we focus solely on reducing CO₂ emissions if we continue to exacerbate the issues by increasing plastic production, constructing new highways, or intensifying pesticide usage? Why produce more electric cars, if our food crops are threatened by the loss of pollinators and by the conversion of land areas from crop production to biofuel production? And so on...

The Institute of Natural Sciences is a key player in both scientific research and raising awareness about biodiversity loss. Therefore, we invited esteemed keynote speakers to share their insights on mass extinctions and the value of natural history collections in the context of current global changes. The speakers also addressed the relationships between biodiversity loss and the environment, nature conservation, and species adaptation. Altogether, such aspects are linked to what is often called the sixth mass extinction.

This title is provocative: as discussed during the meeting, scientists still debate if the current biodiversity loss is similar to a mass extinction. We have learned that Earth has experienced at least five mass extinctions, during which more than 75% of existing species disappeared. Mass extinctions can affect a single location or the entire planet. The causes of mass extinctions are varied, but common factors include temperature changes, ocean anoxia, and exogenic events such as asteroid impacts. Another common feature is that Earth's biodiversity experienced severe, nearly simultaneous turnover rates across all ecosystems. The recovery time is striking; for instance, it can take up to 10 Myr to recover from 70% of species that went extinct. Another striking point is: what constitutes an extinction? This is not easy to address. While climate change or rising ocean levels are relatively easy to quantify in terms of CO₂ concentration, average temperature, and water level, it remains challenging to quantify the loss of biodiversity and even more, to fix objectives for recovery.

We know that our environment is suffering, that extinction takes time, and that some species adapt. But how many have already disappeared or are currently disappearing? And how many new species are being introduced? And in this case, is the increase not too dramatic? Much of the loss is difficult to assess. The “Romeo effect”¹ concept we learned today illustrates these difficulties.

Finally, what about elusive species disappearing without a trace? Quantifying biodiversity change is one point. But what is the role of humans? We have altered the environment everywhere, fragmented habitats, and released pesticides.

Assessing the processes and knowing where we can make a difference remains difficult. Fragmentation, for instance, is a problem, but we have dispersed many species concurrently. We can gather information from field data and natural history institutions' databases. Unfortunately, only 10% of the present



collections are available in the world's databases. Together with field campaigns, natural collections contribute to quantifying past and present biodiversity losses.

Beyond the loss of charismatic species, the extinction of associated parasites presents another hidden consequence. This underlines the need for a philosophical approach. Philosophers can help us ask the right questions: the intrinsic, instrumental, and relational values of species, our right to eradicate harmful species, even the smallpox virus, and the very reason we should care about biodiversity loss. They can also help us determine who can address this issue, as biodiversity cannot advocate for itself. The sadness we feel due to the loss of biodiversity highlights our emotional connection to nature.

Sociologists, on the other hand, help us communicate our messages. How can we make a young citizen understand the loss of biodiversity when they think it's normal not to see sparrows, hear the cuckoo, or have a clean windshield after driving 500 km on the highway? How can they feel sad, how can we evoke emotions among politicians, and hence, how can we communicate about the relevance of habitat restoration? These are the challenges sociologists can help us address.

After understanding the issues with our scientists, who already sounded the alarm enough, the humanities can bridge the gap between scientists, policymakers, and citizens. This collaboration is essential for establishing shared values, and fostering action at all levels – political, institutional, and individual. Engaging diverse stakeholders, from farmers and industrialists to ordinary citizens, religious or not, is crucial.

While capitalism can be blamed for environmental problems, it's not the sole culprit. Humans have caused extinctions throughout history. Today, however, we are aware of the issue and have the tools to address it. Nature is resilient, but we must act before reaching tipping points. Biodiversity loss needs to be a central political concern. We should never miss the song of a bird again.

Conference Programme and contact

- Online programme : [Mass Extinction Conference - 30.05.2024 | Institute of Natural Sciences](#)
- Contact Research Office : reso@naturalsciences.be

Pictures of the day



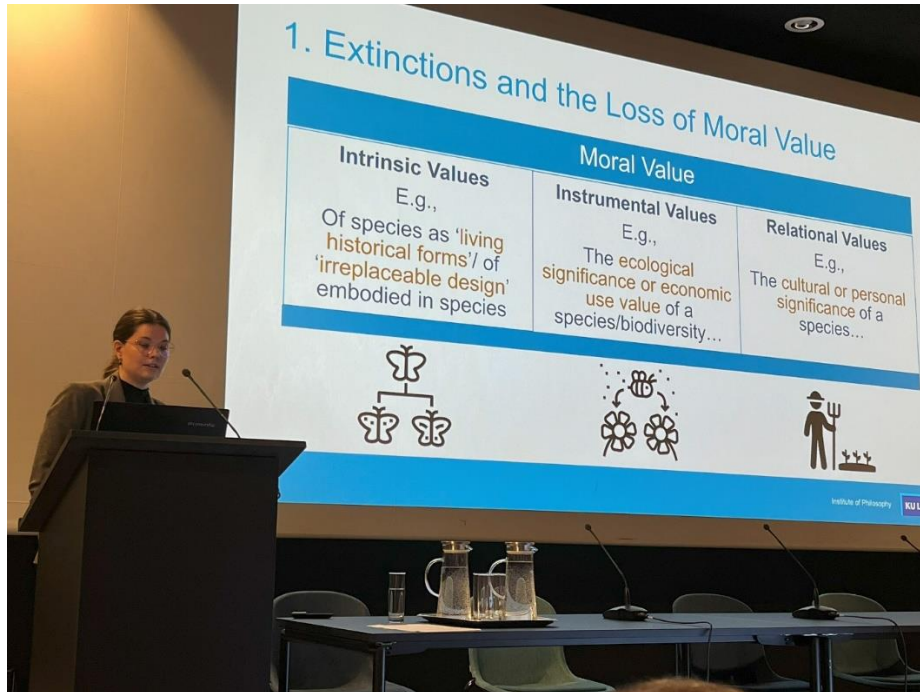
Dr Michel Van Camp, Director General of the Institute of Natural Sciences



Dr. Frank P. Wesseling, Naturalis Biodiversity Center, Leiden, The Netherlands.



Dr Benoît Fontaine, Muséum National d'Histoire Naturelle, Paris, France.



Dr Anna Wienhues, University of Oslo, Norway & KULeuven, Belgium



Dr Patrick Semal – Head of Heritage Service - Institute of Natural Sciences



Debate in the Large auditorium of the Institute, with Moderators : Kelle Moreau - Institute of Natural Sciences & Petra Manderscheid - JPI Climate BELSPO





From left to right : Carole Paleco, Patrick Semal, Jean-Luc Boevé, Frank Wesselingh, Benoît Fontaine, Luc Janssens de Bisthoven, Thierry Smith, Michel Van Camp, Anna Wienhues, Petra Manderscheid, and Kelle Moreau.