

UNIVERSITIES SAFEGUARDING GLOBAL BIODIVERSITY AND HUMAN HEALTH



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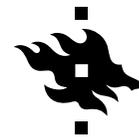
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INTERTWINED CHALLENGES: BIODIVERSITY LOSS, CLIMATE CHANGE AND HUMAN HEALTH

UNIVERSITIES SAFEGUARDING GLOBAL BIODIVERSITY AND HUMAN HEALTH

A REFLECTION ON THE EU POST-2020 BIODIVERSITY FRAMEWORK

BY LEADING BIODIVERSITY RESEARCHERS OF FINNISH UNIVERSITIES

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We are currently facing two big environmental challenges — accelerated **biodiversity loss** and **climate change** - which are already undermining **human health** and **well-being**. The main drivers of biodiversity loss and climate change are partially the same — land use changes, overexploitation of natural resources and environmental pollution¹. These two processes are also inter-related with a negative feed-back loop. Therefore, it is crucial to tackle them together and try to find comprehensive solutions. This need is also identified in the European Green Deal, the new sustainable growth strategy and environmental policy alignment of the EU², and in the orientation document towards the strategic plan for the new EU Framework Programme for Research and Innovation, Horizon Europe³.

Environmental degradation, including biodiversity loss and climate change, is also known to have several short and long-term effects on human health¹, both on physical and mental aspects. The current outbreak

of the Covid-19 virus is an example of the kinds of threats we may be facing in the future with increasing environmental degradation. We should start to think seriously about the root causes for such pandemic diseases, such as destruction of wildlife habitats, environmental pollution and overexploitation of nature – the same causes that are behind the global biodiversity loss and climate crisis. In the post-corona world, research and innovation will have a key role in supporting the transformation towards a sustainable Europe as desired in the European Green Deal², by setting the direction, connecting citizens and providing solutions.

This position paper delivers key messages by leading biodiversity scholars at Finnish Universities for **safeguarding global biodiversity and human health**. We call on the European institutions and the EU Member States to take the following messages into account in the implementation of the EU Green Deal² Horizon Europe³ and Biodiversity Strategy 2030⁴.

1

SCIENCE IS THE KEY TO SUCCESS IN SAFEGUARDING BIODIVERSITY

Science is the cornerstone of evidence-based decision making for a sustainable and resilient future both for the people and the planet. Scientific research plays an essential role in the development of novel tools and approaches to be implemented in biodiversity conservation and management, and to achieve the global and EU level biodiversity objectives, such as to protect at least 30 % of all land and ocean area globally (currently under negotiation)^{2,4,5}.

A better understanding of the composition of biodiversity and its impacts on the functioning of the ecosystem is important to allow us to better project and predict the harmful impacts of the clearly unavoidable biodiversity loss we are going to see in the near future. As much as 80 % of the species on earth are still undescribed. The proportion of threatened species is difficult to estimate even for well-known groups, such as mammals and birds, the IUCN best estimate for these groups being 25 % and 14 %, respectively⁶. We desperately need basic research to increase our knowledge of unknown biodiversity and to understand why certain species are found in certain locations, as well as of the anthropogenic impacts on species' community composition and biotic interactions affecting ecosystem resilience, adaptation and recovery. Universities have a key role here in providing a scientific basis for evidence-based decision making by e.g.:

- Inventorying and monitoring global biodiversity
- Assessing anthropogenic impacts on ecosystems, estimating success of ecosystem restoration and determining the balance between losses and gains to verify no net loss in the integrity of ecosystems
- Developing innovative remote sensing techniques (photonics, spectral imaging, drones) for efficient monitoring also in challenging environments such as wetlands, mountainous and other remote areas
- Maintaining genetic resource pools, e.g. seed materials for reforestation
- Studying the role of coevolving microbes and viruses that are found in all plants and animals with complex and dynamic microbial-host interactions.

2

EDUCATION AND PROFESSIONAL TRAINING ARE CRITICAL IN ENABLING TRANSFORMATIVE CHANGE

Education and professional training, from preliminary schools to universities and beyond, including public education and options for lifelong learning, are crucial to mainstream biodiversity and ensure that at least 90 % of the citizens know what biodiversity is and are aware of its values and causes, and implications of its loss⁴. International cooperation between education and research institutes and universities is also crucial in expanding physical and virtual learning environments in biodiversity issues, for example within University of the Arctic network and European university alliances. Universities are carrying out a central part of diverse education actions in the society enabling transformative change in how we value biodiversity by:

- Providing professional training and in depth understanding of the fundamental role of biodiversity as the basis of all life on Earth
- Integrating biodiversity knowledge in the training of all higher education students with a variety of study options in biodiversity issues
- Developing new and innovative open digital learning environments
- Maintaining natural history museums and botanical gardens



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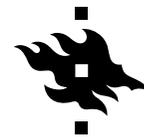
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3

SOCIETAL NEEDS FOR RELIABLE BIODIVERSITY INFORMATION

Several sectors of society need reliable biodiversity information to support evidence-based decision making to halt biodiversity decline and habitat degradation^{2,3}. There is also a growing need to bring biodiversity information closer to the people and increase the understanding of the relationship between environmental quality and human well-being, both in cities and in rural areas. Universities have an important role here in mainstreaming biodiversity by:

- Providing reliable biodiversity information for societal needs (land use planning, food production chains, technology applications and health sector)
- Providing science-based information leading to policy recommendations for a systemic change needed in the society
- Promoting open science and citizen science activities

4

LONG-TERM AND COMPREHENSIVE FUNDING FOR BIODIVERSITY RESEARCH IS NEEDED

Long-term and comprehensive funding allowing basic research in biodiversity is needed as a backbone for biodiversity conservation and restoration actions. Biodiversity research, as well as long-term research on the impacts of conservation and ecosystem restoration actions, must be included broadly through different funding programmes, including Horizon Europe², to cover several sectors and actions in society. This will strengthen the quality and continuity of biodiversity research involving the research community and society at large. With a long-term and comprehensive funding basis for biodiversity research, universities can:

- Strengthen their biodiversity expertise
- Increase their capacity of biodiversity research, including research on biotic interactions, ecosystems resilience and recovery from disturbances
- Contribute to the development towards a healthy planet and society as well as the well-being of human and nonhuman nature

1 IPBES The Global Assessment on Biodiversity and Ecosystem Services

2 Orientations towards the first strategic plan for Horizon Europe

3 The European Green Deal

4 European Parliament resolution on the 15th meeting of the Convention on Biological Diversity (2019/2824(RSP))

5 Zero draft of the post-2020 Global Biodiversity Framework

6 IUCN Red List

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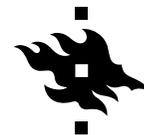
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