

Biodiversity and human health



***Anopheles minimus*¹: An important vector of malaria.**

Biodiversity and human health are intertwined in numerous ways. Biodiversity provides or modifies the resources that we use to satisfy our basic needs: drinking water, food, materials for energy recovery, and medicines. Thus, biodiversity is essential to our health. At the same time, biodiversity may threaten human health, e.g. when pathogens cause diseases and spread among human populations. Beyond these direct dependencies, a multitude of complex relationships between biodiversity and human health exist because they are often subject to the influence of the same drivers or policies.

The World Health Organisation (WHO) and the Secretariat of the Convention on Biological Diversity (CBD) have recently proclaimed biodiversity and human health 'global priorities' and call for much stronger global efforts to safeguard both. While human health has long been an evident argument in the climate change debate, it now also becomes a major case within global biodiversity governance.

¹ Photo: James Gathany, Content Provider: Centers for Disease Control [Public domain], via Wikimedia Commons

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INTRODUCTION

The extent and complexity of relationships between biodiversity and human health are demonstrated in a ground-breaking State of Knowledge review², released by the World Health Organisation (WHO) and the Secretariat of the Convention on Biological Diversity (CBD) early this year.

The report reads *"First, biodiversity gives rise to health benefits. For example, a variety of species and genotypes provide nutrients and medicines. Biodiversity also underpins ecosystem functioning, which provides services such as water and air purification, pest and disease control, and pollination.*

However, it can also be a source of pathogens, leading to negative health outcomes. A second type of interaction arises from drivers of change that affect both biodiversity and health in parallel. For example, air and water pollution can lead to biodiversity loss and have direct impacts on health.

A third type of interaction arises from the impacts of health sector interventions on biodiversity and of biodiversity-related interventions on human health. For example, the use of pharmaceuticals may lead to the release of active ingredients in the environment and damage species and ecosystems, which in turn may have negative knock-on effects on human health. Protected areas or hunting bans could deny access of local communities to bushmeat and other wild sources of food and medicines with negative impacts on health.

² World Health Organization and Secretariat of the Convention on Biological Diversity, 2015: "Connecting Global Priorities, Biodiversity and Human Health, Summary of the State of Knowledge Review". Publication is freely available at <https://www.cbd.int/health/SOK-biodiversity-en.pdf>

*Positive interactions of this type are also possible; for example, the establishment of protected areas may protect water supplies with positive health benefits. [...]. The continued decline of biodiversity, including loss or degradation of ecosystems, is reducing the ability of biodiversity and ecosystems to provide essential life-sustaining services and, in many cases, leads to negative outcomes for health and well-being."*³

The report provides key messages for the following areas:

- (a) Water and air quality;
- (b) Food production and nutrition;
- (c) Microbial diversity and non-communicable diseases;
- (d) Infectious diseases;
- (e) The development of pharmaceuticals;
- (f) Traditional medicine;
- (g) Mental, physical and cultural well-being;
- (h) Impacts of pharmaceutical products on biodiversity, and consequences for health;
- (i) Climate change and disaster risk-reduction.

IMPLICATIONS of the State of Knowledge Review on Biodiversity and Health

The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) of the CBD, responsible for providing the Conference of the Parties to the CBD (COP⁴) with scientific input and

³ *ibid.*, page 2

⁴ The COP is the decision making body of the CBD.

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recommendations, drew several important implications from the report⁵:

1. The recognition of the contributions of biodiversity and related ecosystem services to human health **strengthens the rationale for the conservation and sustainable use of biodiversity**, and therefore supports the achievement of the Aichi Biodiversity Targets.

2. Similarly, the identification of **drivers of change that are common to biodiversity loss and human health suggests that the biodiversity and health communities could join forces** in addressing these drivers.

3. There are also cases in which **trade-offs between health and biodiversity agendas could arise**. For example, the need to conserve areas containing species vulnerable to extinction through the establishment of conservation areas, could conflict with the needs of local populations to avail themselves of the resources, such as bushmeat or medicinal wild plants that may be critical to the health and nutrition of those who rely upon them.

4. An emerging but rapidly growing body of research suggests that **more attention should be given to the role in human health of microorganisms**.

5. Achieving co-benefits will require increased communication and coordination among biodiversity and health sectors. It will also be **necessary to improve communication and coordination with other sectors** such as agriculture, urban development, planning, energy, and finance,

⁵ The following list is not complete and partly slightly re-phrased, please consult UNEP/CBD/SBSTTA/19/6 and UNEP/CBD/SBSTTA/19/6/Add.1 for further information

as well as to identify and reduce perverse economic incentives.

6. **Consideration of health-biodiversity linkages can contribute to the mainstreaming of biodiversity** in the post-2015 development agenda and is of obvious relevance to several of the Sustainable Development Goals.

7. Consideration of health-biodiversity linkages is also of obvious **relevance to several Aichi Targets**.

RECOMMENDATIONS by SBSTTA:

Based on the implications identified (see above), SBSTTA may give several recommendations to the CBD⁶.

1. Parties and other Governments are encouraged to address common drivers for health risks and biodiversity loss, e.g. in areas such as
 - Water supply and sanitation (e.g. by protecting freshwater ecosystems as 'natural infrastructure' and by addressing the drivers of their loss and degradation);
 - Agricultural production (e.g. by promoting sustainable production increases and by reducing the application of pesticides and other chemical inputs);
 - Food and nutrition (e.g. by promoting the use of crop and livestock diversity and by fostering the public awareness as well as social and economic incentives for sustainable diets);
 - Human settlements (e.g. by taking into account the positive role of vegetation in the planning of urban settings);

⁶ COP 13 will take place in Mexico in December 2016

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- Ecosystem management and infectious diseases (e.g. by promoting an integrated approach to the management of ecosystems, associated human settlements and livestock, minimizing unnecessary disturbance to natural systems and unnecessary contact among humans, livestock and wildlife);
- Mental health and well-being (e.g. by promoting the interactions between people and natural environments);
- Traditional medicines (e.g. by promoting the sustainable use of plants and animals used in traditional medicine);
- Biomedical discovery (e.g. by conserving high biodiversity in terrestrial, freshwater, coastal and marine areas);
- Impacts of pharmaceutical products (e.g. by avoiding their overuse, especially of antibiotic and antimicrobial agents and by a better management of the use and disposal of pharmaceuticals);
- Species and habitat conservation (e.g. by implementing policies to protect species and habitats and allowing access and the customary sustainable use of wild foods and other essential resources by local communities, especially if these are poor and resource-dependent communities, including indigenous peoples);
- Ecosystem restoration (e.g. by promoting ecosystem restoration and avoid the re-establishment of habitat that would harbour agents of infectious diseases);
- Climate change and disaster risk reduction (e.g. by prioritizing measures that jointly contribute to human health and to the conservation of biodiversity).

Human health is also considered in other global environmental fora, such as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). The platform currently prepares a number of assessments which will be contributing to understanding the biodiversity-human health nexus⁷, in particular, the assessments on invasive alien species, on sustainable use, on land degradation and restoration, and the regional and global assessments.

More resources on NeFo-Website:

- Interview with Geo-Ecologist Stephanie Thomas, Beyreuth University (in German): <http://www.biodiversity.de/index.php/114-fuer-presse-und-interessierte/experteninterviews/5168-interview-thomas>
- Article (in German): "One Health – ist die Erde gesund, ist es auch der Mensch": <http://www.biodiversity.de/index.php/fuer-presse-medien/top-themen-biodiversitaet/5163-one-health-ist-die-erde-gesund-ist-es-auch-der-mensch>
- Workshop Report (in English): Infectious Diseases and Biodiversity in anthropogenically-altered Water Bodies: http://www.biodiversity.de/images/stories/Downloads/Workshopberichte/report_waterborne_diseases.pdf
- Workshop Report (in German): Klimawandel, Parasiten und Infektionskrankheiten – eine globale Herausforderung: http://www.biodiversity.de/images/stories/Downloads/Workshopberichte/bericht_ws_parasiten_end_02_09_2011.pdf

STAYING UPDATED

Stay updated on this topic by following our [NeFo-blog reporting from the current SBSTTA meeting in Montreal \(2 to 7 November 2015\)](#).

⁷ For more information, please visit <http://ipbes.net>