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Healthy Urban Microbiome Initiative

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Dear Secretariat,

The Healthy Urban Microbiome Initiative wishes to provide some commentary on the post-2020 global biodiversity framework. We were very heartened to see the unanimous adoption of language at COP 14 regarding the interconnections among biodiversity and health, in particular the following: “*Recognizing* the importance of the human microbiome for human health, and the importance of biodiverse green spaces in urban environments, protected areas and their physiological and psychological benefits, and further highlighting the importance of ecosystem-based approaches for the delivery of multiple benefits”.

Our research has underlined this statement, both by connecting microbial biodiversity to health empirically (Liddicoat *et al.* 2018a, b) and by calling for biodiverse urban green spaces to be implemented for global public health benefit (Flies *et al.* 2017, 2018). Given our status as an international non-governmental organisation comprised of academic researchers and public health experts, we wish to address the following questions raised in the post-2020 Global Biodiversity Framework discussion paper:

1. **What, in real terms, does “living in harmony” with nature entail, what are the implications of this for the scope and content of the post-2020 global biodiversity framework and what actions are needed between now and 2050 to reach the 2050 Vision?**
	1. In 1950, only 30% of the global population lived in cities. By 2050, nearly 70% of the population will be urban. Urban areas disconnect humans from natural environments but biodiverse urban green spaces have the potential to restore connections between humans and nature (Flies *et al.* 2017, 2018). Therefore, the Healthy Urban Microbiome Initiative, in partnership with the UN Convention on Biological Diversity, has launched the “2020 Challenge” – an effort to create or restore biodiverse urban green spaces in 20 cities in 20 countries by 2020. Given the myriad health benefits of urban green spaces, and the potential for biodiversity to maximize those health benefits while creating sizable co-benefits for conservation, we believe the biodiverse urban green spaces approach is a critical component for any successful “living in harmony” plan.
2. **What indicators, in addition to those already identified in decision XIII/28, are needed to monitor progress in the implementation of the post-2020 global biodiversity framework at the national, regional and global scales?**
	1. We applaud the UN CBD for recognizing the critical and well-documented link between a biodiverse human microbiome and human health. However, there is yet no mention of the evident connections between biodiverse environmental microbiomes (such as those in air, water, soil and the surfaces of objects) and human microbiomes and health. This is a critical connection because not only do environmental microbiomes help shape the microbial communities in and on the animals in that environment (including humans), they also are the foundation for producing and supporting ecosystem services. Furthermore, biodiversity in microbial communities is easier to reliably quantify and responds more closely in space and time to perturbations (e.g. chemical contaminants, land use change, anthropogenic pressure), which makes it a better indicator for monitoring progress towards biodiversity targets. Furthermore, the assessment of environmental microbial diversity (and its relationship to human microbial diversity and health) present ample opportunities for SMART (specific, measurable, ambitious, realistic and tome-bound) goals. We propose that monitoring environmental microbiomes using standardized methods, is adopted as one of the ways to monitor progress towards the national, regional and global biodiversity scales.

We would also like to underline the critical importance of environmental microbiota to health, as rigorously demonstrated in Chapter 8 of the “Connecting Global Priorities: Biodiversity and Human Health. A State of Knowledge Review” document from the CBD and the World health Organisation (WHO and CBD 2015). Indeed, as suggested by section II.3.c, HUMI partners (including Chapter 8 lead author Prof Graham A.W. Rook) would be interested in hosting a dedicated session or workshop to discuss ways to incorporate microbial biodiversity into the post-2020 global biodiversity framework.

We thank you for your time in considering these perspectives. Do not hesitate to contact us for further engagement.

Best Regards,



Emily J. Flies on behalf of HUMI partners

Director of Communication and Engagement

Healthy Urban Microbiome Initiative

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