

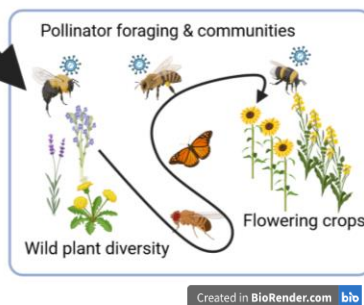
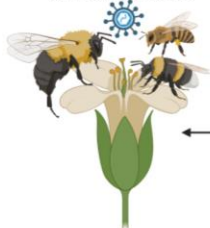
How can global change affect the risk of wild pollinator disease ?

INTRODUCTION: Pollinators face multiple global threats, including land-use change, conventional intensive agriculture, invasive alien species, and pests and pathogens. The [IPBES](#) (2016) highlighted the potentially profound, but largely unexplored, role of pathogens (viruses, fungi, bacteria) in wild pollinator losses. How global changes affects the risk of pathogen transmission and disease among pollinator species remains a major knowledge gap. The VOODOO project produced a knowledge synthesis¹ of how global changes can affect pathogen exchanges among pollinator species and the prospects for their health and populations.

KEY MESSAGES¹:



Flowers as hubs of pathogen exchange



- Contact between pollinator species when foraging on shared flowers for pollen or nectar make flowers potential hubs of pathogen transmission among species.
- The structure of plant–pollinator communities and species characteristics (traits) dictate the level of contact on flowers and hence the likelihood of pathogen spillover among different pollinator species.

- Global changes (climate change, invasive species, agricultural intensification and urbanisation) may create novel disease risks for pollinators by altering plant–pollinator communities and species interactions, the health and susceptibility of host insects and potentially pathogen virulence.

• Interactions between various global changes are likely to affect pollinator populations, health and disease risks leading to complex and context dependent outcomes.

IMPLICATIONS and NEXT STEPS:

- Understanding this interplay between host–pathogen dynamics and global change is important to predicting impacts on pollinators and pollination underpinning ecosystems and human wellbeing and avoiding undermining policies to safeguard pollinators and pollination services.
- VOODOO has surveyed plant–pollinator interaction networks from 48 landscapes in 4 countries (PL, FR, DE, CH) and screened the collected pollinators (bees, hoverflies) for viruses (DWV-A, DWV-B BQCV). Results expected to be published in 2023/4.

¹ Proesmans et al. 2021. Pathways for Novel Epidemiology: Plant–Pollinator–Pathogen Networks and Global Change. Trends in Ecology & Evolution, 36, 623–636.(Open Access): <https://doi.org/10.1016/j.tree.2021.03.006>