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Linking Landscape Structure to Mosquito Communities: Habitat Characteristics and Vector Risk in a Changing Climate

Inhalt

Landscape structure plays a key role in shaping mosquito distribution and associated health risks in changing climates. As part of the UMEX-HOPE project at the Lower Saxony Centre for Climate Research (ZKfN), we investigate how different landscape structures influence mosquito community abundance across urban–rural gradients in and around the city of Hanover. Using high-resolution remote sensing data, we classify the study area into distinct structural types based on land cover and spatial patterns. Mosquitoes are sampled systematically within these types using CO₂-baited traps and ovitraps to assess species presence and abundance. This approach enables a direct comparison of mosquito community abundance across landscape settings and helps identify structural features linked to vector activity. By integrating spatial landscape patterns with field monitoring, we evaluate how habitat characteristics influence mosquito abundance. The findings support the development of targeted, evidence-based strategies for vector surveillance and risk reduction. This work advances adaptive public health planning by linking landscape patterns to potential disease transmission hotspots in the context of climate change.

Keywords

One Health, vector-borne diseases, urban microclimate, landscape structure, mosquito ecology, climate change, habitat fragmentation, risk modeling

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Professional Status of the Speaker

Postdoc

Junior Scientist Status

Yes, I am a Junior Scientist.

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