
Pollinator responses to urban environmental gradients

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Résumé

Urban environmental gradients include landscape and local effects inherent to artificialization, such as habitat loss and fragmentation or the urban heat island effect, as well as management-related effects, such as mowing frequencies of herbaceous sites or artificial lighting. These gradients filter out species and the expression of their functional traits, thus affecting ecological function.

The EvolVille project has established the monitoring of 60 urban grassy sites in the metropolitan area of Strasbourg, France. Recorded variables include the herbaceous plant community composition, management practices, soil composition, temperature and hygrometry. In 2022, standardized insect nest boxes were added. This extensive network aims to capture the various dimensions of the urbanization gradient and establish their link with the composition and functioning of biodiversity in urban natural spaces.

We have analyzed correlations between environmental gradients, herbaceous plant community composition, and the abundance, diversity, and phenology of insect nest box occupation. Nesting insect abundance responded rather to landscape variables than to the herbaceous plant community composition, showing a negative correlation with the volume of surrounding buildings. However, an intensive management of grassy areas also depresses nest box occupation, especially when the site is surrounded by a larger vegetal cover. Our results thus suggest that the success of local management actions aimed at improving the ecological state of urban green spaces depends on the landscape context at scales exceeding 200 meters around the sites.

Mots-Clés: insects, herbaceous plants, community, landscape, management pressure

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