Biodiversity is key to the mental health benefits of nature, new study finds

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New research from King's College London has found that spaces with a diverse range of natural features are associated with stronger improvements in our mental well-being compared to spaces with less

natural diversity.

Published in *Scientific Reports*, this citizen science study used the smartphone application Urban Mind to collect real-time reports on mental well-being and natural diversity from nearly 2,000 participants.

Researchers found that environments with a larger number of natural features, such as trees, birds, plants and waterways, were associated with greater mental well-being than environments with fewer features, and that these benefits can last for up to eight hours.

Further analysis found that nearly a quarter of the positive impact of nature on mental health could be explained by the diversity of features present. These findings highlight that policies and practices that support richness of nature and species are beneficial both for environment and for public mental health.

Lead author Ryan Hammoud, Research Assistant at the Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King's College London, said, "To our knowledge, this is the first study examining the mental health impact of everyday encounters with different levels of natural diversity in real-life contexts. Our results highlight that by protecting and promoting natural diversity we can maximize the benefits of nature for mental well-being.

"In practice, this means moving away from heavily curated monocultural pockets and parks of mown grass, which are typically associated with low biodiversity, towards spaces which mirror the biodiversity of natural ecosystems. By showing how natural diversity boosts our mental well-being, we provide a compelling basis for how to create greener and healthier urban spaces."

The study took place between April 2018 and September 2023, with

1,998 participants completing over 41,000 assessments. Each participant was asked to complete three assessments per day over a period of 14 days, entering information about their environment and answering a series of questions about their mental health. Natural diversity was defined by how many out of four natural features—trees, plants, birds and water—were present within the participant's surrounding environment.

Data were collected using the Urban Mind app, developed by King's College London, landscape architects J&L Gibbons and arts foundation Nomad Projects.

Senior author Andrea Mechelli, Professor of Early Intervention in Mental Health at the IoPPN, said, "In the context of climate change, we are witnessing a rapid decline in biodiversity in the UK as well as globally.

"Our results suggest that biodiversity is critical not only for the health of our natural environments but also for the mental well-being of the people who live in these environments. It is time to recognize that biodiversity brings co-benefits for planetary and human health and needs to be considered vital infrastructure within our cities."

"Smartphone-based ecological momentary assessment reveals an incremental association between natural diversity and mental well-being" by Hammoud, R. et al. is published in *Scientific Reports*.

More information: Smartphone-based ecological momentary assessment reveals an incremental association between natural diversity and mental wellbeing', *Scientific Reports* (2024). DOI: 10.1038/s41598-024-55940-7