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Document Version

Final published version

Citation (APA)

Samuelsson, K., Gren, Å., Lim, N. J., Fisher, J. C., Hartig, T., Lawrence, B. T., Lindberg, F., Sundström, M. L., Ramirez Aranda, N. E., van Timmeren, A., & Barthel, S. (2025). *Fourth Symposium on Social-Ecological Urbanism: Urban Well-Being through the Five Senses: Symposium Report*.

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SYMPOSIUM REPORT

Fourth Symposium on Social-Ecological Urbanism: Urban Well-Being through the Five Senses



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The Fourth Symposium on Social-Ecological Urbanism was hosted by the Urban Studio research programme at University of Gävle, and held 2–3 December 2025 at Gävle Concert Hall, Gävle, Sweden. It examined how multisensory experiences of urban environments and nature relate to human well-being, and how such perspectives can inform social-ecological approaches to urban planning and design.

Urban well-being is shaped by lived, multisensory experience

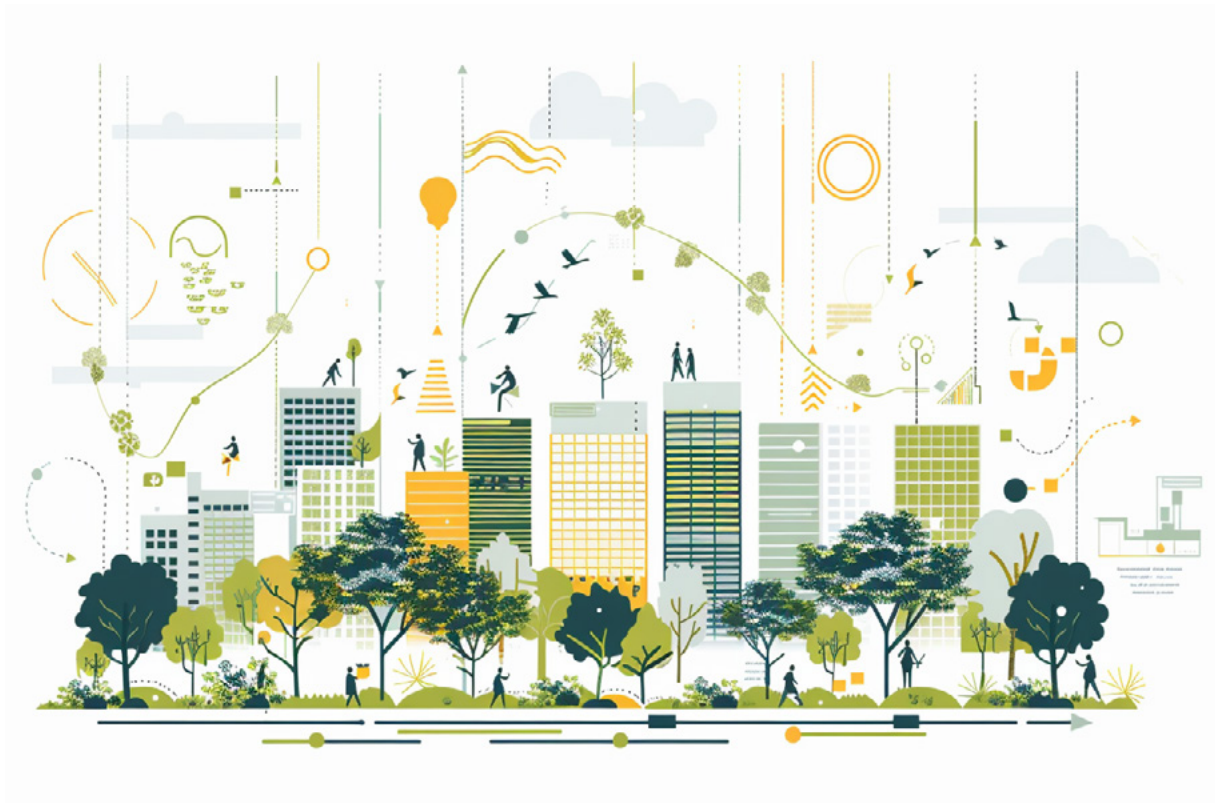
MULTISENSORY EXPERIENCE IS THE pathway through which the physical environment affects attention, adaptation and restoration (Hartig, 2017). In the case of sound, treating it solely as a decibel value misses dimensions of the acoustic environment that are critical for human experience and well-being. Noise action planning provides little information about acoustic conditions below regulatory limits, although experiences of the acoustic environment can vary greatly. Subjective noise annoyance is a validated health outcome, acting as an early warning signal rather than merely a nuisance.

Another example concerns temperature perception. Thermal comfort is mediated by individual perception, not simply a reflection of air temperature, with the same temperature perceived differently across regional climates, the same wind speed is perceived differently in squares versus courtyards (Eliasson et al., 2007), and even different sunlight conditions during different seasons (Ning et al., 2023). Although microclimatic factors affect the overall thermal sensation, individuals can have different tolerance levels to heat and thermal conditions; therefore, thermal sensation can be subjective in nature.

Research is also increasingly focusing on links between biodiversity and well-being. For instance,

forests areas, particularly those close to cities, can be highly beneficial not only for the ecosystem services they provide but also for improving mental health. The presence of forests and their characteristics, such as greenness, can have a positive impact on the perceived visual diversity, which can be associated with well-being (Rozario et al., 2025). Biodiversity in forests also provides different experiences to people. Positive experiences of biodiversity are mediated by colours, sounds, smells and textures (Fisher et al., 2023).

The importance of multisensory experience for well-being highlights a need for direct measurement. Ecoacoustic and psychoacoustic assessments can be used to capture qualitative differences in soundscapes that diverge from conventional modelled noise exposure (Lawrence et al., 2022). Similarly, there's a need to measure perceived thermal comfort in addition to temperature. The BIO-WELL scale (Irvine et al., 2023) provides a concrete tool for measuring experienced biodiversity benefits. Public Participation Geographic Information Systems (PPGIS) has for long been a reliable method for capturing experiences situated in geographic locations, and recent methodological innovations include combining it with AI-based emotion detection trained on locally grounded data.



Multisensory well-being emerges from interactions across spatial and temporal scales

WHILE WE MOSTLY EXPERIENCE environmental stimuli from our immediate surroundings, these are dependent on structures and processes at larger spatial scales. Sensory experiences of thermal comfort in a street or park cannot be planned independently of city-scale urban morphology, with dense urban form lacking green-blue infrastructure reducing wind and increasing heat storage, thereby intensifying heat stress. Microscale conditions of co-presence in a street or square (who encounters whom) are shaped by city-wide spatial patterns of connectivity and segregation (Gren & Berghauser Pont, 2025). Experiences of a place depend on how it relates to the neighbourhood surrounding it. For example, small-scale green elements (such as cemeteries, urban tree stands or pocket parks) can function as quiet biophonic areas within dense urban fabrics which can benefit people living in local neighbourhoods there better compared to modernistically planned areas where noise-levels may be higher. However, the quality and accessibility of these green areas can vary widely depending on their surroundings, including on the residents living there, which can make them expensive and hence spatially exclusive in both distribution and accessibility (Jeon & Jung, 2024).

In terms of the temporal dimension, demanding experiences deplete adaptive resources over time, creating a need for periodic restoration. With adaptive load accumulating through everyday activities, well-being relies on readily available opportunities for restoration embedded in daily life. Hence, small and tranquil green spaces in urban areas can function as restorative environments, that offer opportunities for recharging from daily life activities. Hence such provide opportunities for physiological stress reduction, and may at the same time serve as settings that connects people with nature, further supporting psychological and cognitive well-being of residents. In addition, there are temporal rhythms to environmental stimuli. Biophonic areas exhibit strong diurnal patterns, meaning that the same place may function as an urban oasis at certain times but not others (Lawrence et al., 2024). Similarly, there's a clear day-night rhythm to urban climate, with daytime microclimate primarily shaped by sun/shade and wind, while nighttime conditions are dominated by the urban heat island effect. Across longer time scales, biodiversity-related well-being is dependent on sensory traits that vary with the seasons, such as birdsong, flowering, foliage, and smells (Bentley et al., 2023).

The urban policy and planning gap

THE SYMPOSIUM REPEATEDLY HIGHLIGHTED a gap between established evidence and current policy and planning practice. There is a persistent tension between ensuring availability of microenvironments supporting well-being and responding to demands for development. An example of such policy–science disconnect is that Swedish development guidelines have been relaxed to permit higher noise exposure than WHO health-based recommendations, thereby enabling housing in noise-exposed locations. This policy shift has occurred despite overwhelming epidemiological evidence that noise is a major environmental health determinant. At the European level, although EU Noise Action Plans formally require identification and protection of quiet areas,

in practice these plans rarely include physical sound measurements, provide little information on acoustic environments below noise thresholds, and allow the loss of previously designated quiet areas. Furthermore, despite clear evidence that trees and shading reduce heat stress attenuate noise (e.g., Zhao et al., 2021), and provide biodiversity-related benefits, urban development trajectories still sometimes continue to reduce vegetation cover, as shown by longitudinal remote sensing studies from Gothenburg (Blinge, 2021) and analyses of Swedish urban typologies (Bäcklin et al., 2024). Therefore, a persistent trade-off often exists between urban development and the preservation of the natural environment.

Planning for multisensory well-being requires an equity- and group-sensitive perspective

EVIDENCE INDICATES THAT opportunities for multisensory well-being are not equally distributed across social groups. For example, older adults are particularly vulnerable to heat, due to pre-existing health conditions and social factors. Older individuals in greener areas report lower perceived indoor heat and are less likely to avoid outdoor activity during heatwaves (Lönn et al., 2025). Availability of urban parks often vary spatially (among neighbourhoods) and among different socio-economic groups. In England, deprived areas have worse access to environments with species traits

associated with positive emotional, spiritual, and sensory responses (Fisher et al., 2025). The relaxed regulations around noise described in the previous section begs for studies that analyse if those will exacerbate health inequalities. There are reasons to believe that socioeconomically disadvantaged populations will disproportionately be exposed to noisy environments. Disparities in outcomes may be further compounded by differences in agency within urban policy-making processes, as illustrated for example by inequalities between income groups (King et al., 2025).

In summary the symposium found that many health and well-being impacts from urban environments are relational, since those are contingent on sensation and interpretation of environmental stimuli, and moreover, such impacts are riddled with issues of unequal spatial impacts.

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Symposium presentations

Tuesday 2 December 2025

Keynote: Sensation, adaptation, restoration

Terry Hartig, Uppsala University, Sweden

Noise, health and cities

Mare Löhmus Sundström, Karolinska Institute

Sound in Spatial Planning

Bryce T. Lawrence, TU Dortmund University, Germany

Urban climates, health and well-being

Fredrik Lindberg, University of Gothenburg, Sweden

Multisensory experiences of biodiversity for human wellbeing

Jessica C. Fisher, University of Kent, United Kingdom

Wednesday 3 December 2025

Unlocking the senses: Combined approaches for monitoring urban experiences

Nohemi Ramirez Aranda, Delft University of Technology, the Netherlands

The issue of multi- and cross-scale interactions in developing sustainable and resilient cities

Åsa Gren, University of Gävle, Sweden