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OPEN LETTER

The numbers game of nature in cities

[version 1; peer review: 1 approved, 1 approved with reservations]

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Abstract

Various catchy rules, such as the "3-30-300 rule", or the "15-minute city" are becoming increasingly popular on how to green a city and allow easy access to green public spaces. These rules of thumb focus mostly on the instrumental value of nature, less on its intrinsic value, but none on its relational value—Nature as Culture. Focusing on humans reconnecting with nature and feeling as "One with Nature" is critical for developing ecological identities and sustaining a caring, committed and everlasting relationship with nature.

Keywords

Nature Future Framework, Urban Green, One with Nature, Ecological Identity

Open Peer Review

Approval Status ✓ ?

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1. **Christina Emmanouil**, Aristotle University of Thessaloniki, Thessaloniki, Greece

2. **Andressa Mansur**, Basque Center for Climate Change, Bilbao, Spain

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Background

The Nature Futures Framework (NFF), created by a group of IPBES experts, serves as a heuristic tool guiding the co-creation of scenarios and pathways that will lead to positive nature futures and enrich the relationship of people with nature (IPBES, 2015). The framework showcases nature's diverse values, proposing a redefinition of how we coexist with our natural environment. It provides a vision of how our lives can intertwine with nature and how we can collectively generate novel pathways towards a nature-rich future.

The NFF enables envisaging desirable futures for nature and people, taking explicit account of three distinct value perspectives that people contribute to Nature (Pereira *et al.*, 2020). First, Nature for Nature (NN) emphasizes nature's intrinsic value and the importance of preserving spaces for nature. Second, Nature for Society (NS) emphasizes the instrumental value of how people utilize nature and how nature contributes to people. Finally, the Nature as Culture (NC) value perspective emphasizes relational values, describing people's reciprocal relationship with nature and recognizing people as part of nature. The triangular space within the NFF that has these value perspectives on its three corners is flexible, allowing individuals to express their relationship and interaction with nature in diverse ways. This flexibility fosters the co-creation of desirable futures (Figure 1).

Cities have undergone extensive cementification, with a drastic reduction in natural areas and a surge in impervious surfaces, which in some cases constitute close to 90% of the total urban land cover. In light of this, there is a clear need to reintroduce urban nature to citizens. The NFF offers an innovative, participatory methodology for achieving this.

As climate change progresses, cities are expected to endure increasingly frequent, intense, and prolonged heatwaves and floods. Moreover, existing noise and air pollution are already degrading urban life and human well-being. Therefore, incorporating nature into our cities has become a clear necessity. Pocket parks, green spaces, green roofs, and green walls stand as a counterpoint to the grey "landscape monoculture" of crowded business districts.

The World Health Organization (WHO) identifies various public health challenges closely linked with urban living, including stress, pollution, the urban heat island effect, sedentary lifestyles, violence, and more. Meanwhile, COVID-19 exerted an immense pressure to the city public health system since most cases were detected in crowded urban environments. Scientists have extensively documented the benefits of nature, specifically trees and green spaces, for human well-being. Experiences such as viewing greenery, living among it, and using it for recreation yield positive emotional responses (Konijnendijk, 2023). Urban greening and Nature-Based Solutions are recognized as significant climate adaptation measures (UNDP, 2019). They aid in cooling the city, reducing air, water, and soil pollution, and improving aesthetic value, which in turn increases calmness, promotes activity, fosters a sense of community, and enhances biodiversity.

Discussion

The emerging "3-30-300 rule of thumb" for urban greening and forestry (Konijnendijk, 2023) is gaining popularity, with many cities now adopting it as a sustainability goal. This rule

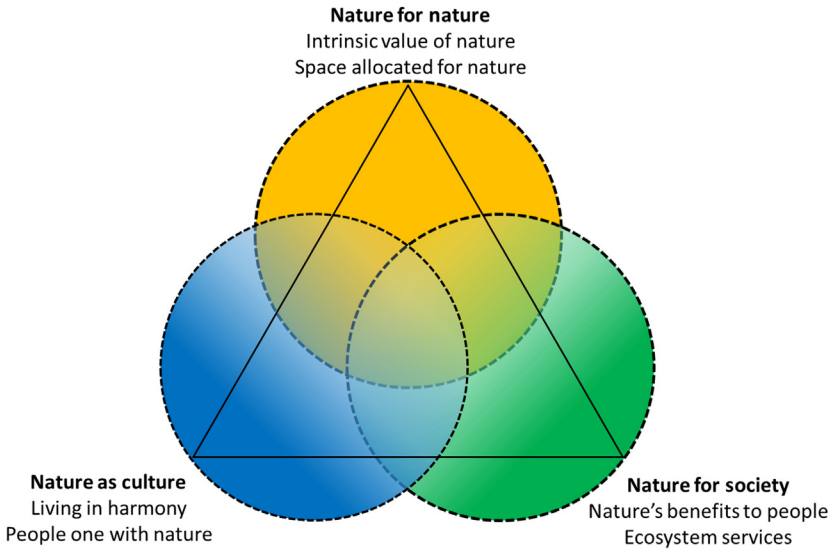

Figure 1. The Nature Futures Framework triangular space with short descriptions for the value perspectives. (Source: Pereira *et al.*, 2020).

provides a guideline for sustainably greening a city while considering equitable access to green spaces. It sets the threshold at having at least 3 trees within view for every citizen, maintaining over 30% tree canopy in all city neighbourhoods, and ensuring that no citizen is more than 300 meters away from the nearest public green space. Another similar concept is the "5/10/15-minute city" rule (Staricco, 2022), which refers to the maximum time it should take all citizens to reach a park or any other green space from their home or work—300 m would correspond to the 5-minute city. However, all these rules seem to emphasize the instrumental value of nature or Nature for Society, as the focus is on what nature can do for humans—pleasing us aesthetically, cooling our surroundings, providing shade, cleaner air and water, etc. It seems that the rules being proposed only explore the NS element of the nature value system, as presented by the NFF, leaving out the NN and NC value perspectives.

On the other hand, another rule of thumb, the 10-20-30 rule, proposed by Santamour (1990) appears to focus on the NN perspective: It is a benchmark that defines the required diversity of urban forests and street trees, aimed at enhancing their long-term resilience. It asserts that they should include no more than 10% of any particular species, 20% of any one genus, or 30% of any single family. This rule diverges from the others in that it concentrates on nature itself, proposing measures that address nature's needs.

However, none of these rules focus on Nature as Culture, which would see humans and nature as one—the "One With Nature" perspective. To promote transformative change and demonstrate that nature and biodiversity underpin every aspect of life, we must also concentrate on people's connection with nature and on fostering identities. This will not be achieved by merely promoting the benefits of nature for people. The reciprocity of the human-nature relationship should incorporate the ways humans connect with, care for, and are committed to nature—all crucial elements of shaping and sustaining ecological identities (Schultz, 2002). The younger generations being born, living, and working in such grey cities nowadays have, for the most part, little to no experience with nature. This lack of ecological knowledge and appreciation, attributable to the disconnect with nature, may be at the root of unsustainable consumption patterns, globalized fast-food systems, obesity, and mental and social health issues. Given how undervalued and underrepresented nature is in many cities today, focusing solely on the nature's benefits for people and introducing catchy rules for urban planners that isolate the NS value perspective impedes people connecting with, appreciating and respecting nature, and envisioning themselves as part of it.

Catchy slogan-like guidelines, such as the 3-30-300 rule or the 15-minute city, are useful. They provide direction and targets to urban planners and cities and facilitate their adoption into policies, regulations, and master plans. However, they focus exclusively on one aspect of the human-nature relationship, potentially offering a skewed perspective on how nature should be viewed. The urgent need to introduce another benchmark and numerical target for the NC value perspective is evident. This approach will highlight aspects of the NC relationship, developing tangible metrics to facilitate understanding. Scientists should further explore the key issues and stages communities need to navigate to reconnect with nature and to feel part of it; adjusting to today's lifestyles, that are far from such a connection, is not an easy task.

Ethics and consent statement

Ethical approval and consent were not required.

Data availability

No data are associated with this article.

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Open Peer Review

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Version 1

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Andressa Mansur
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The letter brings us a good discussion about diverse values for the planning of nature in cities. In this sense, this is an interesting topic that should be more explored in the decision-making of urban greenery. However, it brings out a discussion that is not new in terms of the Nature Futures Framework from IPBES for urban nature and should be included in the background: e.g., Mansur, *et al.* "Nature futures for the urban century: Integrating multiple values into urban management." *Environmental Science & Policy* 131 (2022): 46-56. https://www.sciencedirect.com/science/article/pii/S1462901122000193[1].

I would recommend also to include more citations to corroborate the statements. For instance the 4th paragraph of the Background, "As climate change progresses..." There is a lot of evidence on that, a citation is needed. Also in the rest of this paragraph, there are important contributions in the area to be cited on how urban greenery enhances human well-being and the impacts of the lack of it.

The same for Nature-Based Solutions, there are many important contributions in the area and some evidence is needed. For instance, https://www.science.org/doi/10.1126/science.abn9668[2].

In the discussion part, it is important to give more practical examples of what nature as a culture would look like and the benefits of that to human well-being and biodiversity in cities corroborated with evidence in the literature.

As the audience of this letter seems to be urban planners and decision-makers, the benefits/advantages for the city of having more nature as culture should be explicitly discussed. Maybe bring some numbers and statistical comparisons on the relationship of, for example, community gardening as nature as culture, health, and local food supply, or something similar.

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2. Seddon N: Harnessing the potential of nature-based solutions for mitigating and adapting to climate change.*Science*. 2022; **376** (6600): 1410-1416 PubMed Abstract | Publisher Full Text

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Partly

Does the article adequately reference differing views and opinions?
Partly

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
No

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
No

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Sustainability sciences, transformative change to sustainability

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 27 October 2023

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Christina Emmanouil
School of Spatial Planning and Development, Aristotle University of Thessaloniki, Thessaloniki, Greece

The open letter deals with pragmatic issues that are present in current cities. It was especially

interesting to read about the skewed version of what nature consists, for the newer generation, as the article correctly pinpoints. I would like to see more and more precise suggestions proposed at the end of the open letter, after the shaping and the acknowledgement of the problem, if possible, by the author.

Is the rationale for the Open Letter provided in sufficient detail? (Please consider whether existing challenges in the field are outlined clearly and whether the purpose of the letter is explained)
Yes

Does the article adequately reference differing views and opinions?
Yes

Are all factual statements correct, and are statements and arguments made adequately supported by citations?
Yes

Is the Open Letter written in accessible language? (Please consider whether all subject-specific terms, concepts and abbreviations are explained)
Yes

Where applicable, are recommendations and next steps explained clearly for others to follow? (Please consider whether others in the research community would be able to implement guidelines or recommendations and/or constructively engage in the debate)
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Environmental monitoring

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.