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# Editorial: Women in urban ecology 2022/2023

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## Editorial on the Research Topic

### Women in urban ecology 2022/2023

## Introduction

The impact of urbanization on biodiversity is increasingly important for global conservation efforts (Ibáñez-Álamo et al., 2016; Aronson et al., 2017). As urban areas expand, they create new environments suitable for certain species capable of adapting to urban settings. Thus, wildlife in urban areas encounters new ecological challenges, which may favor certain species over others (Callaghan et al., 2020; Morelli et al., 2021). On one side, cities can act as ecological traps for species (Zuñiga-Palacios et al., 2021), but on the other side, cities also potentially provide habitat for others (Baldock et al., 2015; Spotswoods et al., 2021).

Today, urban ecology comprises ecological, social, economic, and institutional aspects, often in the context of sustainable urban development (e.g., Douglas et al., 2020). The significance of cities in conserving biodiversity has led to the rapid growth of urban ecology as a multidisciplinary scientific field (Pickett et al., 2016). Overall, female researchers encounter disadvantages and are consistently underrepresented in science and academic publishing, as evidenced by several studies (e.g., Fox and Paine, 2019; Huang et al., 2020; Larivière et al., 2013; West et al., 2013). The data shows a significant gender gap in scientific publications, with women representing less than 30% of authors (Fox and Paine, 2019; Huang et al., 2020; Larivière et al., 2013; West et al., 2013). More specifically, in ecology and evolution, women are significantly underrepresented as first, senior, and sole authors, making up only 11% of the top-publishing authors in this field (Fox and Paine, 2019; Maas et al., 2021). Moreover, compared to the overall authorship rate of 31%, women were the first authors in 38%, the last in 23%, and the sole authors in 24% of the publications (Fox et al., 2018; Frances et al., 2020). Even though specific data is still lacking, a similar situation could probably be reflected in the discipline of urban ecology. In this sense, this Research Topic aims to increase the participation of female researchers in scientific publications on urban ecology, as manuscripts were invited with at least a woman researcher as the first or last author.

This Research Topic covers studies of urbanization's effects on biodiversity, sustainable planning, and the design of green infrastructure. Current urban expansion is one of the main threats affecting natural ecosystems and biodiversity conservation (Jiang et al., 2012; Güneralp et al., 2020). The study by Hirpa et al. shows that in central Ethiopia's Awash basin, Addis Ababa grew sixfold due to urbanization from 2000 to 2020. Hirpa et al. found

that cultivated land expanded into bare and forested areas at the expense of natural land. It is predicted that by 2050, the urban area of Addis Ababa will further expand by 87%. These changes will result in significant shifts in ecosystems, and the study aims to contribute to more sustainable urban development.

A key aspect is understanding how urbanization influences the adaptation of animals and plants to urban habitats. In line with this, this Research Topic includes two articles focused on adaptation responses of birds to urbanization. The study conducted by [Goumas et al.](#) shows that urban gulls prefer nesting on cliffs, enabling them to thrive in city areas. Moreover, the same study observed that gull species living in urban environments are not at risk of population decline, demonstrating their adaptability in choosing breeding habitats in urban areas, including using buildings for nesting sites. Similarly, [Abou-Zeid et al.](#) studied the impact of urban areas on birds' response to predators. Thus, they conclude that noise pollution did not affect the alert distance of Eurasian Magpies but significantly delayed their response to potential threats. This indicates how noise pollution increases the birds' response time without interfering with their reaction to potential predators. Focusing on mammal taxon, [Printz and Jung](#) studied the effects of urbanization on bat diversity. In this study, the authors found that larger urban areas in Germany with more impervious surfaces and newly constructed housing had fewer bat species. Additionally, they observed higher bat activity in older

housing areas with open-structured vegetation. Thus, environmental factors are essential in rural-urban planning to promote bat activity and diversity. Synergically to animals, one study on this topic emphasized the role of urbanization by addressing plant responses. Thus, [Qu et al.](#) found a correlation between decreased hydrogen cyanide (HCN) production in leaves and the changes in root-associated nematode communities. Urbanization directly or indirectly impacts soil biota in urban areas, with plant defenses affecting soil communities. This clearly demonstrates how urbanization is leading to changes in plant traits and root-associated nematode communities.

Another important element to consider in urban ecology studies is the role of humans. [Thorpert et al.](#) conducted a study on the perception of green roofs in Malmö, Sweden, focusing on the seasonal and successional variation of *Sedum*-dominated and biodiverse roofs. Participants evaluated aesthetics, biodiversity, and stress-reducing capacity using an online survey. The study showed that vegetation color significantly influenced perceived aesthetics and restorative values. Roofs dominated by green and white colors received higher ratings than those dominated by red and red-brown colors. Insect diversity was also related to vegetation variation. These findings can guide the design of green roofs to enhance their aesthetic and restorative qualities.

Public participation in local plans in Paris, France, was investigated in the study conducted by [Dakouré and Georges](#). The

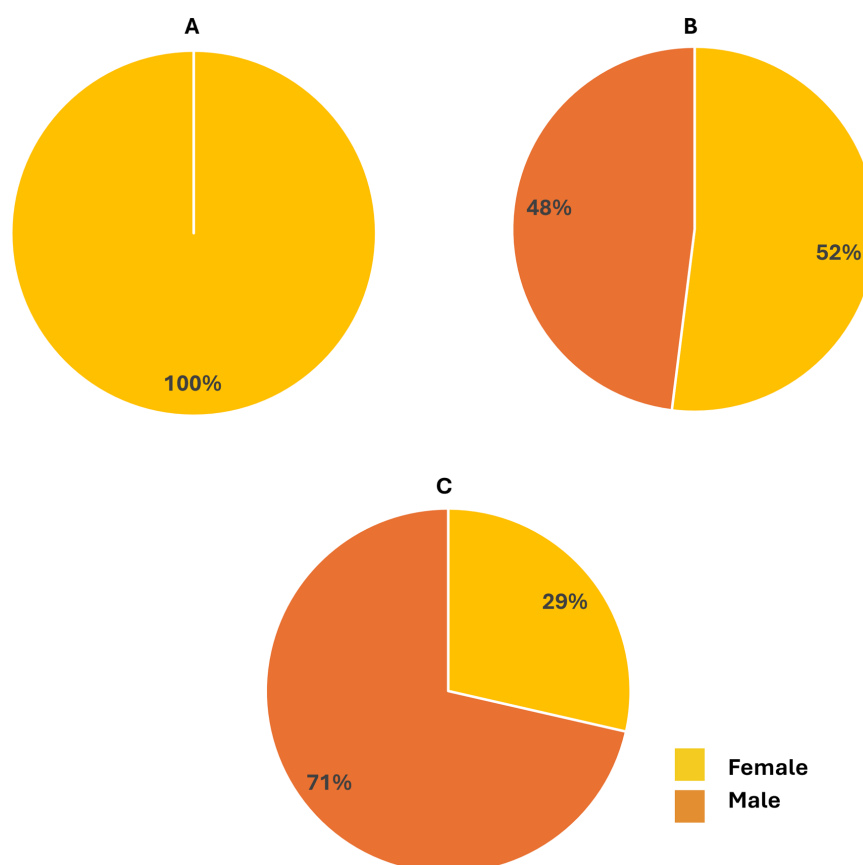


FIGURE 1

(A) Percentage of female first authors.; (B) Percentage of female and male researchers contributing to articles (for this Research Topic); (C) Percentage of female last authors.

authors studied how trees can incite inhabitants to engage in local planning processes regarding green infrastructure. A very high proportion of the participants (83%) were motivated to engage in the local planning process because they could contribute to a tree census. The study highlighted the importance of ecosystem services provided by trees and the need for further improvements in the participation process regarding green infrastructure in cities.

## Conclusion and future directions

This Research Topic covered various critical aspects of urban ecology, from projecting urban expansion by 2050 to understanding the adaptation responses of animals (birds and bats) and plants to urbanization. Furthermore, the research emphasizes including citizens' perceptions and participation for more successful development and conservation of urban biodiversity.

Nowadays, female researchers are underrepresented in scientific publications and likely also in urban ecology studies. However, women scientists can contribute valuable research to urban ecology, enriching this expanding scientific field. Accordingly, to increase their involvement in urban ecology research, this Research Topic invited women researchers to submit their urban ecology studies through various public media platforms. The main requirement was for women to be the first authors of the studies. As a result, females led all the comprehensive studies in this Research Topic (Figure 1A). The proportion of women and men was 52% and 48%, respectively (Figure 1B). Moreover, in 71% of the studies, 50% or more of the contributing authors were women. Only two articles had females as senior authors (Figure 1C), reflecting the underrepresentation of female senior researchers publishing within the urban ecology discipline.

## References

- Aronson, M. F. J., Lepczyk, C. A., Evans, K. L., Goddard, M. A., Lerman, S. B., MacIvor, J. S., et al. (2017). Biodiversity in the city: key challenges for urban green space management. *Front. Ecol. Environ.* 15. doi: 10.1002/fee.1480
- Baldock, K. C. R., Goddard, M. A., Hicks, D. M., Kunin, W. E., Mitschunas, N., and Osgathorpe, L. M. (2015). Where is the UK's pollinator biodiversity? The importance of urban areas for flower-visiting insects. *Proc. R. Soc. B* 282, 0142849. doi: 10.1098/rspb.2014.2849
- Callaghan, C. T., Benedetti, Y., Wilshire, J. H., and Morelli, F. (2020). Avian trait specialization is negatively associated with urban tolerance. *Oikos* 129, 1541–1551. doi: 10.1111/oik.07356
- Douglas, I., Anderson, P. M. L., Goode, D., Houck, M. C., and David Maddox, D. (2020). *Routledge Handbook of Urban Ecology*, Taylor & Francis Ltd, 1177pp.
- Fox, C. W., and Paine, C. E. T. (2019). Gender differences in peer review outcomes and manuscript impact at six journals of ecology and evolution. *Ecol. Evol.* 9, 3599–3619. doi: 10.1002/ece3.4993
- Fox, C. W., Ritchey, J. P., and Paine, C. E. T. (2018). Patterns of authorship in ecology and evolution: First, last, and corresponding authorship vary with gender and geography. *Ecol. Evol.* 8, 11492–11507. doi: 10.1002/ece3.4584
- Frances, D. N., Fitzpatrick, C. R., Koprivnikar, J., and McCauley, S. J. (2020). Effects of inferred gender on patterns of co-authorship in ecology and evolutionary biology publications. *Bull. Ecol. Soc. Am.* 101, e01705. doi: 10.1002/bes2.1705
- Güneralp, B., Reba, M., Hales, B. U., Wentz, E. A., and Seto, K. C. (2020). Trends in urban land expansion, density, and land transitions from 1970 to 2010: A global synthesis. *Environ. Res. Lett.* 15, 044015. doi: 10.1088/1748-9326/ab6669
- Huang, J., Gates, A. J., Sinatra, R., and Barabási, A. L. (2020). Historical comparison of gender inequality in scientific careers across countries and disciplines. *Proc. Natl. Acad. Sci. U. S. A.* 117, 4609–4616. doi: 10.1073/pnas.1914221117
- Ibáñez-Álamo, J. D. J. D., Rubio, E., Benedetti, Y., and Morelli, F. (2016). Global loss of avian evolutionary uniqueness in urban areas. *Glob. Change Biol.* 23, 2990–2998. doi: 10.1111/gcb.13567
- Jiang, L., Deng, X., and Seto, K. C. (2012). Multi-level modeling of urban expansion and cultivated land conversion for urban hotspot counties in China. *Landsc. Urban Plan* 108, 131–139. doi: 10.1016/j.landurbplan.2012.08.008
- Larivière, V., Ni, C., Gingras, Y., Cronin, B., and Sugimoto, C. R. (2013). Bibliometrics: Global gender disparities in science. *Nature* 504, 211–213. doi: 10.1038/504211a
- Maas, B., Pakeman, R. J., Godet, L., Smith, L., Devictor, V., and Primack, R. (2021). Women and Global South strikingly underrepresented among top-publishing ecologists. *Conserv. Lett.* 14, e12797. doi: 10.1111/conl.12797
- Morelli, F., Benedetti, Y., Ibáñez-Álamo, J. D., Tryjanowski, P., Jokimäki, J., Kaisanlahti-Jokimäki, M.-L., et al. (2021). Effects of urbanization on taxonomic, functional and phylogenetic avian diversity in Europe. *Sci. Total Environ.* 795, 148874. doi: 10.1016/j.scitotenv.2021.148874
- Pickett, S. T. A., Cadenasso, M. L., Childers, D. L., McDonnell, M. J., and Zhou, W. (2016). Evolution and future of urban ecological science: ecology in, of, and for the city. *Ecosystem Health and Sustainability* 2(7):e01229. doi: 10.1002/ehs2.1229
- Spotswood, E. N., Beller, E. E., Grossinger, R., Grenier, J. L., Heller, N. E., and Aronson, M. F. J. (2021). The Biological Deserts Fallacy: Cities in Their Landscapes Contribute More than We Think to Regional Biodiversity. *BioScience* 71, 148–160. doi: 10.1093/biosci/biaa155
- West, J. D., Jacquet, J., King, M. M., Correll, S. J., and Bergstrom, C. T. (2013). The role of gender in scholarly authorship. *PLoS One* 8, e66212. doi: 10.1371/journal.pone.0066212
- Zuñiga-Palacios, J., Zuria, I., Castellanos, I., Lara, C., and Sánchez-Rojas, G. (2021). What do we know (and need to know) about the role of urban habitats as ecological traps? Systematic review and meta-analysis. *Sci. Total Environ.* 780, 146559. doi: 10.1016/j.scitotenv.2021.146559

## Author contributions

YB: Conceptualization, Writing – original draft, Writing – review & editing. CH: Conceptualization, Writing – original draft, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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