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EDITED AND REVIEWED BY
Peter Convey,
British Antarctic Survey (BAS), United Kingdom

*CORRESPONDENCE
Ana Filipa Filipe
✉ afilipe@isa.ulisboa.pt

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Editorial: Women in biogeography and macroecology 2022

Anouschka R. Hof¹, Ana Filipa Filipe^{2,3*},
Genoveva Rodríguez-Castañeda^{4,5} and Luisa Maria Diele-Viegas⁶

¹Wildlife Ecology and Conservation Group, Wageningen University, Wageningen, Netherlands, ²Forest Research Centre, Associate Laboratory TERRA, University of Lisbon, Lisboa, Portugal, ³ESS, Instituto Politécnico de Setúbal, Setúbal, Portugal, ⁴Arachnology and Entomology collections, Burke Museum, Seattle, WA, United States, ⁵Centro de Estudios Ambientales y de Biodiversidad, Instituto de Investigaciones, Universidad del Valle de Guatemala, Ciudad de Guatemala, Guatemala, ⁶Laboratory of (Bio)Diversity in the Anthropocene, Federal University of Bahia, Salvador, Bahia, Brazil

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Editorial on the Research Topic

Women in biogeography and macroecology 2022

Women continue to be significantly underrepresented in science (Ceci and Williams, 2011; Holman et al., 2018; Hughes et al., 2023; Sebastián-Tirado et al., 2023; Cheung, 2024). Long-standing biases and gender stereotypes have for generations been discouraging girls and women away from science-related fields, the so-called STEM research (i.e., Science, Technology, Engineering, or Mathematics) (Holman et al., 2018). This situation is no different in the field of Biogeography based on a recent list of top-100 researchers (Renner and Skov, 2023). This list included 70 nominees for an International Biogeography Society award – note that there is a known significant bias towards men receiving scientific awards (Van Miegroet and Glass, 2020) – plus 30 additions to “more evenly cover researchers from different geographical origins and gender.” Although authors tried to balance gender, still 76% of the listed researchers were likely to be men, based on the first names and pictures.

Gender equality is essential to ensure sustainable development (Donders and Tararas, 2021). However, to achieve this goal, traditional mindsets must be changed, gender stereotypes must be defeated, and girls and women must be encouraged to pursue STEM careers. The long-standing gender bias affects not only access and representation in science but also the publishing process (Bancroft et al., 2022). Considerable and specific language barriers prevent non-native-English speaker female scientists from publishing (Márquez and Porras, 2020; Amano et al., 2023). Furthermore, unpredictable circumstances may disproportionately affect the productivity of women, which was the case during the COVID-19 pandemic (Staniscuanski et al., 2021; Heo et al., 2022). Additional to such difficulties, women-first authors or people from low and middle-HDI countries are more likely to be rejected at the revision or resubmission publication step (Srivastava et al., 2024). Although this may not be the case for all journals, it stresses the need to reconsider the current approaches to promote equity in the publication process (Cassia-Silva et al., 2023).

As equity concerns in science become evident, journals are adopting special publication fees for low-income countries, including *Frontiers in Ecology and Evolution*, which offers a fee support program for which authors of institutions with insufficient funding to cover the charges can apply. To fully support female scientists from developing countries, there may, however, be a need to waive fees for those scientists.

To promote the work of women scientists, we present a collection showcasing their contributions to Biogeography and Macroecology. These studies reflect the diversity and advancement of women's contributions to science by addressing compelling problems in the biogeography field of science. First, [Diele-Viegas et al.](#) discuss the impacts of systematic biases against underrepresented groups in STEM in their academic productivity, making the current academic productivity metric a biased index of scientific merit. They propose strategies to mitigate such biases by guaranteeing diversified evaluation committees, editorial and peer-review boards, scientific society boards, and scientific meeting convenors. [Marshall et al.](#) examine predictors of endemism hotspot zones in the Nimba Mountains in Africa through the analysis of vascular plant records. The authors found that endemism rises with precipitation and elevation but decreases with increased disturbance, underscoring the urgency of safeguarding the Nimba mountains from deforestation. [Wang et al.](#) use species distribution modelling to project the current and future distributions of 40 threatened endemic vertebrates throughout a currently protected endemism hotspot in China under land-use and climate change. They found that the protected area will not be able to effectively conserve many of these species in future, highlighting the importance of such studies to conserve species. [Wroczynna et al.](#) study the body-size variability of a salinity-tolerant ostracod species, from Early Holocene to Recent populations. Authors show that distinct body-size clusters are superimposed by two large-scale geographical patterns. Results highlighted that body-size of ostracods might be predominantly controlled by phylogeny rather than by environmental factors. The authors conclude phylogenetic relationships should be primarily considered when attempting to explain body-size variability. [Bisht et al.](#) focus on plant biodiversity of some high-altitude national parks of the Indian Himalaya, and their current anthropogenic pressures. The authors compared data on plant composition collected at disturbed and at undisturbed sites along the altitudinal gradient and concluded that anthropogenic pressures altered the soil properties but also species composition. [Krokaitė et al.](#) show that plant invasions are driven by a combination of characteristics of invasive species and the invaded environment. The authors used *Impatiens parviflora* as a case study and molecular techniques covering various habitats in Lithuania. The study revealed that multiple introductions of the species likely occurred and that there is a lack of genetic variation between neighbouring populations of the study species. [Wu et al.](#) provide a framework to analyse large-scale temporal patterns of biodiversity by assessing changes in the alpha, beta, and gamma freshwater fish biodiversity in a large number of lakes across Alberta (Canada) over fifty years. Initially increasing diversity trends reversed in the last decade, leading to the loss of coldwater fishes in their study system.

The “*Women in biogeography and macroecology 2022*” special Research Topic collected diverse studies, offering valuable insights with

broad research and methodological implications. Case studies spanned various biota and geographies, enriching understanding in the field. Five of these studies covered the main current anthropogenic pressures and environmental impacts, such as climate change, biological introductions, and the efficacy of protected areas. One study covered the importance of phylogenetics in shaping body size variation. Finally, one study argued about the need to explicitly promote researcher's diversity, equity, and inclusion in science.

The path toward achieving equity for women in terms of access, representation, and publication opportunities in Biogeography and Macroecology remains unfinished, but the contributions made by the authors in this Research Topic suggest that if you give women opportunities, they overcome hardships of biases and deliver. It is our aspiration that this Research Topic will serve as a resolute stride in that direction and that the articles included herein will serve as a catalyst for all readers and researchers with an interest in Biogeography and Macroecology- especially girls and women!

Author contributions

AH: Conceptualization, Writing – original draft, Writing – review & editing. AF: Conceptualization, Writing – original draft, Writing – review & editing. GR: Conceptualization, Writing – original draft, Writing – review & editing. LD: 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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References

- Amano, T., Ramírez-Castañeda, V., Berdejo-Espinola, V., Borokini, I., Chowdhury, S., Golivets, M., et al. (2023). The manifold costs of being a non-native English speaker in science. *PLoS Biol.* 21, e3002184. doi: 10.1371/journal.pbio.3002184
- Bancroft, S. F., Ryoo, K., and Miles, M. (2022). Promoting equity in the peer review process of journal publication. *Sci. Educ.* 106, 1232–1248. doi: 10.1002/sce.21733
- Cassia-Silva, C., Rocha, B. S., Liévano-Torres, L. F., Sobreiro, M. B., and Diele-Viegas, L. M. (2023). Overcoming the gender bias in ecology and evolution: is the double-anonymized peer review an effective pathway over time? *PeerJ* 11, e15186. doi: 10.7717/peerj.15186
- Ceci, S. J., and Williams, W. M. (2011). Understanding current causes of women's underrepresentation in science. *Proc. Natl. Acad. Sci.* 108, 3157–3162. doi: 10.1073/pnas.1014871108
- Cheung, G. (2024). "The complex reality: unraveling the underrepresentation of women in STEM," in *Empowering Women in STEM* (Boca Raton, Florida, USA: CRC Press), 176–185.
- Donders, Y., and Tararas, K. (2021). "Mainstreaming science and human rights in UNESCO." in *The Right to Science*. Then and Now, edited by H. Porsdam and S. Porsdam Mann (Cambridge, UK: Cambridge University Press), 124–139. doi: 10.1017/9781108776301
- Heo, S., Chan, A. Y., Diaz Peralta, P., Jin, L., Pereira Nunes, C. R., and Bell, M. L. (2022). Impacts of the COVID-19 pandemic on scientists' productivity in science, technology, engineering, mathematics (STEM), and medicine fields. *Humanities Soc. Sci. Commun.* 9, 1–11. doi: 10.1057/s41599-022-01466-0
- Holman, L., Devi, S.-F., and Hauser, C. E. (2018). The gender gap in science: How long until women are equally represented? *PLoS Biol.* 16, e2004956. doi: 10.1371/journal.pbio.2004956
- Hughes, A. C., Than, K. Z., Tanalgo, K. C., Agung, A. P., Alexander, T., Kane, Y., et al. (2023). Who is publishing in ecology and evolution? the underrepresentation of women and the Global South. *Front. Environ. Sci.* 11, 1211211. doi: 10.3389/fevs.2023.1211211
- Márquez, M. C., and Porras, A. M. (2020). Science communication in multiple languages is critical to its effectiveness. *Front. Communication* 5. doi: 10.3389/fcomm.2020.00031
- Renner, S. S., and Skov, F. (2023). Science maps for biogeography—The field's place within the sciences and its change over the past quarter century. *J. Biogeography* 50, 805–815. doi: 10.1111/jbi.14575
- Sebastián-Tirado, A., Félix-Esbrí, S., Forn, C., and Sanchis-Segura, C. (2023). Are gender-science stereotypes barriers for women in science, technology, engineering, and mathematics? Exploring when, how, and to whom in an experimentally-controlled setting. *Front. Psychol.* 14, 1219012. doi: 10.3389/fpsyg.2023.1219012
- Srivastava, D. S., Bernardino, J., Marques, A. T., Proença-Ferreira, A., Filipe, A. F., Borda-de-Água, L., et al. (2024). Editors are biased too: An extension of Fox et al., (2023)'s analysis makes the case for triple-blind review. *Funct. Ecol.* 38, 278–283. doi: 10.1111/1365-2435.14483
- Staniscuaski, F., Kmetzsch, L., Soletti, R. C., Reichert, F., Zandonà, E., Schwartz, I. V., et al. (2021). Gender, race and parenthood impact academic productivity during the COVID-19 pandemic: from survey to action. *Front. Psychol.* 12, 663252. doi: 10.3389/fpsyg.2021.663252
- Van Miegroet, H., and Glass, C. (2020). Recognition through awards: a source of gender inequality in science? *Int. J. Gender Sci. Technol.* 12, 289–315.