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LETTER TO THE EDITOR

Open letter: There are more than just trees and forests to be conserved and restored

OPEN LETTER TO POLICYMAKERS AT THE 16TH MEETING OF THE CONFERENCE OF THE PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY (COP 16, CALI, COLOMBIA, 2024)

Tropical and subtropical grasslands and savannas have historically been neglected in global and local conservation policies. As a result, nearly half of their coverage has been lost. In 2023, the world's most biodiverse savanna (Brazilian Cerrado) lost 1.110.326 ha, increasing the rate of land conversion by 67.7% (MapBiomas, 2024). The resulting biodiversity and ecosystem service losses, including the ability to mitigate climate change, are profound and irreversible.

As scientists specialized in ecology, conservation, and restoration, from around the world, we call on policymakers at COP 16 to act decisively: *Tropical and subtropical grasslands and savannas matter for biodiversity protection, and the future of this planet relies on these ecosystems to the same extent it relies on forests*.

We urge the following commitments:

- Prioritize conservation and adequate management of grasslands and savannas.
- Establish mechanisms to reduce and halt land conversion in these ecosystems immediately.
- Promote conservation aligned with local economic activities, such as ecotourism and sustainable bioeconomic initiatives.
- Reject afforestation initiatives disguised as restoration efforts that harm these unique ecosystems.

Grasslands and savannas harbor an extraordinary biodiversity of light-loving fauna and flora, with up to 60 plants per square meter in some regions (Silva Menezes et al., 2018; Wilson et al., 2012). Many of these species are endemic and at risk of extinction. These ancient ecosystems are home to an astonishing cultural legacy and diversity. They are not only crucial for species conservation but also water security and carbon storage. For example, most of the major rivers in the Amazon originate in montane grasslands in the Andes, the *Cerrado*, and the Guyana Plateau. Peat soils in South American savannas store more carbon belowground than tropical forests do aboveground. These carbon stocks, some dating back 40,000 years, are at risk if inappropriate land use practices like soil drainage or large-scale tree planting disrupt natural water cycles.

Once open ecosystems are degraded, they rarely regain their original biodiversity and function. Effective restoration remains a challenge, while promising, restored open ecosystems rarely fully recover the complexity, diversity, or resilience of pristine ecosystems (Nerlekar & Veldman, 2020; Pilon et al., 2023; Zaloumis & Bond, 2011). This makes immediate conservation the most effective tool in mitigating biodiversity loss and maintaining ecosystem services.

The UN Decade on Ecosystem Restoration is meaningless without a solid policy to reduce and stop land conversion. Conserving the remaining tropical and subtropical grasslands and savannas is the only assurance that future generations will benefit from the services these ecosystems provide. We believe in the potential of restoration, but it cannot replace effective biodiversity protection. Robust environmental policies must be grounded in scientific evidence and prioritize both present and future societal well-being. As scientists and citizens, we emphasize the critical need to conserve what remains of these ecosystems. **While science works toward restoring what has been lost, conservation is our best defense against the biodiversity crisis and the loss of essential ecosystem services**.

KEYWORDS

biodiversity crises, conservation, COP 16, ecological restoration, open ecosystems

AUTHOR CONTRIBUTIONS

Natashi Pilon, Franciele Peixoto, Rafael S. Oliveira, Ana Carolina C. Oliveira, and Giselda Durigan led the initiative and wrote the letter; all the 137 authors read and agreed with all the content of the letter.

CONFLICT OF INTEREST STATEMENT

We declare no conflict of interest.

DATA AVAILABILITY STATEMENT

There are no data associated with the paper.

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REFERENCES

MapBiomas. (2024). *RAD2023: Relatório Anual do Desmatamento no Brasil 2023*. MapBiomas.

Nerlekar, A. N., & Veldman, J. W. (2020). High plant diversity and slow assembly of old-growth grasslands. *Proceedings of the National Academy of Sciences*, *117*, 18550–18556. https://doi.org/10.1073/pnas.1922266117

Pilon, N., Campos, B. H., Durigan, G., Cava, M. G., Rowland, L., Schmidt, I., Sampaio, A., & Oliveira, R. S. (2023). Challenges and directions for open ecosystems biodiversity restoration: An overview of the techniques applied for Cerrado. *Journal of Applied Ecology*, *60*, 849–858. https://doi.org/10.1111/1365-2664.14368

Silva Menezes, L., Vogel Ely, C., Lucas, D. B., Minervini Silva, G. H., Boldrini, I. I., & Overbeck, G. E. (2018). Plant species richness record in Brazilian Pampa grasslands and implications. *Brazilian Journal of Botany*, *41*, 817–823. https://doi.org/10.1007/s40415-018-0492-6

Wilson, J. B., Peet, R. K., Dengler, J., & Pärtel, M. (2012). Plant species richness: The world records. *Journal of Vegetation Science*, *23*, 796–802. https://doi.org/10.1111/j.1654-1103.2012.01400.x

Zaloumis, N. P., & Bond, W. J. (2011). Grassland restoration after afforestation: No direction home? *Austral Ecology*, *36*, 357–366. https://doi.org/10.1111/j.1442-9993.2010.02158.x

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