

RESEARCH HIGHLIGHT

Tackling potential bias in global biodiversity indicators: The relevance of considering local data and non-English literature

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Email: barbaralangdon@gmail.com**Handling Editor:** Martin Nuñez**Abstract**

1. **Research Highlight discussing:** Serrano, F., Marconi, V., Deinet, S., Puleston, H., Correa, H., Díaz-Ricaurte, J. C., Farhat, C., Luria-Manzano, R., Martins, M., Souza, E., Souza, S., Vieira-Alencar, J., Valdujo, P., Freeman, R., & McRae, L. (2025). Knowledge from non-English-language studies broadens contributions to conservation policy and helps to tackle bias in biodiversity data. *Journal of Applied Ecology*, <https://doi.org/10.1111/1365-2664.70092>.
2. Serrano et al. (2025) have done an incredible job of quantifying the potential effects of excluding non-English literature sources from the datasets that feed repositories used to estimate global biodiversity indicators. These indicators are presently used to monitor the success of various biodiversity frameworks and therefore form a basis for conservation and policy decision-making. To assess the effects of including non-English literature on the databases that feed these indicators, they used Brazil as a case study. Vertebrate species abundance and population data feed the Living Planet Index Database, which is used to estimate the Living Planet Index, a component of the monitoring framework of the Global Biodiversity Framework.
3. By screening articles from international (English-written) and Brazilian (Portuguese and English-written) journals, they demonstrated that the inclusion of Brazilian journals, particularly those published in Portuguese, increased the Brazilian vertebrate species abundance and population data in the databases approximately 10 and 8 times, respectively. They were also able to show how this inclusion changes estimations of species representation and population trends. They further compared publication trends between Brazilian and international journals and discussed how this could affect policy and conservation.
4. There is increasing evidence that focusing solely on English-language literature when assessing 'global' issues is not the right approach for conducting global science, at least in ecology. Local sources of information, in local languages, can significantly improve our understanding of many ongoing processes, if only they were considered when publishing global or regional-scale meta-analyses, assessments and/or reports.

KEYWORDS

biodiversity, global indicators, local data, non-English literature, vertebrate abundance

Biodiversity loss, together with climate change, has been recognized as one of the most pressing issues of the Anthropocene. Therefore, efforts are being made to tackle them together as a global issue, for which international initiatives are being pushed to slow and stop current trends. Since the Rio Earth Summit in 1992, the UN Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC) have dealt with those drivers of biodiversity loss, primarily climate change and pollution. The Aichi Biodiversity Targets (UNEP/CBD/COP/10/27) (UN, 2011), the Paris Agreement (FCCC/CP/2015/10/Add.1) (UN, 2016) and, more recently, the Kunming-Montreal Global Biodiversity Framework (CBD/COP/DEC/15/4) (UN, 2022) have been adopted by parties in order to address biodiversity loss, restore ecosystems and protect the benefits that nature provides to people (IUCN, 2024). Under this scenario, several indicators have been implemented to provide consistent, standardized and scalable tracking of the Global Goals and Targets, for example: services provided by ecosystems, percentage of land and seas covered by biodiversity-inclusive spatial plans, rate of invasive alien species establishment, index of coastal eutrophication potential, or the benefits from the sustainable use of wild species, among many others (CD/COP/DEC/15/5). But what happens when these indicators are based on biased data, and therefore, conservation and policy decisions have been based on incomplete information? That is exactly what (Serrano et al., 2025) asked. In particular, they wondered about the effects of estimating global indicators based on datasets collected only from international English-language journals. Are there enough local, non-English publications and datasets to significantly influence biodiversity indicators? Surprisingly (or not), they showed that, when using Brazil as a case study, representation of vertebrate species in terms of abundance and populations increased 10-fold and almost 8-fold in the dataset, respectively, when data published in Brazilian journals, especially those in Portuguese, were included.

English dominates the most recognized journals in conservation and ecological science, with articles mainly written by English-speaking authors from the Global North (Hazlett et al., 2020; Melles et al., 2019). As Serrano et al. (2025) explain, a third of all 75,513 scientific documents on biodiversity conservation published in 2014 were written in languages other than English (Portuguese, Spanish, Chinese and French) (Amano et al., 2016), which leads to the omission of large parts of information used in global studies, meta-analyses and indicators (Konno et al., 2020). More recently, Amano et al. (2023) established that, on average, 65% of the references used in country-level biodiversity assessments were local information sources in non-English languages.

Brazil is the largest country in Latin America, one of the parties to the CBD, a signatory of the Aichi Biodiversity Target (MMA, 2017) and also a party to the latest Kunming-Montreal Global Biodiversity Framework. It is recognized as one of the most biodiverse countries in the world and an owner of two biodiversity hotspots (Lewinsohn & Prado, 2005; Myers et al., 2000). The country has a thriving scientific activity, with national scientific journals published both in Portuguese and English. On the contrary, unfortunately, biodiversity

loss in Brazil is increasing with increasing deforestation (Assis et al., 2022; Pacheco et al., 2021), which leads to, for example, vertebrate population abundance declining severely (WWF, 2024). That background, makes Brazil a perfect case to test the effectiveness of bilingual literature searches in addressing biases and improving data coverage in biodiversity datasets. They focused on the population abundance databases used in the global monitoring framework as a case study, particularly the Living Planet Index (LPI; Ledger et al., 2023), defined as 'a measure of the state of the world's biological diversity based on population trends of vertebrate species from terrestrial, freshwater, and marine habitats'.

Using time-series of vertebrate population abundance data obtained from published articles between 1990 and 2015, the authors created three sets of sources: (a) Portuguese-language articles from Brazilian journals (Brazilian-Portuguese), (b) English-language articles from Brazilian journals (Brazilian-English) and (c) English-language articles from non-Brazilian journals (International dataset). All data collected was suitable for entry into the Living Planet Index Database (LPD), which provides data for one of the indicators of the Global Biodiversity Framework, the Living Planet Index (LPI; Ledger et al., 2023). They screened 59 Brazilian and 79 international journals, selecting those relevant according to the presence of suitable vertebrate species abundance data and the LPD criteria. Once all data was collected, they estimated search effectiveness and data representation, defined as the encounter rate of relevant articles and the taxonomic representation of each dataset by calculating the percentage of species in each vertebrate group with relevant data in relation to the number of species of that taxonomic group in Brazil. They also assessed the threat status of each species, the temporal and spatial coverage of the different datasets, and quantified the bias of terrestrial records towards infrastructure proximity, among other indicators. They also tested how trends in relative abundance changed according to each dataset and assessed how the influence of national-level data affected global trends in relative abundance (Figure 1).

The literature search yielded quite an amazing result: Brazilian journals with publications in Portuguese informed about 700 populations and 449 species, presented in 104 relevant articles (from 15,185 screened articles), and only 103 populations and 51 species from 29 relevant articles (in English) in international journals (from a total of 535,434 screened articles) (Table 1). The main difference between datasets was that international journals (with English-written articles) focused more on threatened species than Brazilian-Portuguese articles, and Brazilian articles written in English were mainly about Critically Endangered species. Spatial and temporal coverage was not significantly different among the three analysed datasets. Finally, not only can species and population representation improve when local non-English sources are included, but the robustness of calculations can also be enhanced. As the authors show in their discussion, this is not the first time that including non-English sources yields changes in biodiversity datasets, which would affect the estimation of biodiversity trends. They also address in the discussion how bias in publication interests can affect species

INTERNATIONAL "GLOBAL" DATA (1990 - 2015)

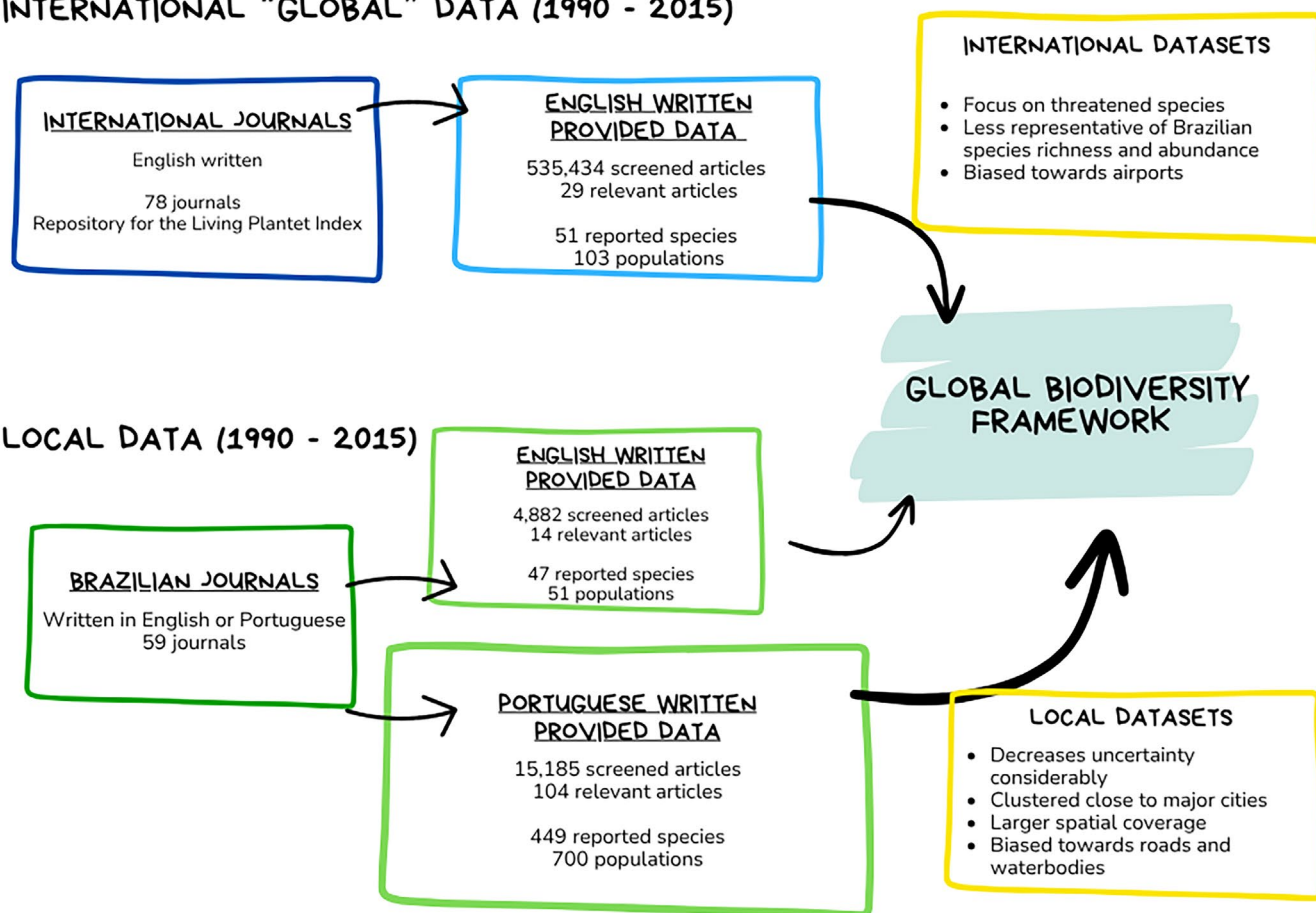


FIGURE 1 Diagram of the main findings and ideas discussed in Serrano et al. (2025) paper.

TABLE 1 Total number of screened articles, relevant articles, populations and species for each dataset created according to journal origin and language.

Dataset	No. of screened articles	No. of relevant articles	No. of populations	No. of species
Brazilian-Portuguese	15,185	104	700	449
Brazilian-English	4882	14	51	47
International	535,434	29	103	51

representation or temporal and spatial coverage, and how this new scenario can influence policy. Hopefully, their work will spark change and be replicated, contributing to enhance information between local sources and global assessments of biodiversity trends.

Local cases are still relevant for international journals, which tend to discard studies that are too local for such an international audience and 'global' expectations. But something has to change if global studies are not considering the whole globe nor its amazing variety of languages. Although this research does not solve the existing bias, it is a call for funding agencies, research institutions and journals to work towards that path. What should change, then? Some ideas have been proposed, for example, from the publishing point of view. Nuñez et al. (2019) propose in their editorial published in the Journal of Applied Ecology that: (a) both the editorial and reviewing processes should be more inclusive, considering underrepresented geographical regions; (b) the editorial skills of Early Career researchers

from underrepresented areas should be enhanced, which will help local researchers to engage with international networks; (c) issues in equality and diversity should be addressed by providing training and resources to researchers from underrepresented areas, increasing the likelihood of submission and publication success; and (d) it is necessary to break the barrier of language, which limits both readership and publication. Translating abstracts into local languages, among other actions, has been a great example of breaking this barrier for the Journal of Applied Ecology since 2018.

Initiatives like that, would increase local journals visibility, allowing local studies to reach global and/or regional-scale meta-analyses, assessments and reports, making 'global' science closer to be actually global, at least, in ecology.

AUTHOR CONTRIBUTIONS

Barbara Langdon has written this manuscript.

CONFLICT OF INTEREST STATEMENT

The author declares no conflict of interest. Bárbara Langdon is an Associate Editor of *Journal of Applied Ecology*, but took no part in the peer review and decision-making processes for this paper.

DATA AVAILABILITY STATEMENT

Data have not been archived because this article does not use data.

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