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Editors

*Basic and Applied Ecology*

Special issue: *Scales and heterogeneity in ecology*

February 14, 2022

Dear editors,

Hereby, we submit a literature review entitled *“How has bird biodiversity changed over time? A review across metrics and spatio-temporal scales”* for consideration for the special issue *Scales and heterogeneity in ecology* of *Basic and Applied Ecology.*

There are numerous analyses that assess biodiversity trends of birds, they come from different countries, and most of them use a single spatial scale (*e.g.* only local). They have never been put together, and never compared while also considering their spatial and temporal features (*i.e.* grain, extent, lag, …). Here, we review these studies, and we show that for birds, biodiversity can have opposing trends depending on the scale at which these trends are assessed. Given the current debate about biodiversity loss, we believe that demonstrating the influence of spatial scales on biodiversity change will motivate researchers to measure biodiversity trends across scales.

Moreover, we highlight a lack of consensus about temporal scale (*i.e.* confusion between temporal grain of the sampling effort and of the metric and the temporal lag), and we give guidelines for authors to better consider it. Finally, we show an insufficient spatio-temporal coverage of bird biodiversity datasets, which can lead to biased assessment of temporal biodiversity trends.

By considering spatio-temporal scales and heterogeneity of macroecological metrics, we believe that this literature review is relevant for the special issue “*Scaling and heterogeneity in ecology”*.

We have no conflict of interest to disclose. We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

Thank you for the consideration of our manuscript.

Sincerely,

François Leroy

PhD candidate

On behalf of the co-authors.