THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Forestry

April 15, 2025

Dear Dr. Rudolf:

We would be grateful for your consideration of our manuscript, "A four-step Bayesian workflow for improving ecological science," as an Inspiring Perspective in *The American Naturalist*.

Given the increasing aims of forecasting and prediction today, ecologists are using more complex models to leverage larger datasets (Anderson *et al.*, 2021; Muff *et al.*, 2022). Many researchers—ourselves included—were not trained in best statistical practice for these approaches, which can lead to poor models and incorrect predictions and decisions.

To address this pressing gap, we outline a generalizable workflow (Grinsztajn *et al.*, 2021; van de Schoot *et al.*, 2021), which is built on fundamental scientific principles and new insights from statistics and data science. This approach moves away from a focus on null hypothesis testing, towards estimating effect sizes, using models calibrated and better understood through simulating data at multiple steps—using a number of skills more often associated with theoretical than empirical ecology. We conclude by highlighting how adopting this workflow has changed our science and how it may improve statistical and mathematical training in ecology.

We have included previous reviews of this manuscript from *Nature Ecology & Evolution*. In response to these reviews we have made a number of changes to the manuscript, including clarifying its scope and goals, providing a GitHub repository (not shown here for double-blind review) and shortened the manuscript (2700 words currently) so that it is accessible for more readers. We would be happy to detail these changes further if requested.

We hope that you will find this perspective, which provides a road-map for the many ecologists now building more complex models, suitable for publication in *The American Naturalist*.

Sincerely,

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References

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