

April 22, 2022

Richard L. Wallace

Ecological Society of America  
Editor in Chief

Frontiers in Ecology and Environment

Collegeville, PA, USA

Dear Editor:

We are submitting the manuscript, “Finer scale layers and uncertainty analysis increase precision and differentiate areas of varying suitability in geopotential modelling of non-native plants in the U.S.” by Seokmin Kim, Anthony Koop, Glenn Fowler, Kimberly Israel, Yu Takeuchi, and Deah Lieurance for consideration as a Research paper in *Biological Invasions*.

In this paper, we introduce the “Proto4” model that is used to predict the potential distribution of non-native weed species in the continental U.S. as part of routine weed risk assessments (WRA). We then compare this model with the established and mechanistically similar “Proto3” model currently used in the Plant Protection and Quarantine – WRA process. By using more detailed geospatial layers and incorporating uncertainty into modeling, we found that the Proto4 model is more precise (by hundreds of thousands of square kilometers) than the Proto3 model while only failing to capture fewer than 1% of more georeferenced points found within the U.S., thereby increasing precision without greatly sacrificing accuracy.

We believe this work qualifies for one of your “XXXX papers” XXXX. This research is of broad interest to *Biological Invasions* readers because this model provides a mechanically simple tool for both managers and researchers in predicting the distributions of invasive weeds. We also provide an analysis of the relative importance of each of the model’s components in accurately predicting weed distributions and is the first to our knowledge to directly include uncertainty as an integral part of the modeling process. We are confident our results will influence weed risk modeling and management, while providing insight into the development of future prediction models.

These results have not been published elsewhere nor are they under considerations for publication by any other journal or publisher. Please address all correspondence concerning this manuscript to me at [sxk1332@miami.edu](mailto:sxk1332@miami.edu). Thank you for considering our manuscript for publication in *Biological Invasions*.

Sincerely,

Seokmin Kim, Anthony Koop, Glenn Fowler, Kimberly Israel, Yu Takeuchi, and Deah Lieurance