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Conference Abstract

Present-day and future global maps of non-native species richness across 17,343 islands worldwide

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Abstract

Island biodiversity is increasingly threatened by non-native species (NNS). Yet, no global map of island NNS richness has been produced to support global threat assessments. Using a hurdle random forest model informed by 11 biogeographic and anthropogenic predictors, we predicted NNS richness for 17,343 islands for the present day and the near future (2050). Biogeographic factors were the strongest predictors of NNS establishment, while the combined influence of biogeographic and anthropogenic variables best explained the accumulation of NNS across islands once established. We found NNS richness to be greater for larger, more elevated, and more remote islands, with high human population densities and low natural habitat proportions. Models predicted 54% of islands invaded in 2020, and an increase in NNS richness for 16% of these islands by 2050. These predictions help identifying islands prone to biological invasions, both today and in the future, and thus to derive conservation prioritizations.

Keywords

biological invasions, hurdle model, islands, exotic species, SSPs, random forest, threat maps

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Author contributions

Equal contribution of the two co-first authors, CM and MPL, and equal contribution of the two co-last author, CB and ABL. All authors conceived the study. CM collected data, CM and MPL performed modeling work, ran analyses, and wrote the first draft of the manuscript. ABL, JL, and CB provided methodological knowledge and literature review. All authors revised substantially the manuscript and the visualizations.

Conflicts of interest

The authors have declared that no competing interests exist.