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Conference Abstract

Habitat niche breadth drives global patterns of alien plant naturalization

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Abstract

Although habitat is widely recognised as a key factor in the naturalisation of alien plants — for example, with greater success observed in human-made habitats than in natural ones — the extent to which a species' habitat niche influences its invasiveness remains unclear. In particular, species that occupy a broad range of habitats may spread more widely due to their tolerance of diverse environmental conditions. To address this issue, we analysed data from the SynHab database, which was developed as part of the “Macroecology of plant invasions: a global synthesis across habitats” project (www.synhab.com). This dataset comprises records of approximately 6,500 naturalised species across 14 habitat categories from 102 regions worldwide. Where available, habitat distribution data were complemented with information on invasion status (naturalised vs. invasive; GloNAF database, van Kleunen et al. 2018), residence time (Seebens and Renard Truong 2026) and species-specific traits (GIFT; Weigelt et al. 2019).

Preliminary results show that the number of regions invaded by a species is strongly positively related to the number of habitats it occupies, with habitat specialists consistently exhibiting limited geographic distributions. Species traits also play an important role in determining naturalisation success. Naturalization success showed a unimodal relationship with plant height, peaking at approximately 1 m, which characterises the most widespread naturalised species globally. This pattern was consistent across most habitat types, except in aquatic habitats, where taller species tended to be more successful in general. In contrast, the effect of plant growth form did not vary among habitats, with graminoids being among the most successful groups and shrubs being among the least successful. Overall, habitat is a key predictor of naturalisation success, shaping species' naturalisation strategies across environments.

Keywords

habitat niche breadth, naturalized plants, traits.

Presenting author

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Conflicts of interest

The authors have declared that no competing interests exist.

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