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Conference Abstract

Global cascading effects and long-term disruption by invasive ants

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Abstract

Biological invasions negatively impact biodiversity and ecosystem functions worldwide. Understanding the spatiotemporal dynamics of these impacts is crucial for improving management actions, yet how their impacts scale through space and time remains poorly resolved. Here, we reviewed effects of invasive ants and assess how they vary across ecological and geographical context and invasion histories from 577 studies, using a global meta-analysis. We found that invasive ants caused substantial changes in native species behaviour and abundance, community structure and ecosystem functions. We detected overall greater negative effects on species at higher levels of ecological complexity, with lasting negative effects on the invaded ecosystems for more than 60 years. Invasive ants caused rapid and persistent negative effects at lower levels of ecological complexity (e.g., individual or population), while at higher levels (e.g., ecosystem) they manifested with a time lag of approximately 30 years. Finally, our results show that ~ 61% of total studies are focused only on two species, indicating a publication bias and an important knowledge gap. This meta-analysis is the first to reveal that negative impacts caused by invasive species accumulate with increasing ecological complexity, these effects persist over one century and may accumulate on higher ecological levels over time.

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Keywords

ant invasion, context-dependent effects, ecological complexity, time since invasion

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Conflicts of interest

The authors have declared that no competing interests exist.