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Conference Abstract

The mourning gecko *Lepidodactylus lugubris* as a model system for advancing invasion science

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Abstract

Biological invasions is a component and consequence of anthropogenically-driven global environmental change that is threatening ecosystems and the benefits they provide. Decades of research have established conceptual frameworks to understand the complex dynamics of invasions and its impacts. However, taxonomic biases in formulating these frameworks limit our perspective that often results in misinformed decisions that can cause unwanted management results. Here, we discuss the characteristics of *Lepidodactylus lugubris* that are relevant to existing invasion science frameworks and outline how using this species as a model can advance the field. We underscore four areas where *L. lugubris* can improve invasion science. The unique biological characteristics of the species can help

1. test the generality of invasion hypotheses largely developed from plants and invertebrates; and
2. the presence of multiple clonal lineages tests genotype-specific invasion success, niche use and impacts. The strong association of this species with trade and anthropogenic structures allow
3. linking introduction pathways to ecological outcomes; and lastly, its interaction-driven effects

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4. exemplify the context-dependence of biological invasion impacts.

Treating *L. lugubris* as a model system exposes mechanistic assumptions that currently underpin applied invasion frameworks—particularly regarding propagule pressure, pathway attribution, and impact scaling—and highlights how incorporating life-history traits, pathway structure, and context dependence can improve invasion risk assessment, surveillance design, and prioritisation across taxa associated with human infrastructure.

Keywords

alien, exotic, non-native, invasive species, invasion frameworks

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Conflicts of interest

The authors have declared that no competing interests exist.