
What can we learn about invasion ecology from ant invasions of islands ?

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Abstract

Nowhere are ecological communities more transformed by invasive species than on islands. The words ‘islands’ and ‘invasive species’ may evoke images of rats, cats, and goats preying on defenseless birds and mammals and devouring and trampling native plants. However, invasive ants have earned their place on the list of some of the world’s most invasive species, and few, if any, inhabited tropical islands would have escaped invasion by one or more non-native ants or possibly even invasive ants. My talk will draw on results of multiple experiments investigating ant interactions with resident flora and fauna in insular and continental habitats and experience incorporating ant ecology into management actions and policy. From these experiences, I draw five broad lessons about ant invasions. 1) Context matters in determining the direction and magnitude of impacts. Ant populations will be dependent on access to resources, often plant-derived, and outcomes of their interactions will depend on which interactors are present and their role in the ecosystem. 2) Although context matters, knowledge of adverse experiences elsewhere is still a powerful motivating tool for management action, as it should be. Many of our best examples come from ant invasions of islands. Undoubtedly, this is partly because of 3) the ‘simpler’ floral and faunal compositions characteristic of islands. The lower species richness of islands means that they lack some of the functional redundancy that is characteristic of more speciose ecosystems. However, their relative simplicity also more readily enables characterization of the context of interactions and their impacts. Relatively depauperate biota have a modest capacity to buffer change, and therefore 4) island ecosystems are more dynamic than continental ecosystems. Changing conditions may eliminate or decrease the importance of some interactions but introduce or increase the importance of others. Some invasive ants weather these changes better than others. Therefore, islands may be the best place to investigate ‘boom and bust’ cycles. However, 5) though natural population declines of invaders are gaining attention, we cannot predict them, nor are they fast or certain enough to warrant complacency where invasive ants pose a threat to biodiversity. Looking to the future, islands can be important settings for trialing new techniques and novel methods for addressing problems posed by invasive ant species. Many of the lessons learned from ant invasions can be extended to other invasive biota.

Keywords: biological invasions, impacts, taxon cycle, dysharmonism, model taxa

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