Positive Interactions of Native Species Melt Invasional Meltdown over Long-Term Plant Succession

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Abstract

Positive interactions have been hypothesized to influence plant community dynamics and species invasions. However, their prevalence and importance relative to negative interactions remain unclear, but are fundamentally important for both theoretical and applied ecology. We examined pairwise biotic interactions using over 50 years of successional data to assess the prevalence of positive interactions and their effects on each focal species (either native or exotic). We found that positive interactions were widespread and the relative frequency of positive and negative interactions varied with establishment stage and between native and exotic species. Specifically, positive interactions were more frequent during early establishment and less frequent at later stages. Positive interactions involving native species were more frequent and stronger than those between exotic species, reducing the impact of invasional meltdown on succession. Our study highlights the role of positive native interactions in shielding communities from biological invasion and enhancing the potential for long-term resilience.

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