

Successional shifts in tree demographic strategies in wet and dry Neotropical forests

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Abstract

Tropical forest succession and associated changes in community composition are driven by species' demographic rates, but how demographic strategies shift during succession remains unclear. To identify generalities in demographic trade-offs and successional shifts in demographic strategies, we quantified demographic rates of 787 tree species from two wet and two dry Neotropical forests. Across all forests, we found two demographic trade-offs – the growth–survival and the stature–recruitment

trade-off – enabling the data-driven assignment of species to five demographic strategies. Fast species dominated early in succession and were then replaced by long-lived pioneers in three forests. Intermediate and slow species increased in basal area over succession but in contrast to the current conceptual model, long-lived pioneers continued to dominate until the old-growth stage in all forests. The basal area of short-lived breeders was low across all successional stages. These results increase the mechanistic understanding and predictability of Neotropical forest succession.

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