

# Neighborhood effects on seed dispersal by frugivores: Testing theory with a mistletoe-marsupial system in Patagonia

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The outcome of the dispersal process in zoochorous plants is largely determined by the behavior of frugivorous animals. Recent simulation studies have found that fruit removal rates and mean dispersal distances are strongly affected by fruiting plant neighborhoods. We empirically tested the effects of conspecific fruiting plant neighborhoods, crop sizes, and plant accessibility on fruit removal rates and seed dispersal distances of a mistletoe species exclusively dispersed by an arboreal marsupial in Northern Patagonia. Moreover, in this study, we overcome technical limitations in the empirical estimation of seed dispersal by using a novel  $^{15}\text{N}$  stable isotope enrichment technique together with Bayesian mixing models that allowed us to identify dispersed seeds from focal plants without the need of extensive genotyping. We found that, as predicted by theory, plants in denser neighborhoods had greater fruit removal and shorter mean dispersal distances than more isolated plants. Furthermore,