Post-dispersal diaspore fate in degraded and pristine areas in a tropical grassland

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Abstract

Granivore invertebrates and vertebrates have important effects on seed fate. The removal or predation of diaspores during the post-dispersal (natural or seed sowing) phase can affect plant community dynamics and regeneration processes. The campo rupestre vegetation (mosaic of tropical grasslands and rocky outcrops) presents little natural resilience to soil disturbances. The aim of this study was to test the hypothesis that seed predation could be an important factor limiting natural plant recolonization in campo rupestre. We performed a factorial experiment involving the assessment of diaspores removal in four paired disturbed and pristine sites, and in vertebrate-excluded and control paired stations. We used two native seeds, three native fruits and made artificial diaspores containing sugar and fat, with attractive aroma and color. In each area, we placed six stations with vertebrate's exclusion cages and six control stations open structures with diaspores that were evaluated for removal after 24 and 48 hours of exposure. Additionally, for the three natural diaspores that presented the most significant removal rates we performed direct observations totaling 20 hours for each diaspore type distributed equally between the sites. Our results suggest that invertebrates comprised the group that contributed most to seed removal. Removal by vertebrates was not affected much in disturbed sites, whereas invertebrate activity seemed to be significantly reduced. Contrary to our expectations, we found that diaspore removal can be reduced by more than two fold in disturbed sites compared to pristine sites. Post-dispersal removal can vary remarkably between diaspore types. To conclude, seed removal and predation, still occurs and even at low rate could negatively affect vegetation regeneration, especially if seed rain in disturbed patches is limited.

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