

## LETTER

### Matrix matters for seed dispersal – a comment to Jules and Shahani

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In a recent JVS Forum paper, Jules & Shahani (2003) shed some light on the role of matrix quality for conditioning habitat fragmentation effects on plant regeneration, focusing on processes modulated by plant-animal interactions. The authors gathered published information on how matrix characteristics modify the outcomes of pollination, seed predation and herbivory in fragmented landscapes, by providing occasionally suitable habitat for fragment species, determining patch connection or even buffering negative border effects related to among-habitats structural contrast. However, they could not find any evidence of these matrix effects on seed dispersal. In this note we pay attention to several observational and experimental studies suggesting, directly or indirectly, that matrix actually matters for seed dispersal by animals.

A first suggestion of how matrix quality can modulate plant-disperser interaction comes from the evidence that matrix affects the abundance of vertebrate frugivores, providing the first step for differential seed dispersal patterns. For example, Estrada and Coates-Estrada (2002) showed that bats, many of them potential dispersers for a broad spectrum of plant species, were less abundant in tropical forest fragments surrounded by pastures, compared to patches embedded in an agricultural, structurally more complex matrix, namely cocoa and coffee plantations. Another observational, functional evidence is related with the role of remnant trees isolated in matrix pastures surrounding many tropical forest fragments (e.g. Galindo-González, Guevara, & Sosa 2000). Remnant trees are used as perches and foraging canopies by frugivorous birds and bats, facilitating the movement of dispersers among fragments. Thus, they foster seed dispersal from forest into pastures, acting as nucleation foci for tree recolonization, and they promote seed exchange among forest fragments, functioning as 'stepping stones' for dispersal processes. Finally, a recent experimental contribution by Tewksbury et al. (2002) provides unequivocal evidence of the positive effect of habitat corridors for seed dispersal. Working in

an experimental landscape of early-successional patches surrounded by mature forests, they demonstrate that seed dispersal by avian frugivores was more frequent among patches connected by habitat linear strips than among patches isolated by a homogeneous, inhospitable matrix.

Seed dispersal by animals, a main process shaping woody plant demographic and genetic dynamics, is frequently hampered by habitat fragmentation. A burgeoning empirical evidence is supporting the idea that some matrix features (isolated trees, corridors, and the matrix quality itself) may actually buffer this negative effect, by providing opportunities for dispersers movement among fragments and, consequently, increasing landscape connectivity for plant dispersal. In this context, we strongly encourage to consider seed dispersal as a target plant-animal interaction for further development of a general framework of matrix effects on fragmentation.

#### References

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