

Rodent-mediated plant seed dispersal: what happens to the seeds after entering the gaps with different sizes?

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Abstract

In general, it is accepted that gap formation significantly affects the placement of scatter-hoarded seeds by small rodents, but the effects of different forest gap sizes on the seed-eating and scatter-hoarding behaviors of small rodents remain unclear. Thus, we examined the effects of a closed canopy forest, forest edge, and gaps with different sizes on the spatial dispersal of *Quercus variabilis* acorns and cache placement by small rodents using coded plastic tags in the Taihang Mountains, China. The seeds were removed rapidly and there were significant differences in the seed-eating and caching strategies between the stand types. We found that *Q. variabilis* acorns were usually eaten after being removed from the closed canopy forest and forest edges. By contrast, the *Q. variabilis* acorns in the forest gap stands were more likely to be scatter hoarded. The dispersal distances of *Q. variabilis* acorns were significantly longer in the forest gap plots compared with the closed canopy and forest edge plots. However, the proportions of scatter-hoarded seeds did not increase significantly as the gap size increased. In small-scale oak reforestation projects or research, creating small gaps to promote rodent-mediated seed dispersal may effectively accelerate forest recovery and successional processes.

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