

Ecological efficiency and legitimacy in seed dispersal of an endemic shrub (*Lithrea caustica*) by the European rabbit (*Oryctolagus cuniculus*) in central Chile

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Abstract

The European rabbit (*Oryctolagus cuniculus*) is an alien herbivore in central Chile. Although its diet is poorly studied, this rabbit is known to consume native fruits and seeds, and thus it could act as a seed-dispersal agent. We evaluated the effect of endozoochory by rabbits on the survival and germination of seeds of a native shrub (*Lithrea caustica*, Anacardiaceae), as well as its consequences for seed dispersal. We extracted seeds by hand from parental shrubs, and compared the germination dynamics of seeds passing once and twice throughout the rabbit's gut (simulating its coprophagy) versus control treatments (seeds not consumed). Additionally, in permanent 2x2 m sampling plots placed in the wild, we evaluated the abundance of *L. caustica* seedlings and of its seeds in rabbit droppings. Results indicate that rabbits reduced seed survival to 82% on average with the first gut passage, and to an additional 52% with a second passage. Nevertheless, germination variables such as initiation time and germination, as well as final germination rate, increased significantly in comparison to non-ingested seeds. Sampling plots showed that *L. caustica* seedlings were concentrated principally underneath woody patches, which are then regarded as safe sites. Outside shrub cover, seedling abundance small, this indicates that open places are unsafe sites. We recorded that feces (and seeds contained) were deposited in higher proportion beneath woody cover. Thus, the native shrub *L. caustica* may be dispersed by alien rabbits through endozoochory, which provides legitimacy and efficiency in this dispersal service. Alien rabbits may fill a similar role played by native mammals, which have been reduced in abundance by human agency in central Chile. We suggest that the generalist syndrome, common among plants and dispersers, may be an arena of positive effects in ecological interactions between alien and native species.