

Frugivory and Seed Dispersal by Foxes in Relation to Mammalian Prey Abundance in a Semi-arid Thornscrub

Sergio I. Silva, Francisco Bozinovic and Fabian M. Jaksic

Abstract

We examine the role of the native fox, *Pseudalopex culpaeus*, as a frugivore and seed disperser in a semi-arid thornscrub of Chile. We quantified the fruit and animal components in its diet versus the availability of fruits and small mammals in the field over a 2-year period (January 1998 through February 2000). We tested the legitimacy and effectiveness of foxes as dispersers by quantifying the percentages of seed viability and of germination of seeds that passed through fox gut versus those picked from plants. We also studied their efficiency as dispersers, monitoring the fate of seeds in faeces placed in the field. The highest frequencies of fruit consumption by foxes were observed when abundances of small mammal prey were <6 individuals per hectare, regardless of fruit abundance in the field. Thus, foxes consumed fruits as a supplementary food resource. Based on 326 faeces, the total number of fruits consumed was about 34 000 over the 2-year study period, and fruits from the alien shrub *Schinus molle* represented 98% of that total, with the native *Porlieria chilensis* a distant second. Germination and viability of defecated seeds of *P. chilensis* were reduced by 66% and 48%, respectively, in comparison to controls. In contrast, germination of seeds of *S. molle* increased by 50% and no effect on viability was observed. With regard to *P. chilensis*, foxes were legitimate (they defecated viable seeds), but ineffective (seeds in faeces had lower germination than those taken directly from parental plants and there was no seedling establishment in the field) and inefficient dispersers (seeds in faeces were deposited on microhabitats hostile to seed germination and seedling establishment). However, with regard to *S. molle*, foxes were legitimate, effective (seeds in faeces had higher germination than those taken directly from parental plants; there was germination but no establishment in the field), and efficient dispersers (over 41% of seeds were deposited on safe microsites). Thus, a native fox may be contributing to the spread of an alien shrub, co-opting existing community processes.

Keywords: Chile, effectiveness, germination, legitimacy, *Pseudalopex culpaeus*, viability.