

Effects of small mammals and vertebrate predators on vegetation in the Chilean semiarid zone

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Abstract

We monitored the cover and seed bank response of shrubs, perennial herbs, and ephemeral plants to experimental exclusion of both the principal rodent herbivore, *Octodon degus*, and its vertebrate predators from 1989 to 1994 in a semiarid Chilean mediterranean site. Although both richness and species composition of the plant community at the study site were largely determined by abiotic factors (mainly rainfall and soil nutrients), predator and herbivore exclusion had significant effects on the relative abundance of several plant species. Experimental exclusion of herbivores was associated with increased cover of some shrubs and a perennial grass, and decreased cover and seed densities of several ephemerals, especially those exotic or restricted to areas underneath shrubs. Herbivores apparently reduced shrubs through browsing and indirectly affected herb cover and seed densities by opening up areas under shrubs and/or modifying physical and chemical conditions of the soil. Plant responses to predator exclusion were less clear. Nevertheless, higher cover of some shrubs and ephemerals in the presence of predators suggests tritrophic effects through changes in small mammal densities and/or foraging behavior.

Key words

Herbivory, Predation, Tritrophic effects, Ephemeral plants, Chilean semiarid zone