
Endemic plant species are more palatable to introduced herbivores than non-endemics

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Abstract

Oceanic islands harbour a spectacular diversity and unique species composition, thus being major contributors to global plant biodiversity. This uniqueness is mainly a result of endemic plant species that have evolved in-situ, often in the absence of mammal herbivores. However, island endemism is under severe threat by introduced herbivores, especially generalist herbivores such as the European rabbit (*Oryctolagus cuniculus*). The European rabbit has been introduced to a large number of islands around the world, where it has been recognized as a major threat to island plant species and island ecosystems. We test the long-standing assumption that endemic species are particularly vulnerable to generalist introduced herbivores (European rabbit) using an unprecedented dataset covering an entire island ($n = 210$) with enormous topographic, climatic and biological diversity (Tenerife, Canary Islands). We find that, with increasing endemism, plant species are more heavily browsed by rabbits than non-endemic species with up to 67% of endemics being negatively impacted by browsing. This indicates a dramatic lack of adaptation to mammal herbivory in endemics, making endemics much more palatable to introduced generalist herbivores than native non-endemic or non-native plant species. Further, ecosystems with a high percent endemism are most heavily browsed, suggesting ecosystem-specific vulnerability to introduced herbivores, even within islands. Interestingly, rabbit density is a poor predictor of browsing damage, illustrating that ecosystem-specific density-damage relationships exist. Thus, conservation initiative should consider applying ecosystem-specific rabbit densities as basis for management efforts. To protect global biodiversity offered by disproportionately high endemism on oceanic islands ecosystem-specific herbivore control and eradication measures are of highest priority.

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