Response of a small felid of conservation concern to habitat fragmentation

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Abstract

Habitat loss and fragmentation are major drivers of biodiversity loss. A key question, particularly relevant to carnivore conservation, is to which extent species are able to survive in human-modified landscapes. Currently, conservationists are concerned about the impact habitat fragmentation may have on the long-term persistence of the forest-dwelling guiña (Leopardus guigna), given the increasingly modified landscapes in which they live. Here we evaluate the effect habitat cover, fragmentation and anthropogenic pressure have on the occupancy probability for guiñas in privately-owned forest fragments. We collected camera-trap data from 100 temperate rainforest sites in Chile and used single-season occupancy modeling to evaluate the influence of 13 parameters of landscape structure/anthropogenic pressure and four parameters of detection probability on the ocurrence of guiñas. The camera-trap survey data comprised 4168 camera-trap days and 112 independent records of guiñas. Surprisingly, fragmented (defined as having a high perimeter-to-area ratio) and moderately sized habitat patches best predicted site occupancy. Occupancy also increased where habitat patches were closer to continuous forest and nearer to buildings. Our results imply that guiñas can benefit from a high degree of edge type habitats in fragmented landscapes, capable of adapting to habitat fragmentation in the proximity to large continuous forest patches. This suggests that guiñas have a broader niche than previously believed. Additionally, the guiña is tolerant of human infrastructure. Further research is required to identify potential ecological traps, long-term source-sink dynamics, and the habitat loss/fragmentation threshold beyond which guiña populations are no longer viable..

Keywords

Camera traps, Chilean temperate rainforest, Edge effects, Forest specialist, Habitat loss, Leopardus guigna, Occupancy.