

OR131*Top predators, habitat complexity and the biodiversity of litter-dwelling ants*

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The loss of top predators in ecosystems can have cascading effects, including the loss of social insect biodiversity. We demonstrate how ground-dwelling ants responded to 17-year exclusion of large vertebrates in a Costa Rican rainforest. The biomass of leaf litter was unchanged, and there was no alteration in the density of ants regardless of vertebrate exclusion. However, the physical structure of the leaf litter environment was significantly altered, and was more compacted when unmanipulated densities of terrestrial vertebrates were permitted access to the research plots. The species richness of ground-dwelling ants reduced by one half as a result of terrestrial vertebrate access. Because there was no effect on density, this is likely a non-trophic cascade caused by a structural change in the leaf litter related to habitat complexity. Investigations into the thermal microclimates of leaf litter suggest that the loss of biodiversity may be connected to a loss of environmental heterogeneity, in which species with functional roles unsuited to lost microclimates may disappear.