Invasive predator ecology and impacts in a biodiversity hotspot. The feral cat Felis catus in the New-Caledonian archipelago

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Abstract

Feral cat (*Felis catus*) is one of the most successful and harmful invasive predator species for island biodiversity. The presence of this alien predator species generally lead to dramatic loss of native island biodiversity and represents a serious threat for numerous endemic and threatened species. Feral cats have invaded the whole New-Caledonian archipelago and all its habitats. In this study, we focused on the ecology and impacts of this invasive predator on the outstanding endemic fauna found in the different habitats of the exceptional New-Caledonia biodiversity hotspot. Feral cat diet analyses on 14 selected sites representing the 4 main natural habitats revealed a high diversified diet and high predation rates on native species particularly on squamates, flying foxes and petrels. Among the 44 vertebrates species found into the feral cat diet, 20 are IUCN red-listed threatened species. Cat movements of eleven feral cats fitted with GPS collars have been studied in a western coast Peninsula hosting an important seabird colony. Male cats showed large home ranges while female showed small home ranges. Feral cats exhibited important movements within the studied peninsula linked with the breeding cycles of seabirds. GPS data coupled with dietary informations suggested a predation that concerned both breeding adults and fledgings bird, and at a large geographic

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scale as some feral cats have their core home range distant to the colony (> 3km). We evaluated the effects of a high level but intense cat control on this site that showed a low sustainability of feral cat culling and a rapid recolonization process. Our results are pleading for the future limitation of feral cat impacts and call to focus first abundance limitation measures on maquis mosaic and humid forest habitats This study also provided information on the spatial extent and intensity of future control measures in the special context of a large and highly invaded island.

Keywords: biological invasions, islands, predation, movement analysis, predator management