
Genetic diversity and colony isolation in one of the world's most endangered seabirds, the Mascarene petrel (*Pseudobulweria aterrima*), endemic to Reunion Island (Indian Ocean)

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Abstract

Tropical petrels of the genus *Pseudobulweria* are among the least known and most endangered birds in the world. The Mascarene petrel (*Pseudobulweria aterrima*) is a very poorly known and critically endangered seabird endemic to Reunion Island. This species has an extremely small population estimation (100-200 mature individuals) suffering several anthropogenic threats as predation by introduced mammals and light pollution leading to stranding. Fifteen polymorphic microsatellites loci were isolated from this species in order to analyse genetic diversity, inbreeding and colony isolation, but also contemporary effective population size estimation and search for population bottlenecks. Analysis were done on individuals from two breeding colonies and on individuals found grounded as a consequence of light pollution. We found a surprisingly high level of genetic diversity and no significant deviation from Hardy-Weinberg Equilibrium, suggesting an absence of inbreeding. The analysis of genetic structure highlighted a slight but significant genetic differentiation between the two breeding colonies, suggesting high levels of natal philopatry and few exchanges between colonies. We also found that Mascarene petrel population probably has probably undergone a bottleneck. These results confirm that conservation actions engaged by the European Life+ Pétrels project since 2015 are strongly needed, and should be implemented independently for each colony to maintain genetic diversity.

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