

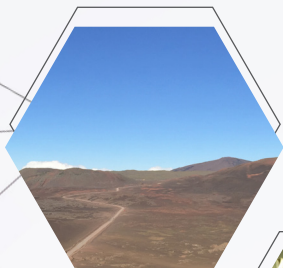
BOOK OF ABSTRACTS POSTERS

Island BIOLOGY

La Réunion
8-13 JULY

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📍 **Université de la Réunion**
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Island Biology

BOOK OF ABSTRACTS

POSTERS

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Heritability and evolvability of morphological traits of the honeybee *Apis mellifera* in tropical islands from the Mascarene archipelago

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Before invoking evolutionary process to explain morphological divergences among insular populations, estimation of morphological heritability is essential. Indeed, phenotypic divergence between populations could be the result of either phenotypic plasticity or micro-evolutionary response to contrasted environments. A given phenotypic trait could evolve only if it could be transmitted to the next generation, i.e. it has a genetic basis. Quantitative genetic studies typically permit to estimate this part of the genetic variance in the phenotypic variation of a trait, this ratio is the heritability. The islands and archipelagoes of the Southwest Indian Ocean (SOOI) present a great diversity of habitats. As evolutionary forces are exacerbated in islands, populations are expected to show large divergence between islands. Several studies have demonstrated genetic and morphological differentiation between populations of the honeybee *Apis mellifera unicolor* in the SOOI area. Hybridizations between African and European lines, introduced by beekeepers in La Réunion and Mauritius, may explain a part of this differentiation pattern. *Apis mellifera unicolor* is an eusocial species with a polyandric and monogynic reproduction regime allowing quantitative genetic study to be conducted from wild populations. The objective of this study is to improve our understanding of the phenotypic differentiation of *Apis mellifera unicolor* populations in Reunion and Mauritius through heritability estimates of two morphological characters. We will assess the heritability of the size of the wings and the length of the proboscis, two traits subjected to different evolutionary forces. We sampled 6 colonies in Reunion Island and 8 colonies in Mauritius, with 95 workers per colony. All individuals were genotyped using 8 microsatellite markers to reconstitute the pedigree of each colony. Morphometric measurements on individuals with known degrees of relatedness will allow to estimate the heritability of these traits, using a so-called animal model.

Keywords: *Apis mellifera*, heritability, La Réunion, Mauritius, morphometry

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