

FOREIGN HONEY BEE INTRODUCTION IN A MEDITERRANEAN BIODIVERSITY HOTSPOT: THE CASE OF THE BALEARIC ISLANDS

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The spread of honey bee subspecies has been identified as one of the current threats to honey bee biodiversity. This endangers the conservation of local populations, not only by the joint spread of pathogens and parasites, but also by introgressive hybridisation leading to the loss of locally adapted populations. This is especially true when dealing with Mediterranean islands such as the Balearic Islands, as they are biodiversity hotspots where the design of local fauna conservation policies is an urgent issue.

In this work, the evolutionary lineage of 123 honeybee colony samples collected during 2021 in Formentera (4), Ibiza (36), Menorca (18) and Mallorca (65) has been determined by analysing mitochondrial haplotypes. Their genetic integrity has been inferred by analysis of the genetic structure through SNPs and population differentiation by geometric morphometry analysis. For the first time, foreign haplotypes of subspecies from other European evolutionary lineages have been found, which usually corresponds to introductions of honey bee queens of the subspecies *Apis mellifera ligustica* and *carnica* or the hybrid Buckfast. The results of the SNPs analysis corroborate this, as the presence of hybrid individuals has been observed especially in the samples from Mallorca, suggesting that genetic introgression is taking place. This hybridisation seems to be recent, so there is still time to reverse it by eliminating those colonies in which honey bees of foreign lineages or with a percentage of hybridisation higher than 10% are detected. Interestingly, the geometric morphometry of honey bee samples from the Balearic Islands has revealed their differentiation from other Mediterranean honey bee populations, which may well be due to the effect of insularity. Further studies are needed to corroborate the presence of this potential ecotype of *Apis mellifera iberiensis*. The results of this study can be applied by local beekeepers for the conservation of the genetic resources of the honeybee population of the Balearic Islands.

EurBee 9 2022 - Symposium 02

Keywords: Biodiversity, Conservation, Introgression