

Evaluation of hybridization between *Apis mellifera* subspecies in Albania

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Abstract – In this study, we add further information about the genetic variation and admixture of *Apis mellifera* subspecies in Albania. The genetic diversity of the honey bee (*Apis mellifera*) remains undescribed in some parts of its natural distribution range but yet the distribution of subspecies is nowadays also much influenced by beekeeping activities, so the aim of this study was a genomic evaluation of the current state of Albanian bee population. In total, 10 samples (30 bees) of different subspecies which are claimed to be bred in Albania were analyzed. Morphometric identification of the samples was done through the specialized program Identyfly, which automatically performs a racial classification of bees based on the angles of the front wings of different subspecies. The analysis of the results obtained with the Identyfly program showed a high level of subspecies admixture in the breeding populations. The beekeepers claimed that they bred subspecies of the evolutionary lines M, A and O, except of our autochthonous subspecies (*Apis mellifera carnica*) which belongs to the evolutionary line C. Our results indicate also that in Albania breeds more than 12 subspecies of *Apis mellifera* which belong to 4 evolutionary lines. The subspecies that the beekeepers claimed they were breeding did not turn out to be such, but were hybrids between them. This high hybridization may lead to greater genetic diversity of our native bee populations. All these results showed that the increasing introgressive hybridization with managed non-native subspecies, may lead to the loss of valuable combinations of traits shaped by natural selection. We suggest the establishment of a racial improvement center in Albania, and also the future research should focus on genetic analyzes with a greater coverage of bee populations in Albania.

Keywords – Identyfly, *Apis Mellifera*, Subspecies, Hybridization