

Morphometrics Study of *Apis florea* and *Apis mellifera* from Different Locations in Sudan

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Abstract : The traditional honey bee species of Sudan is *Apis mellifera*, but in 1985, the dwarf bee *Apis florea* was introduced to the country, so now there are two species present. However, there are conflicting assessments regarding the subspecies of *Apis mellifera* colonies in Sudan. Likewise, it is unclear if, in the 40 years since its introduction, *Apis florea* has already developed regional differences or ecotypes. To shed light on these questions, we performed a morphology study on Sudanese honeybees. Samples of 10 to 20 honeybee workers per colony of the two species were collected from 16 locations, spanning different climatic zones in Sudan during 2021. Measurements were taken from 16 morphometric characteristics using a stereo-microscope equipped with an Image Analysis System (Moticam Image Plus 5.0 Digital Microscope Camera) to study their variability. The results indicate that in both species, the general means of various characters showed significant differences ($p < 0.05$) within a species between different locations, indicating that there might indeed be regional differences. However, more taxonomic investigation and, ideally also, molecular studies are needed in order to confirm the proper identification of subspecies and their ecotypes.

Keywords : *Apis*, subspecies, morphology, Sudan

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