



Plasticity in the mandibular gland signals of honey bees

Author(s): Christian Pirk, Christian Pirk , Robin Crewe , Abdullahi Yusuf

Institution(s): Department of Zoology & Entomology, University of Pretoria, South Africa ; Department of Zoology & Entomology, University of Pretoria, South Africa ; Department of Zoology & Entomology, University of Pretoria, South Africa ; Department of Zoology & Entomology, University of Pretoria, South Africa

Secretions from the mandibular glands of honeybees (*Apis mellifera*) have been studied extensively. The glands of queens are dominated by ω -9 fatty acids and those of non-reproducing workers by ω -10 fatty acids. The mandibular gland pheromones of *Apis mellifera adansonii* (Latreille), which is one of the widely distributed subspecies of honeybees, have only recently been analysed. Using gas chromatography, we analysed the composition of mandibular gland pheromones in workers and queens of *A. mellifera adansonii* from Nigeria. Due to the size of and the variable ecological conditions within the distribution area we analysed the quality and quantity of mandibular gland pheromones of workers and queens in relation to their spatial distribution. In general queen and workers have similar pheromone profiles to those previously reported in other African subspecies of honeybees. We found 9-ODA and high amounts of its precursor 9-hydroxy-2 (E)-decenoic acid (9-HDA) in workers, thus showing that they produce queen-like signals even under queen-right conditions. Similar to what has been found in the Cape Honeybee, *Apis mellifera capensis*. Furthermore, we also found geographic variation in the pheromone profiles and morphometric characters of these workers, suggesting local pheromonal adaptations to the different ecological and climatological regions inhabited by *A. m. adansonii* in Nigeria.