MARKING PHEROMONES OF BUMBLEBEES: COMPOSITION OF THE LABIAL GLAND SECRETION OF MALES OF BOMBUS MAGNUS.

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Bombus magnus is a bumblebee species belonging to the subgenus Bombus sensu stricto and closely related to B. cryptarum and B. patagiatus. It is abundant in Atlantic heaths from Portugal to Norway [1,2]. Characters given by Rasmont to separate B. magnus, B. cryptarum, B. terrestris and B. lucorum show a great variability in coloration and a great homogeneity of genitalia which make them difficult to identify [2]. Because of this variability Williams [3] does not recognise B. magnus as a good species. As application of the Paterson species recognition concept [4], the composition of the labial gland secretion, used by males for scent-marking their patrolling nuptial behaviour, seems to be the most reliable trait for recognising the validity of the bumblebees species [5].

Main component of the labial gland secretion of B. magnus is ethyl dodecanoate (23 %) as it is the case also for B. patagiatus [5] and B. cryptarum [6]. This is also a major or minor characteristic component in all known sexual pheromones of other species of the subgenus Bombus [5-7]. Unsaturated C18 alcohols and ethyl esters of the corresponding acids are found in B. magnus and B. lucorum [7], but they are not reported in B. cryptarum [6]. Beside the main component, many other lower-abundant components are in common for B. magnus and B. cryptarum. However, their proportions are different. Another characteristic of B. magnus sexual pheromone is that it contains small amount (0.4 %) of geranylgeranisole and other terpene derivatives. The same is true for B. lucorum (0.3 % of isoprenoids). However, B. terrestris is the only other species of the subgenus Bombus which contains large amounts of isoprenoids (2,3-dihydrofarnesol 5 %, 2,3-dihydrofarnesol 18 %, 2,3-dihydrofarnesyl acetate 2 %, geranylgeranisole 4 %, geranylgeranisole 8 %, and 2,3-dihydrofarnesyl dodecanoate 6 %).


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