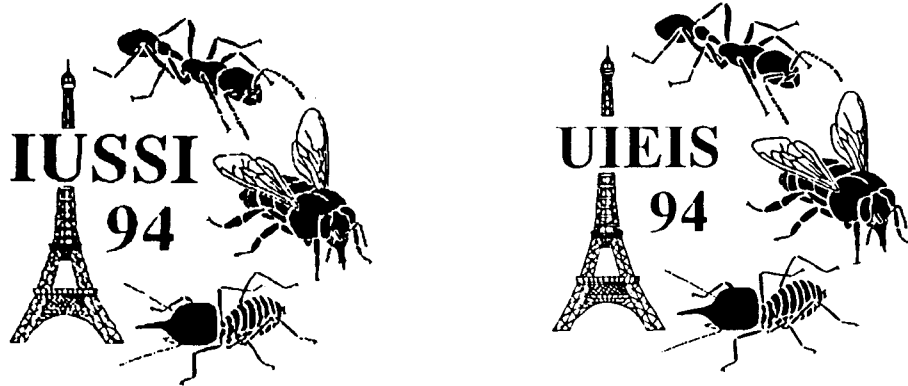


# LES INSECTES SOCIAUX



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## BUMBLEBEE FORAGING: IS THERE A RESOURCE PARTITIONING WITH APIS MELLIFERA L. BASED ON POLLEN STEROLIC FRACTION ?

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Bumblebee species do not use the same flower resources as *Apis mellifera* L. To test possible dietetic differences, the authors have determined the sterol compositions of pollens from several plants exclusively or mainly consumed by bumblebees: *Arbutus unedo*, *Salpichroa origanifolia*, *Cerintho minor*, *Aconitum vulparia*. For *Arbutus*, the amino-acid composition has also been determined.

*Arbutus unedo* provides the only food resource for a huge winter generation of S-France *Bombus terrestris* (L.) (Rasmont, 1985). It may therefore be assumed that the food requirements of *B. terrestris* are at least satisfactorily met. *Apis mellifera* also forage on this plant, though only for nectar. The amino-acid composition of this pollen nearly fits the honey-bee basic requirements determined by De Groot (1953). It is therefore astounding that honey-bees do not at all forage on *Arbutus* for pollen, despite of its correct amino-acid balance and the lack of other winter resources. *Arbutus* pollen shows a great proportion of  $\beta$ -sitosterol and  $\delta 5$ -avenasterol and a very low one of 24-methylene-cholesterol. The latter is known as essential for *Apis mellifera* (Herbert et al., 1980; Svoboda & Feldlaufer, 1991).

*Salpichroa origanifolia* sterols contains great percentages of  $\beta$ -sitosterol,  $\delta 5$ -avenasterol and also 24-methylene-cholesterol. This pollen is able to support an entire *Bombus terrestris* generation but (thanks to the 24-methylene-cholesterol?) it is also foraged by *Apis*. *Cerintho minor* entirely supports the bumblebee *Bombus brodmannicus delmasi* (Tkalcù). *Aconitum vulparia* supports populations of *B. gerstaeckeri* (Morawitz). Both plant species have pollen specially rich in  $\delta 5$ -avenasterol and in 24-methylene cholesterol.

As  $\beta$ -sitosterol and  $\delta 5$ -avenasterol are not included in the metabolic pathways of sterols in *Apis mellifera* (l.c.), the authors suggest that sterolic basic requirements of *Bombus terrestris* are significantly different. Food plants of other bumblebee species as *B. brodmannicus* and *B. gerstaeckeri* seem to share a high concentration in  $\delta 5$ -avenasterol.

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