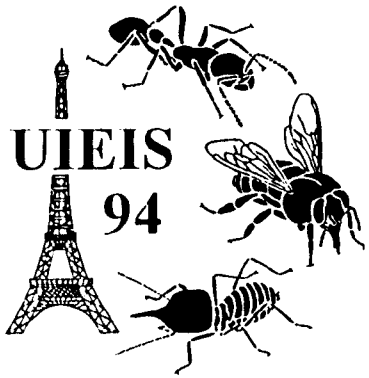
LES INSECTES SOCIAUX



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FORAGING MOVEMENTS AND FLOWER DISTRIBUTION : THE CASE OF *BOMBUS HORTORUM* (SCOPOLI) WORKERS COLLECTING ON *DIGITALIS LUTEA L.*

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Movement patterns of collecting Apoïds are known to be correlated to nectar richness or predictability. For instance *Bombus terricola* workers (Heinrich 1979) show more directionality and longer inter-head flights when nectar reward is low. These movement rules maximize foraging efficiency by avoiding to stay in a non-rewarding zone. On the other hand, little is known about the influence of flower distribution on foraging movements. Ginsberg (1986), using experimental arrays of flowers, has shown the existence of such a relation in *Apis mellifera* L. but it remained to be confirmed in the field and for other species. *B. hortorum* workers have been observed collecting nectar on *D. lutea* on summers 92 and 93 in a chalk grassland area near Treignes (Belgium). Foraging parameters such as flight distance and turn angle were measured. The distribution of the *D. lutea* plants was assessed by measuring the nearest neighbour distance and the angle formed by triplets of nearest neighbour inflorescences. Our results show that the foraging parameters of *B. hortorum* significantly match the distribution of its resource. Notably, if *B. hortorum* exhibited an overall directionality while foraging, there were more turns in the 30-60° range than expected. Such a turn angle allows the bee to cover the shortest distance in the *D. lutea* Patch, thus enhancing foraging efficiency. Our results indicate that bumblebees can base foraging decisions on flower distribution.

references

Ginsberg H., 1986. Honey bee orientation behaviour and the influence of flower distribution on foraging movements. Ec. Ent. *11*:173-179.
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