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Bumble bee cryptic taxa discrimination by pheromonal and morphometrics approach

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The holarctic subgenus *Bombus* s.str. comprises the most common bumble bee's species. However, the homogenous morphology of the 20 species leads to a problematic systematics, probably the most confused within the genus. Some species are nearly impossible to be identified and several taxa are involved in cryptic species complex. For instance, the *lucorum* complex includes at least 9 different taxa. The specific status of these cryptic taxa is defined here by sexual pheromone analysis (performed on cephalic secretions). Wing shape geometric morphometrics is used to characterize these taxa by clear morphological variation and, as non-destructive methods, can be applied on museum and reference material (type material). Both methods have been successfully applied on the European species of *Bombus* s.str. (*Bombus cryptarum*, *B. lucorum*, *B. magnus*, *B. sporadicus* and *B. terrestris*) and on two Asian species of the same subgenus as comparison group (*B. hypocrita* and *B. ignitus*). Geometric morphometrics of cryptic taxa is based on predictive discriminant analysis. Assignment of potentially independent taxa is assessed by pattern recognition system. Results of the study show that the close species of the *lucorum* complex (e.g. *B. cryptarum* and *B. magnus*) can be distinguished both by their CLG secretion and by their wing shape providing more evidences about their specific status.