

Landmark based geometric morphometrics analysis of wing shape as a tool for *Bombus s.str.* taxonomy (Hymenoptera:Apidae).

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The main common bumblebee's species of Palaearctic and Nearctic regions belong to the subgenus *Bombus s. str.* Latreille. Despite their relative abundance, their systematics could be considered as the most problematic and confused within the genus. Several taxa are involved in cryptic species complex. The main confusion comes from the homogeneous morphology of the 20 species, leading to the near impossibility to identify some species. New investigation methods as sexual pheromone analysis [performed on Cephalic Labial Glands (CLG) secretions] and geometric morphometrics (performed on wing shape) have been undertaken to define the specific status of the taxa and to characterise them by robust morphological features. In the present study, European species of *Bombus s.str.* (*Bombus cryptarum*, *B. lucorum*, *B. magnus*, *B. sporadicus* and *B. terrestris*) were analysed and compared to two Asian species of the same subgenus (*B. hypocrita* and *B. ignitus*). All these species were recognised by their CLG secretion. Geometric morphometrics analysis was based on 18 2D-landmarks. Ordination methods as CVA were used to discriminate the species. Results of wing shape analysis were congruent with results from pheromonal analysis. Both methods can distinguish close species of *Bombus s.str.* (e.g. *B. cryptarum* and *B. magnus* in the *lucorum* complex). Unlike pheromonal analysis, geometric morphometrics as non-destructive method also allows to include museum and reference material (type material) in order to connect chemiospecies to traditional nomenclature.