

2. Open session - Oral

Insights into bumblebee fossils

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One of the main challenges in paleontology is to integrate fossils in the taxonomy and phylogeny of extant clades. Such fossils taxonomy remains too often based on the description of a few qualitative and subjective characters whereas the use of robust statistical tools is quite rare. Herein we underline the importance of such tools by presenting a taxonomic revision of bumblebee fossils based on reliable statistical analyses. Wing-shape analysis by geometric morphometrics procedures has proven to be a powerful tool for morphological discrimination of bee taxa at different taxonomical levels. Moreover bee forewings are easy to analyze because of their flatness and represent a neutral character with enough variation to discriminate taxa. Previous studies have shown the utility of wing shape analysis to assess taxonomic affinities between extinct and extant clades of bees. Bees are relatively rare in fossil deposits; nonetheless using this method, anthophorids, halictids, bumblebees and other clades have been revised or described from different deposits like the Florissant shale of Colorado (US) or the Eocene Baltic amber. For the present analyses, three bumblebee fossils have been considered: *Bombus randeckensis* Wappler & Engel, 2012 from the Miocene Randeck Maar (DE); *Bombus cerdanyensis* Dehon, De Meulemeester & Engel, 2014 from the Eocene of the Green River Formation of Colorado (US); and a new specimen from the Miocene of Bilina Mine (CZ).