

Historical biogeography: consequences on sexual pheromones evolution among bumblebee species

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Divergence in sexual pheromones (SP), is considered as main force promoting the speciation. The sexual signal is under a strong stabilizing selection which avoids reproductive interference with sister species. Studies suggest that SP evolve by major saltational shifts in chemical composition which increase the divergence of SP between two young species to avoid mismatching. However, the sexual selective pressure can decrease if taxon is allopatric from its sister species because individuals with some small pheromonal changes cannot mismatch. The evolution becomes a gradual evolution (small changes are not eliminated by selective pressure). Therefore, the species biogeography influences the evolution of sexual pheromones. However, the present biogeography is consequences of historical biogeography. Moreover, to understand the premating signals evolution, steps before the speciation in the intraspecific level must be known.

The present study deals with this evolution by a comparison of the historical biogeography (phylogeography and molecular clock) and SP geographic variations (chemical analyses) of three *Bombus* (*B. pascuorum*, *B. lapidarius* and *B. soroensis*) and their sister species.