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*Diversity of the chemical signature in the invasive hornet* Vespa velutina

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The yellow-legged hornet, *Vespa velutina nigrithorax*, was accidentally introduced to southwestern France in 2004, probably as a result of ceramic pottery being imported from China by boat. The species subsequently successfully established itself in France and Europe. The hornet now occurs across more than 60% of France and is currently colonizing neighboring countries (Spain, Portugal, Belgium, and Italy). It is predicted that the species will continue to spread along the Mediterranean coast and will invade northern Europe. Since the species preys on several insect and arthropod taxa, it can have a significant effect on biodiversity. *V. velutina* is a pest in France because it preys upon domestic honeybees, *Apis mellifera*. Beekeeping operations are directly affected by *V. velutina* predation, with some beekeepers reporting colony losses. The species presents also a risk to human health. Accidents have occurred, some of which have resulted in death, when people have accidentally approached the hornet nests.

Among the different subjects we analyze (biology and ecology of the species, selective traping), we study the chemical signature (cuticular hydrocarbons or CHCs) of the invasive hornet. Preliminary study shows that few insects were introduced in France, probably only one queen. In this condition, we wanted to show whether the chemical signature is different among colonies or not. First, cuticular hydrocarbons were identified in GC-MS. Second, we analyzed the CHCs according to individuals. Hornets have specific CHCs according to their gender, their caste and their colony. These differences in the chemical signatures are linked to the relative quantity of each compound. Moreover, in each caste from the same colony, it is possible to separate different groups of individuals with their CHCs. This plasticity of the chemical signature could be linked to the age or the function of each individual.