
Tracking the hunting range of *Vespa velutina* by RFID or radio telemetry

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Abstract

Vespinae are very invasive, predatory insects that feed their young with proteins, typically other insects. *Vespa velutina*, also called yellow-legged hornet, was accidentally introduced to Western Europe (South West France) in 2004. Since its introduction, it quickly expanded its geographical range to Spain, Portugal, Italy, very recently to Great Britain (2016), and flying individuals have been noticed in Belgium, Switzerland and close to the German border. Where established, it dramatically predaes on colonies of *Apis mellifera* which, contrary to the Asian honeybee *Apis cerana*, are rather inefficient at defending themselves. In areas suffering heavy hornet populations, predation is now suspected to contribute to the decline in bees. Research urgently needs to focus on understanding the hornet's dispersion capacity and developing sustainable control methods with limited impact on the environment. Since eradication in some areas is no longer possible, the control of this predator should target the colony itself and should involve understanding the action range of the foragers. We thus used Radio Frequency Identification to evaluate the action range of a nest's workers, and their homing capacities – typically over a few kilometers. This also revealed the capacity of some hornet workers to take long trips, not unlike 'scout' bees. Recently, we successfully used radio telemetry to track workers returning from foraging sites back to their nest. Equipping 8 workers with such tags enabled the rapid discovery of 5 nests in urban landscapes. Those nests were well camouflaged in the upper part of trees and never detected by any monitoring. These approaches offer significant progress in understanding the foraging behaviour of this invasive predator and for early nest detection, which can thus be destroyed.

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