

## Assessment of the host/vector contact for Palaearctic *Culicoides* biting midges (Diptera: Ceratopogonidae). Implications for Orbivirus transmission

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Bluetongue virus (BTV) (Reoviridae: Orbivirus) is a good example of emerging arbovirus in Europe, with a little understanding of the disease epidemiology. This virus is transmitted by blood-sucking midges of the genus *Culicoides* (Diptera: Ceratopogonidae) to wild and domestic ruminants. In Europe, BT had been considered as an exotic disease until recently. In 1998, several BT incursions were observed in the western Mediterranean Basin in line with the northward progression of *C. imicola* populations, the main afrotropical vector. From August 2006, the emergence and transmission of BT serotype 8 in northern Europe, in areas where *C. imicola* was absent, revealed the importance of autochthonous *Culicoides* species and the urgent need to understand their vector role. The emergence and massive spread of bluetongue virus in western Europe during 2006-2008 had disastrous consequences for sheep and cattle production and confirmed the ability of Palaearctic *Culicoides* to transmit the virus. Despite the importance of understanding *Culicoides* biology to implement adequate vector control measures, especially host-seeking and feeding behaviours, it remains insufficiently described due to the difficulty of collecting them directly on a bait animal, the most reliable method to evaluate biting rates and host/vector contact.

During a three-year work, we aimed at (i) comparing typical animal-baited traps (drop trap and direct aspiration) to both a new sticky cover trap and a UV-light/suction trap (the most commonly used method to collect *Culicoides*) (Viennet et al 2011), (ii) describing host preferences of Palaearctic *Culicoides* species of veterinary interest (Viennet et al in press) and (iii) describing endo/exophagy and circadian host-seeking activity of Palaearctic *Culicoides* species (Viennet et al submitted).

This work gives new insights into the understanding of BTV transmission in northern Europe by assessing different methods to study the biting rate and highlighting trends in host-seeking behaviour for *Culicoides* of veterinary interest.