

# E-SOVE 2014

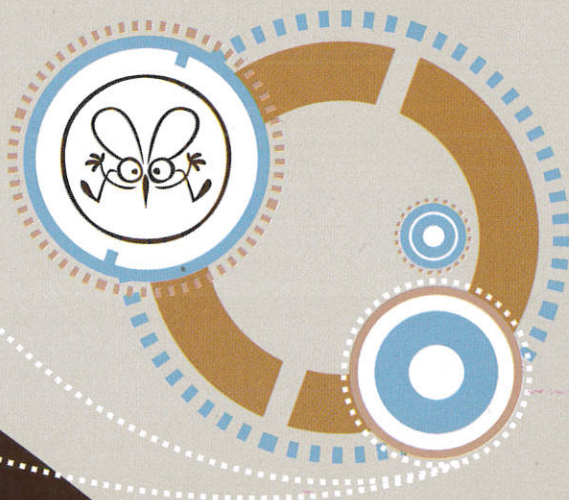
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When epidemic  
becomes endemic:  
a global challenge  
towards vector  
control

## Abstract Book



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# Phylogeography of *Culicoides imicola* (Diptera: Ceratopogonidae), biting midge vector species of Orbivirus: expansion and colonization?

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The biting midge *Culicoides imicola* Kieffer, 1913 (Diptera: Ceratopogonidae) is a major vector species in the Afrotropical region responsible for Orbiviruses transmission to livestock and equids. Among the most important orbiviroses from a sanitary and economic point of view, Bluetongue (BT) disease affects wild and domestic ruminants, and African Horse Sickness (AHS) is a lethal disease for horses. Historically, *C. imicola* has an Afrotropical distribution but from 1990s, following epizootic BT outbreaks in the Mediterranean Basin, *C. imicola* was found on the Mediterranean insular territories and then on the mainland. This leads to the suggestion that bluetongue emergence in the Mediterranean was due to *C. imicola* range distribution expansion and global warming. The objective of this study is to investigate the routes and scenarios of colonization of *C. imicola* in the Mediterranean Basin. We performed a multilocus analysis, using two mitochondrial genes (COI and Cytochrome b), one nuclear gene (Elongation factor alpha) and nine microsatellites markers. Insects were sampled in Africa (12 populations), in the Indian Ocean (3 populations), and in the Mediterranean Basin (30 populations). The routes and scenarios of colonization were tested with an approximate Bayesian computation framework. We found high diversity in Africa and in the east Mediterranean basin compared to the west Mediterranean basin. Haplotype and genotype distribution showed a clear genetic subdivision between the west and east Mediterranean basin. Moreover, the haplotypes and genotypes found in the east Mediterranean basin were genetically related to those found in Africa. The haplotype network and the demographic analyses highlighted a signal of recent population expansion in West Mediterranean zone only. These results support that (1) sub-Saharan Africa is the native range and source of *C. imicola* for the Mediterranean basin area and (2) there might have been two routes of colonization: one from western Africa through North Africa and one from east Africa through the Middle-East, with probably different tempo of colonization.