3166: *Culicoides imicola*: Phylogeography, population genetics, and invasive status in the Mediterranean basin

**Introduction:** Biological invasions are of major concern because of their environmental, economic, and health consequences. Determining and understanding the factors underlying invasion success of species allows predicting potential other biological invasions and developing vector control strategies. *Culicoides imicola* is a major vector species of *Orbivirus*, including the bluetongue virus (BTV) which affects domestic ruminants. Following BT emergence in the Mediterranean basin, *C. imicola* populations were recorded in territories where the species was considered to be absent, and consequently was described as expanding its distribution range on a short period. This work aimed at understanding the colonization history of the Mediterranean basin by *C. imicola* and determining the factors underlying the current distribution of the species.

**Methods:** We used a multi-loci approach and combined population genetics analyses, *Approximate Bayesian Computation* (ABC) methods and mathematical simulations of the atmospheric dispersion of the species.

**Results/Conclusion:** This approach enabled us to (i) demonstrate that *C. imicola* Mediterranean populations originated from the northern region of sub-Saharan Africa and are established in the Mediterranean basin since the Pleistocene/Holocene period, (ii) confirm a North African origin of southwestern European populations and reveal two routes of colonization: starting from Morocco to the Iberian Peninsula and from Algeria to France and Italy, and (iii) highlight the major role of wind-mediated dispersal and population abundances in the range expansion success of the species. Altogether, our study shed a new light on the evolutionary and demographic history of *C. imicola*.

doi: 10.1603/ICE.2016.93155

**Authors**

**Stéphanie Jacquet**
*CIRAD*

Karine Huber
*CIRAD*
*INRA*

Hélène Guis
*CIRAD*

Thomas Balenghien
Christine Chevillon  
IRD  
National Center for Scientific Research

Jérémy Bouyer  
CIRAD

Claire Garros  
CIRAD

View Related Events

**Symposium:** 506 Symposium: Ecology, Surveillance, and Control of Biting Midge

**Program:** Symposium

**Day:** Thursday, September 29, 2016