

## **Abstract of my thesis research:**

**Name:** Mame Thierno Bakhoum

**E-mail:** [thierno.bakhoum@gmail.com](mailto:thierno.bakhoum@gmail.com)

**Home institute address:** ISRA-LNERV BP: 2057 Dakar-Hann (Senegal)

**Host institute address:** Cirad-ASTRE, 34398 Montpellier Cedex 5 (France)

**Thesis title:** Ecology and integrative taxonomy of biting midges of the genus *Culicoides* Latreille (Diptera: Ceratopogonidae) in the Afrotropical region.

### **Abstract:**

In a context of emergence or re-emergence of vector-borne diseases, certain species of *Culicoides* (Diptera: Ceratopogonidae) are involved in the transmission of certain viruses (Reoviridae: *Orbivirus*) and nematodes (Onchocercidae: *Mansonella*) in the Afrotropical region. However, the systematic and taxonomic schemes as well as the bio-ecology of species of veterinary interest remain to be explored. This work of integrative taxonomy aims to achieve (i) a systematic and taxonomic revision of species belonging to subgenera and groups of veterinary interest using a multi-marker molecular phylogeny and species delineation, and (ii) to develop molecular tools for studying the bioecology of species of veterinary interest and dynamics of their immature populations. Our results show (i) the presence of three monophyletic clades, the Imicola group, the Milnei group and the subgenus *Remmia*, (ii) a new species for science named *C. sp. # 22* and affiliated into the subgenus *Avaritia*, Imicola group, (iii) the presence of a new undescribed species named *C. sp. # 54* belonging to the *Dasyops* group, subgenus *Avaritia*, (iii) affiliating the *Similis* and *Neavei* species groups to the subgenus *Synhelea*, and (iv) cryptic species within *C. oxystoma* (subgenus *Remmia*). From a bioecological point of view, this work combining entomological follow-up and molecular identification with a library of barcode sequences allowed to describe the trophic behavior of *C. imicola*, *C. kingi* and *C. oxystoma* as well as their larval habitats in equine environments of the Niayes area in Senegal. This work completes the corpus of knowledge about the genus *Culicoides* in the Afrotropical region to improve our knowledge on the epidemiology of the transmitted pathogens and to propose research tracks to better control the immature and adult populations of the vector species in order to better anticipate and prevent *Culicoides*-borne diseases outbreaks.

**Key words:** Systematics, taxonomy, bio-ecology *Culicoides*, Senegal, Afrotropical region