

## Microdiversity inside macrobiodiversity : zoonotic risk along the Congo River .

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The year 2010 was celebrated as the Year of Biodiversity and was marked by a series of great expeditions based on the model of the first explorers such as Stanley and Livingstone. The Congo River Expedition, Boyekoli ebale Congo, was set up by a consortium of Museums and academic institutions to realize an inventory of the Congo River biodiversity outside protected areas along the Congo River in DR Congo. However the term biodiversity includes not only macroorganisms but also smaller organisms (microbiodiversity) such as helminths, protozoa, bacteria and viruses.

In order to study the microbiodiversity in mammals, animals were trapped in different localities along the Congo River and along three main tributaries (the Lomami, Itimbiri and Aruwimi rivers), and in different habitat types (from domestic to natural rainforest). Bushmeat (either fresh or smoked) was also bought from local markets. Blood, tissues and ecto- and endoparasites were collected from most animals and stored for molecular or serological screening. The Congo river being a commercial spine linking Kinshasa to Kisangani, with intensive exchange of goods, bushmeat and people, and boats docking and moving for weeks, potential for pathogen circulation is non negligible. The Congo river may thus act as a barrier for host species or a bridge for others. Indeed, several studies have shown that some host species are similar or to the contrary do differ on the left and right Congo River banks; some small mammal species being only found on one or the other bank . So far we have no idea on what could be the influence of this barrier on the bacterial and protozoan agents small mammals do carry. However, the fact that *Rickettsia*, *Bartonella*, *Borrelia* and *Babesia* are vectored by arthropods (and some *Rickettsia* potentially by mosquitoes, see Socolovschi et al, 2012), some being opportunist and other more specific, some being mobile and other more static or even sessile, some transmitting vertically the pathogenic agents they carry, one may suggest that bacterial or protozoan species will be more similar than their hosts.

It is not clear yet how often the above agents found in rodents infect humans but the fact that people live in close contact with or do eat some of the carrier species do suggest infection do occur but are not estimated. Unfortunately, in a country where health centres do lack basic infrastructure (microscope), it is unlikely that such pathogens will be associated with symptoms similar to malaria and hence be undiagnosed.

Understanding the evolution of pathogens is especially interesting when constant flux of material occurs between both banks; the movement being of anthropic origin (human intervention) or via animal transport by strict phoresy or migration. In other words, the evolution of pathogen leading to a lack of species-specific pathogen-host relationship may reveal critical for human populations.

We present here the preliminary results on the microbiodiversity in mammals trapped along the Congo river, and more globally in the Congo River watershed discussing the anthroozoonotic risk linked with host ecology, local practices and conditions, such as the hunting and consumption of bushmeat, combined with a clear lack of efficient diagnostic tools