European Network for Neglected Vectors and Vector-Borne Infections

Reciprocal Short Term Scientific Mission (RSTSM) Report

Beneficiary: Dr Laetitia Lempereur

Home Institution: University of Liège (Belgium), Parasitology and Parasitic Diseases Unit

Host Institution: University of Pretoria (South Africa), Department of Veterinary Tropical Diseases, Faculty of Veterinary Science

Host: Prof. Marinda Oosthuizen

Starting date: 1st January 2015

Duration: 1 month

Prevalence and diversity of tick-borne pathogens present in wild rodents and their associated ticks in the Mnisi community, Mpumalanga Province, South Africa.

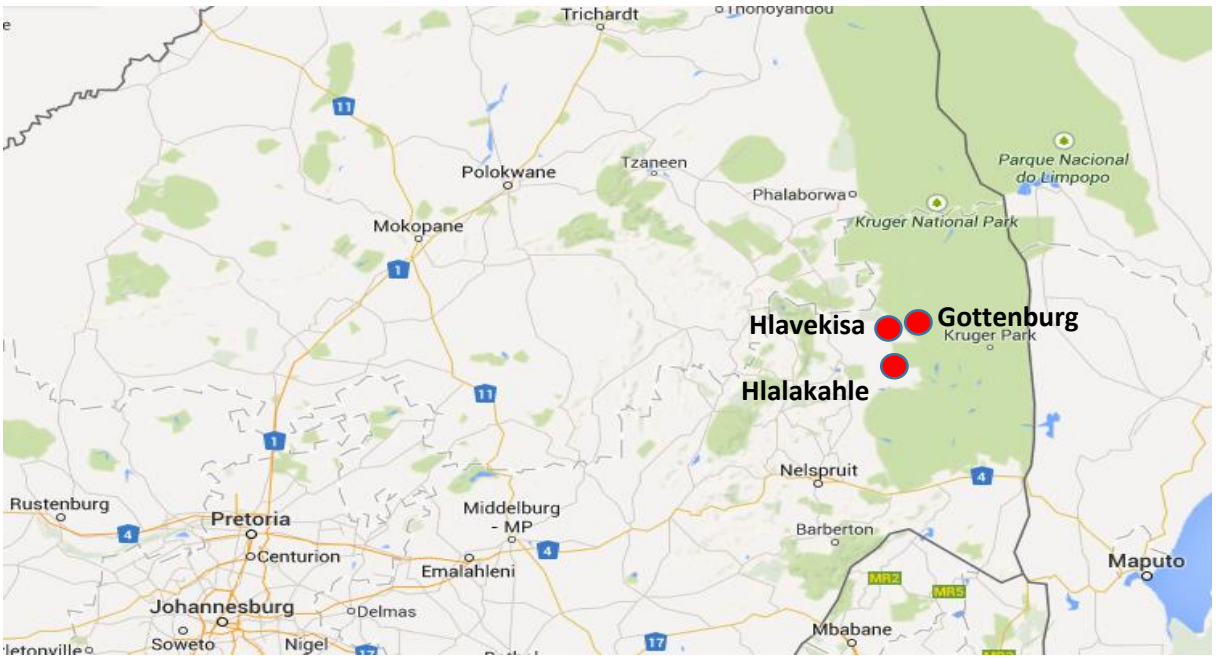
The aim of this mission was to participate in an ongoing project on prevalence and diversity of the tick-borne pathogens present in wild rodent species and their associated ticks in the Mnisi community, Mpumalanga Province, South Africa. This project addresses basic research questions about the prevalence of tick-borne pathogens in wild rodent species, the role of these rodents as reservoir of infection for humans and domestic animals, the genetic diversity that exists in the rodent-borne zoonoses found, and development of novel and innovative new diagnostic tools.

The main research objective of this mission was to transfer competence from South African to Belgian team on wildlife trapping methods and laboratory techniques such as the reverse line blot (RLB) hybridization assay and DNA extraction from specific FTA card. Additionally, the Belgian laboratory shared its knowledge on *Babesia* spp. especially human babesiosis and molecular biology. Moreover, this reciprocal short term scientific mission reflects a strong willingness of collaboration between the University of Pretoria and the University of Liège. This RSTSM represents a part of wider networking perspective between Belgian and South African laboratories in particular via other collaboration and support opportunities.

Description of the work carried out during the RSTSM

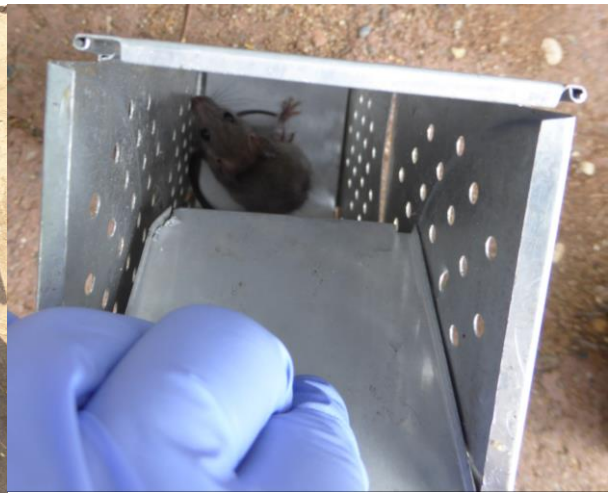
RSTSM started the 1st January 2015 for a one month period at the University of Pretoria (South Africa). This mission started with a three-week field trip jointly with the South African team at

the Mnisi community, Mpumalanga Province, South Africa for rodent trapping and sampling. Mnisi community is situated in the vicinity of the National Kruger Park, one of the largest game reserves in Africa. Trapping of rodent communities took place across three habitat types in Bushbuckridge East at the interface between wildlife, domestic animals and humans. The first trapping area was located in a private game reserve (Manyeleti, part of Kruger Park) at the border of communal grazing areas (Gottenburg, Hlalakahle, Hlavekisa) which represented the second trapping habitat type. Both areas are separated by an electric fence which represents the border of the Kruger Park and the only barrier between wildlife and livestock. Traps were also placed in 3 different villages (Gottenburg, Hlalakahle, Hlavekisa) which represented the third habitat type.



Trapping method was done using Sherman's traps baited with a mix of oat and peanuts butter. Traps were place late afternoon and collected early morning in order to facilitate the work and to reduce the risk of rodent death due to the warmth. Three hundred traps were alternatively placed in each collection sites. Outside, the traps were particularly placed in the shade. In the village, traps were placed outside and inside houses mainly in the kitchen and the reserve.

Vegetation characterisation (plant species composition, basal cover, tree density, canopy cover, tuft size) was recorded at all collection sites.



These different captures allowed to collect 75 rodents of 6 different species (*Mastomys* sp., *Mus* sp., *Saccostomus* sp., *Ratus* sp., *Apodemus* sp., *Aethomis* sp.). After trapping, samples were processed at the local Veterinary Laboratory. Trapped rodents were humanely euthanized. Blood samples and ectoparasites were collected and will be available for further analysis.

The second part of this RSTSM was done in the laboratory of the Department of Veterinary Tropical Diseases, Faculty of Veterinary Science, University of Pretoria (South Africa).

Several diagnostic tools were demonstrated such as the reverse line blot (RLB) assay and specific DNA extraction method from FTA card. These methods were applied to various sample batches from wild animals for evidence of infection with a range of pathogens of medical, veterinary and biological importance such as *Anaplasma, Ehrlichia, Babesia* and *Theileria* species. Some samples showed interesting results especially the evidence of uncommon *Babesia* and *Theileria* species. A literature review was initiated for future publication of these results.

Future collaboration with the host institution:

During this mission, future collaboration between the University of Liège and the University of Pretoria were discussed especially regarding bilateral scientific cooperation and research project applications. In addition to the continuation of the existent collaboration within the EurNegVec Cost Action, 4 different applications to national and local grant agencies were initiated focusing particularly on training, networking programmes and research project.

Foreseen publications/articles resulting from the RSTSM:

The interesting results on the evidence of uncommon *Babesia* and *Theileria* species found during the analysis of wildlife samples are expected to be published in an international peer-reviewed journal.