



Zoonoses in Emerging Livestock Systems

ISSUE | VOLUME |



ZooLinK Newsletter

The Quarterly Newsletter of the “Zoonoses in Livestock in Kenya” Programme

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LETTER FROM THE PI



Prof. Eric Fèvre

It's a real pleasure to write the first “Letter from the PI” for the Zoonoses in Livestock in Kenya (ZooLinK) project, part of the Zoonoses in Emerging Livestock Systems programme, funded by the UK Research Councils (led by the BBSRC), UK DFID and UK DSTL.

Our project has been underway since 2015, engaged in planning and staffing, followed by refurbishing of our field lab and the commencement of field activities in Kenya. It's satisfying, a year and a half in, to now be able to start reporting on how we are doing and what we are up to. While we have been and will continue to share updates through social media on a regular basis, our project newsletters serve to provide slightly more indepth ongoing reporting of our work. Newsletter articles will also appear on our project website as blog articles – we are active on social media both on the web at www.zoonotic-diseases.org and through twitter @ZoonoticDisease, with #zels #zoolink.

Dr Laura Falzon has been appointed as our postdoctoral epidemiologist, leading activity in our field sites. Laura is co-ordinating scientific activity at our primary laboratory, based in the town of Busia, on Kenya's border with Uganda. The lab houses BSL-2 standard biosecurity and is fully spec'ed for basic parasitological diagnostic work, serological assays, PCR and molecular diagnostics and microbiological assays. Later this year, we'll have some exciting DNA sequencing capacity there too. Samples are flowing through this laboratory where a number of our project scientists are working, and two Masters theses have already resulted from this ongoing work (projects undertaken by Isaac Ngere and Maurice Omondi on arboviruses and Fasciola spp– see elsewhere in this newsletter). Christine Mosoti is our ZooLinK project manager, and is the primary point of contact for any external queries on the project.

While the ZELS programme does not directly fund PhD students, we've successfully attracted a real diversity of academic interests to our programme with some innovative co-funding mechanisms. Ten

PhD students are currently active in the programme, some nearing the end of their first year, others just beginning their studies, on topics as wide ranging as within household economics to genetic diversity of parasites – we'll ensure that the students' work is highlighted regularly in the student's section of this newsletter – see Jessica Floyd's entry in this edition.

We've been engaging very successfully with the national veterinary system too, with two seconded members of County Veterinary Staff attached to our project and so far two cohorts of Animal Health Diploma holders coming through on 3 month “One Health” graduate internships. Elsewhere in Kenya, we're investing, with our national partners, in the surveillance of several other zoonotic disease issues: we put significant effort in to surveillance for Rift Valley Fever during the rainy season early this year and in to understanding the epidemiology of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in camelids and humans. We've also been working on enumerating and vaccinating dogs for rabies in central Kenya. Much work, and many challenges lie ahead, but our excellent team is already proving that it can face these challenges successfully, and I am very proud of the excellent interdisciplinary work that we are doing.

Introducing Zoolink Staff



Dr. Christine Mosoti

Project Manager

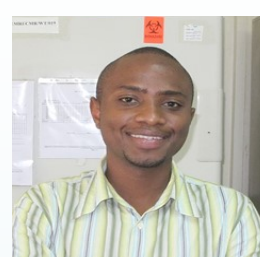
Christine is a veterinarian from Kenya. Her main role includes managing several aspects of the project including reporting & communication, planning the project cycle, budget management, logistics management and co-ordination of the project aspects on behalf of the Principle Investigators. She holds a MSc. in Public Health, from Jomo Kenyatta University of Agriculture and Technology, Kenya.



Dr. Laura Falzon

Post-doctoral Research Associate

Laura is a veterinarian from Malta. She oversees the design and required documentation for the project, liaises with relevant stakeholders, provides scientific guidance to graduate students, and represents the project at conferences and meetings. Laura holds a PhD in Epidemiology from the University of Guelph in Canada, and recently became a diplomat of the European College of Veterinary Public Health.



Samuel Njoroge

Busia Lab Manager

Sam joined ZooLink project as the Lab manager. His main role is managing the field lab in Western Kenya receiving samples from three Counties of Busia, Bungoma and Kakamega.

Sam holds a MSc. degree in Medical Microbiology and is registered with the KMLTTB.

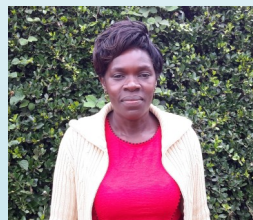


Dr. Joseph Ogola

Consultant

Joseph is a seconded member of Bungoma County veterinary staff, attached to our project. His role is to support the field research activities in western Kenya.

He holds an MSc. in Veterinary Epidemiology and Economics (MVEE) from University of Nairobi, Kenya.



Lilian Achola

Administrative Assistant

Lilian Previously worked with the IDEAL & PAZ projects based at ILRI/DVS Busia Laboratory. In the ZooLink project, Lilian oversees the administrative activities in the lab as well as managing the stores and field level coordination. She holds a diploma in Public relations and a certificate in Accounts.

We look forward to introducing the rest of our staff, comprising research technicians, medical team and others in this regular newsletter feature

STUDENT SECTION

Freshwater Vector Snails and their Infection with Trematode cercariae in Busia County



By Maurice Omondi Owiny, Resident, Kenya FELTP.

Resident, Kenya Field Epidemiology and Laboratory Training Programme based at the International Livestock Research Institute .

In this study, we sought to identify snail species infected with Trematode cercariae and environmental factors that correlate to their presence. This was undertaken to better understand the underlying biology of these species to better understand the risk of transmission of livestock- and human-infectious trematodes.

We found that lymnaeid snails were widely distributed in all the agro-ecological zones (AEZs) we studied, and were the majority snail at low altitudes. Biomphalariae, Bulinus, Oncomelaniae and Melanoides were present in some but not all of the zones. The study found that snails were more abundant in streams originating from springs and swamps near the shores of Lake Victoria. Biomphalariae and Lymnaeid species were found to be infected with trematode cercariae. The *B. sudanica* species found in the swamps near the lakeshore were infected with both *Fasciola gigantica* and *Schistosoma mansoni* pointing to a co-existence of *Schistosoma* and *Fasciola* infection at the site. The relative abundance of vector snails was found to be influenced by water pH, water temperature, ambient temperature and vegetation cover.

Presence of vector snails and cer-

cariae in all of the zones points to presence of possible transmission foci for Schistosomiasis, Fascioliasis and other foodborne trematodiasis. People and animals using water and pasture from these sites in western



Identification/Isolation of cercariae

Kenya are at a risk of contracting these parasitic infections

Control of food borne trematode infection should be targeted in all the AEZ's with emphasis placed on the areas that border the lake and those with streams flowing from springs.

Dengue and Chikungunya infections among febrile children in Busia County Referral Hospital

By Isaac Ngere- Resident, Kenya FELTP.

Infections leading to fever are the largest causes of child morbidity and mortality in Africa. Dengue and Chikungunya infections are among viral diseases that cause fever even in traditionally malaria endemic areas. We set out to determine the prevalence and risk factors of Dengue and Chikungunya infections and estimate coinfection with malaria among children aged between 1 and 12 years presenting with fever at Busia County Referral Hospital in Western Kenya.

We sampled a cross section of children presenting with fever. We interviewed the parents/guardians of these children and collected blood samples and tested by microscopy for malaria and by conventional PCR for dengue and chikungunya. We found that chikungunya was prevalent among



Recruitment and venous blood sampling of children in the study

febrile children and infection was more likely among children presenting with vomiting and children with positive blood-slide for malaria. None of the children screened was found to have dengue.

Our results suggest that mainly chikungunya virus appears to be actively circulating in western Kenya even in the absence of a de-

clared outbreak. We recommend establishment of prevention measures and routine laboratory testing of febrile cases for chikungunya in western Kenya.

Partner Logos



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STUDENT SECTION

Tracking the movements of people and their livestock



By Jessica Floyd, PhD student, University of Southampton, UK.

As zoonotic diseases can be transported across landscapes by hosts, understanding the complexities of host-mediated pathogen movement is a priority for zoonotic disease research. For my research, I have been using surveys and GPS trackers to gather data on the movement patterns of people and their livestock. We will be looking at the differences in movement patterns between the wet and dry seasons:

the first part of the study took place in July and we anticipate completion in November, 2016.

At each selected household, we interview the adults present and ask them questions about places they regularly go to, how they get there and how long they stay. We also ask questions about places they go to less regularly and their activities involving livestock kept by the household. At the end of the interview, we ask the adult who spends the most time looking after the livestock (if they have any) to wear a GPS tracker on a lanyard around their neck for one week which stores their location once a minute. At the

same time, if they keep cattle, goats or sheep then one of these animals (usually a cow) is fitted with an identical device attached to a collar. If the household does not keep any livestock, one person is still asked to wear a tracker, so that we can detect differences in movement patterns between people who do keep livestock and those who don't. Once the week is up, we return to the household to collect the devices and download the data. The devices are set to record their location once a minute, and the batteries can last up to 10 days.

Nearly all of the people we interviewed have been willing to wear a tracker and all of the trackers given out have been returned without problems. We look forward to sharing some results from this study in the next newsletter!

NEWS IN BRIEF

we are open to collaborate-get in touch!

Animal Health & Industry Kabete. Training Institute (AHITI)

AHITI is the principal institution involved in training animal health extension workers in Kenya. As per the project work plans, we have developed partnerships with AHITI to train a cadre of field extension and laboratory staff to undertake enhanced, targeted surveillance for zoonoses. So far, we have had 6 AHITI students engaged in our project, each for 3 months. These have been trained to use standardized protocols for sample and data collection.

Field Epidemiology and Laboratory Training Programme (FELTP)

The FELTP program was established to strengthen the epidemiology and laboratory management capacity of Kenya to meet the challenges of emerging infectious diseases and other public health problems. The ZooLinK project offers a platform for select FELTP students to conduct their Masters research within the project. There are currently 5 FELTP students working on various projects; including: *Campylobacter* in children under 5 years old in Busia, validation of ELISA kits for Brucellosis in Camelids and economic losses due to Echinococcosis in western Kenya.



ILRI DVS Busia Lab