

## **Minutes of RATZOOMAN meeting held at the Danish Pest Infestation Laboratory, Kings Lyngby, Denmark, 22-24 September 2004**

### **The following people were in attendance:-**

Lorraine Arntzen, National Health Laboratory Service, South Africa  
Steve Belmain, Natural Resources Institute, UK  
Stephen Davis, University of Antwerp, Belgium  
Rudy Hartskeerl, Royal Tropical Institute, the Netherlands  
Ann-Charlotte Heiberg, Pest Infestation Laboratory, Denmark  
John Holt, Natural Resources Institute, UK  
Malcolm Iles, Natural Resources Institute, UK  
Monica Janowski, Natural Resources Institute, UK  
Jorgen Jespersen, Danish Pest Infestation Laboratory, Denmark  
Herwig Leirs, Danish Pest Infestation Laboratory, Denmark and University of Antwerp, Belgium  
Jens Lodal, Pest Infestation Laboratory, Denmark  
Robert Machang'u, Sokoine University of Agriculture, Tanzania  
Anabela Manhica, National Veterinary Research Institute, Mozambique  
Adrian Meyer, Natural Resources Institute, UK  
Rassul Nala, National Institute of Health, Mozambique  
Judith Pender, Natural Resources Institute, UK  
Linda Ritchie, Natural Resources Institute, UK  
Ricardo Thompson, National Institute of Health, Mozambique  
Solveig Vibe-Petersen, Danish Pest Infestation Laboratory, Denmark  
Peter Weile, Ministry of the Environment, Denmark  
Moses Zimba, Harare City Health, Zimbabwe

Meeting opened with welcome by the Director of the DPIL, Jorgen Jespersen. Format of meeting was to discuss activities for each workpackage, receiving reports from each partner involved followed by a summary presented by the workpackage coordinator.

### **WP1 Retrospective and prospective investigation of human sera for zoonotics.**

RM reported on progress in Tanzania. Human samples (1702) have been collected from a number of clinics and serologically screened for leptospirosis using MAT against five serovars. Details can be found in his presentation linked to this text.

LA reported progress from South Africa. No blood samples have yet to be obtained. Problems with ethics, witchcraft and HIV are making it difficult to obtain samples from hospitals and targeted communities. Consent forms must be translated into all local languages which makes particular problems for multi-ethnic communities as found in Cato Crest. Partners will continue to work towards collecting human samples but no firm deadline can be set for when this might occur.

MM reported on progress from Zimbabwe. Some human samples have been collected but not yet analysed. Collection and analysis have been constrained by lack of project money. Samples can be collected, but requires payment to those collecting samples. Analysis kits are very expensive and it was agreed that samples should be sent to LA for analysis in South Africa.

RT reported progress in Mozambique. Samples have been collected in Maputo and Zambezia and analysed in South Africa through LA. Toxoplasmosis was found to be very high in both Zambezia (rodent eaters) and in Maputo (HIV patients), generating concern over the lack of diagnosis and treatment in cerebro-reactivation in AIDS patients.

As workpackage coordinator, RH commented on the problems faced in this workpackage, and he is not optimistic that we will deliver the promised outputs in time. Sample sizes collected so far are small and unlikely to provide representative prevalence data. Not all samples have been evaluated against all three diseases using the tests previously agreed. Rudy also reminded everybody that human isolates are required to confirm the serovars responsible to establish linkage with results in WP3. Collecting human isolates will be difficult without strong relationships and communication with clinical staff involved. Tanzania has the best chance of succeeding in human isolation, but other countries should try to develop the appropriate linkages to achieve this aim.

**Action:** Everyone to try harder to get human samples collected from the target communities and/or local clinics, hospitals, blood banks, other clinical surveys.

### **WP2 Taxonomic Identification of rodent species found in rural and peri-urban habitats.**

RM reported that approximately 3000 rodents and shrews have been caught to date in Tanzania. Samples have been given preliminary identifications and sent to Antwerp for confirmation. Data showed some temporal variation for both sylvatic and commensal species.

LA reported that samples in Limpopo Province, South Africa have been limited due to a period of drought. As the drought has now ended, rodent captures have increased. It was decided to repeat the collection again in Oct/Nov to collect a larger sample size. Sample sizes collected in Durban have been higher and reliably identified locally by Peter Taylor. Sample collection in Port Elisabeth has not occurred.

MM reported some sampling has occurred in Zimbabwe, but again activities are limited by availability of money. Financial problems were discussed separately later on.

RT reported that samples have been collected in both Maputo and Zambezia, Mozambique, and all samples have been sent for identification in Antwerp. It is planned to carry out more sampling in both sites.

As workpackage coordinator, HL presented a summary of the data collected and analysed so far. Please see the summary to establish what samples and information has been received for each African country. What is still missing from the workpackage is the need to link rodent trapping site information and human sero-positives.

**Action:** Ensure that data is entered into standard forms. This ensures that no data entry errors are made. Contact HL if unsure how to do this. HL will send each country the most recent version and partners should continue to work with this one for all future input.

**Action:** Collect missing site data for sites in Tanzania, Zimbabwe and Mozambique and enter into standard form. The data is useless without the site information so this must be done.

**Action:** Send all collected specimens and livers to Antwerp asap. These are urgently needed to carry out identification work.

**Action:** Lorraine will ask Peter Taylor for information on rodent identification and circulate the relevant pages to all African partners plus Monica and Malcolm.

### **WP3 Isolation and identification of zoonotics from rodents and domestic animals.**

LA reported that Port Elisabeth rodent sera samples are plentiful but not much known about sources or methods of capture. No other tissues are provided for other tests and rodent species identification can not be confirmed beyond that reported by the collectors in Port Elisabeth. All samples have been screened for leptospirosis using the human dri-dot test. Positive leptospirosis samples have been sent for MATs. The negatives will be sent after the positive samples have been analysed. All samples so far have been plague negative, and toxoplasmosis ranges from 5 to 26% sero-positives at the different sites. No samples from domestic animals have yet to be collected.

Rodent samples have not been analysed in Zimbabwe due to financial problems. It was agreed that samples will be sent to South Africa for analysis.

AM reported that rodent samples have been serologically analysed for Mozambique through South Africa, awaiting results of MAT and PCR. AM wants to try to do some of the analysis in Mozambique, and it was suggested that

RM reported on leptospirosis serological and isolation tests from Tanzania. Samples from domestic animals have been collected but have yet to be analysed. Six serovars were tested in MAT. RH suggested that a larger panel should be done with a subsample to see whether these are the correct serovars to use. However, it was suggested that the six serovars should be used to promote standardisation and comparability of results obtained in different countries and with human and domestic animals. It was, therefore, agreed to leave panels as they are but to appreciate their limitations and that it is likely that sero-positive samples will go undetected. RH emphasised that different areas/countries may need different panels of serovars in the MAT because having the same panel in all countries for standardization only makes sense if you use a large, generally applicable panel. Some titre levels of leptospirosis in rodents were remarkably high, but the total percentage of positives was disappointingly low.

RM then summarised the workpackage status so far. HL stressed the importance of using the standard files for inputting data from the WP3 tests. These files need to be finalised

by RH, LA and RM. It was agreed that it would be necessary to identify the precise living place of sero-positive patients.

**Action:** Rudy to finalise the record sheet for human positives in discussion with Robert and Lorraine. Sheet needs to be circulated to African partners for data input, ensuring everyone uses the standard form.

**Action:** Herwig will produce labels for human and domestic animal samples

**Action:** African partners to increase efforts to collect domestic animal samples.

**Action:** Herwig will add a list of domestic animals to the existing rodent data sheet so that all non-human samples appear within the same spreadsheet.

#### **WP4 Rodent Ecology in rural/peri-urban Africa**

HL summarised what information has been collected so far. Research using marked baits to assess likely rodent movement distances in urban areas has been completed and provides good data on likely distances moved by rodents in urban areas. There have been several problems in the collection of CMR data in Zimbabwe and Mozambique where it was misunderstood that data must be collected from the CMR study sites on a monthly basis. Partners now understand why this must be done and will continue the study on a monthly basis. Data from South Africa has not been input using the standard form and software, and it is essential that this occurs to minimise data entry errors and reduce future workload.

**Action:** Solveig will go through all data she currently has and input it into the correct CMR programme. This will then be sent to the African partners who must then use the standard form for all future CMR data input. It is essential that the standard CMR data entry package is used for all future data collection.

**Action:** African partners must send area description information about the CMR sites to Solveig on local habitat, environment, climate and the distance between the different CMR plots.

**Action:** African partners to send through the toe clippings obtained from marked animals to Antwerp. This is used to confirm the rodent species.

**Action:** African partners must obtain climatic data from the nearest weather stations to the CMR study sites and provide temperature and rainfall data (broken down on a daily basis) for the duration of the CMR study period as well as 3 months before the trial started.

#### **WP5 Impact of environmental factors, water management and land use strategies upon zoonotics.**

SB reported that NRI is looking at survival of pathogens on food. Initial work by a PhD student has started with using salmonella and will then be extended to leptospirosis based on a recent visit to KIT by NRI staff to determine the requirements for handling leptospires. Reports should be available for next meeting. JP presented work related to establishment of GIS and analysis of land use changes. Difficulties in procuring all the maps required have had a major impact on analysing change as recent maps for all sites are still missing.

**Action:** get the missing images and complete land use categorisation for change analysis.

#### **WP6 Socio-economic impact and livelihood constraints of disease**

MI presented a consolidated report for results collected so far. It was agreed to try to incorporate a question on the degree to which people slept in the same room as food stored. Agreed to work on development of risk scores for certain behaviours and habitat aspects and will discuss further with John Holt and Stephen Davis on how the modellers can help with this. Surveys have still not yet occurred in Morogoro, Mozambique and Zimbabwe. It was agreed that the work should definitely be done in Morogoro and that funding existed to do this. Surveys in Zimbabwe and Mozambique should go ahead, and it was stressed that these must happen within the next three months in order for the result to be of use to the project. Ricardo and Rasul will do the data collection themselves on their next visit to Morrumbala.

**Action:** MI to liaise with SB over correlating socio-economic factors with questionnaire parameters.

**Action:** MI to liaise with JH and SD over potential models that could be used to assess potential risks associated with certain questionnaire responses.

**Action:** Further studies in Tanzania, Zimbabwe and Mozambique must be completed as a matter of urgency.

### **WP7 Measuring factors of anthropogenic change upon rodent ecology**

MJ presented a consolidated report of the surveys conducted in Lushoto, Limpopo and Durban. It was agreed that comparable surveys will not be undertaken in Morogoro due to lack of sufficient funds. It was agreed that surveys in Mozambique (Zambezia already done but further revisions and translation required before deciding whether to also do Maputo) and in Zimbabwe (staff for survey in Harare are identified and awaiting financial resolutions before work can be carried out). It should be possible to get these surveys done in time with data and reports handed to Monica by end of 2004.

### **WP8 Geographic Information System**

JP presented existing database structure for comment by all partners. It was agreed that all spreadsheets should be sent to JP immediately so that preliminary analyses can be done. Revised spreadsheets will automatically update any changed data as further information is collected. It was agreed that all partners should have access to the database component of the GIS and further buttons to facilitate the user interface will be added.

**Action:** All partners to tell Judith details of required analyses as soon as possible.

**Action:** African partners to obtain climatic data, particularly rainfall and temperature for study sites.

**Action:** RT, RN, SB, JP and possibly LA to work out the financial problems associated with obtaining the final satellite images required.

**Action:** All partners to send new data, spreadsheets and photos to Judith asap.

**Action:** All partners to send Judith a list of keywords, references (for a bibliography) and reports they wish to be associated with the GIS database.

**Action:** All partners to establish whether they have access to Access 2000. Earlier versions of Access 2000 will not work with the GIS database. Anyone without Access 2000 should notify SB and JP immediately.

### **WP9 Predictive Modelling for assessing zoonotic transmission risks.**

JH and SD presented a summary of the current mathematical model developed for leptospirosis. The model does not yet incorporate any potential stochasticity, and is based on many theoretical parameter values for which we do not yet have real evidence. However, it will allow us to vary parameters and understand how changes in rodent or disease ecology will effect transmission risks. Work will continue to develop the model as more data from other workpackages is generated.

### **WP10 Development of Sustainable Control Strategies**

This workpackage is due to start in January 2005. The delays in collecting and analysing information from the other workpackages will influence what can be achieved in this WP. It was agreed that it will be possible to make some analysis of data collected so far, leading to reporting potential intervention strategies, recommendations and trialling limited activities through demonstration.

**Action:** HL, SVP, ACH and JL will summarise our existing knowledge and draft a report that highlights potential interventions and recommendations which will then be circulated to all partners for comment. It will then be decided how to proceed with this workpackage.

### **WP11 Analysis of Policy Issues**

MM reported that will be necessary to involve government at all levels (local, national, agriculture, health, women). Activities in WP10 such as demonstration sites in each country will be essential for raising awareness and influencing policy makers.

**Action:** Martha will develop a brief report on the current policies in different SADC countries with regard to zoonotic diseases, particularly leptospirosis, plague and toxoplasmosis, but also more widely about neglected communicable diseases where rodents may be involved in their transmission. This report about existing policies should be completed by the time of our next meeting in April.

**Action:** In addition to contacting key government policy makers in each country Martha will also contact WHO and FAO to find out about their current recommendations and ask for their assistance in revising policies relevant to the SADC.

### **WP12 Stakeholder Workshop**

LA presented to partners issues that need to be clarified with regard to the timing, location and audience for the workshop. It was suggested that the meeting takes place away from Johannesburg and Pretoria in a place such as Kruger National Park to encourage people to come and stay focussed on the workshop agenda. It was suggested that the workshop should then be two days with allowances for safari. Participant numbers should be limited to approximately 100 – based on Kruger limitations.

**Action:** All partners to send lists of potential participants to Lorraine and Steve. Ideally the list should contain names, and addresses of key VIPs to whom invitations should be sent. Participants should be drawn from different categories of stakeholders, e.g. Ministers of Health, Environmental Health Officers, Directors of Research Institutes, Disease Surveillance Boards, charitable organisations involved in health care delivery, Councillors/representatives from communities involved, WHO representatives, officers from key donors particularly the EU and, DANIDA, DFID offices in each country.

**Action:** Lorraine and John Freaan to investigate getting a VVIP (such as Nelson Mandela) committed to the workshop for inclusion on the invitations to be sent out.

**Action:** Steve and Herwig to discuss asap additional funding through the CTA or as an EC Accompanying Measure to cover the travel and subsistence of a limited number of delegates and other workshop costs.

**Action:** A variety of materials should be ready for distribution at the meeting, including a brief report of the project's findings and recommendations, a policy document for discussion, and shorter leaflets and handouts that highlight the problems with rodent-transmitted diseases and existing/proposed interventions.

### **WP13 Output Dissemination**

The only output since our last meeting has been by Herwig who gave a conference presentation at the International Congress of Zoology in Beijing in August 2004 where the ratzooman activities were summarised to date. Herwig's presentation can be found on the ratzooman website (<http://www.nri.org/ratzooman/publications.htm>) as a PowerPoint presentation (that contains the animations) and as a smaller PDF file (where the animations are lost).

**Action:** Every effort should now be made to complete reports as soon as possible so that peer-reviewed publications can be developed and submitted.

### **Administration / Financial Issues**

We have still not had the 2<sup>nd</sup> payment from the EC. We have responded to all their queries raised in our first cost statements and can only hope that the money arrives soon. NRI will send the money out as soon as we get it. Please remember the queries raised by the EC and try to avoid them with the next round of cost statements.

NRI has already advanced some money to needy partners, and hopes that everyone can find alternative sources of cash to keep project activities going until the money arrives from the EC. **It is imperative that partners contact NRI if they are suffering financial problems so that something can be sorted out.**

The dates of the next meetings are as follows:

Meeting in Amsterdam arranged for **27 to 29 April 2005** - with people arriving on the 26<sup>th</sup>

Meeting in Harare for **7 to 9 September 2005**, with people arriving on the 6<sup>th</sup>.

Stakeholder workshop in South Africa for the **week starting 7 November 2005**. This would be a two day workshop on the Thursday and Friday with ratzooman partners meeting on the Tuesday and Wednesday, therefore partners need to arrive in Jo'burg/Kruger on the 7<sup>th</sup> Nov.

All consortium partners requested that we ask the EC for the project time period to be extended by six months. This would give everyone more time to complete the analysis and integration of data sets and prepare materials for the stakeholder workshop that would then take place a few months into 2006. SB said he would raise the prospect of an extension with the NRI administration, and if agreed, he would contact the EC and make arrangements for the extension. SB will contact everyone once he has a better idea of what will happen. **In the meantime everyone should continue planning as if the project will end December 31<sup>st</sup> 2005.**