
AHEAD-GLTFCA WORKING GROUP – 9TH MEETING

Record of the 9th Meeting held on the 4th – 6th March, 2009

Xisaka Hotel, Namaacha, Mozambique

Note: PDFs of most of the Powerpoint presentations given at this meeting are available at

http://www.wcs-ahead.org/gltfca_march2009/agenda_march2009.html.

1. WELCOME AND INTRODUCTIONS

Mr. Pariela, Director of National Conservation Areas in Mozambique, warmly welcomed participants to the 9th AHEAD-GLTFCA Working Group meeting and indicated that he was standing in for Dr. Soto who had not been able to attend. The government of Mozambique was committed to the transfrontier conservation area process and was happy to be hosting another AHEAD-GLTFCA Working Group Meeting. He noted that this was the third occasion on which Mozambique had done so, and he was pleased to see so many institutions involved in such a dynamic programme. Mr. Pariela wished the delegates fruitful discussions over the next three days.

After the opening speech delegates introduced themselves. Once again the number of people attending the meeting exceeded that of previous meetings, with more than 75 delegates in attendance.

2. THE AHEAD-GLTFCA PROGRAMME AND CONCEPTUAL FRAMEWORK

2.1 Brief Introduction to AHEAD and AHEAD-GLTFCA, and Background Nicky Shongwe

Dr. Shongwe gave a Powerpoint overview of the AHEAD-GLTFCA initiative and the context provided by the broader AHEAD program. As per the AHEAD website's homepage (<http://www.wcs-ahead.org/>):

Animal & Human Health for the Environment And Development was launched by WCS, IUCN and a consortium of organizations six years ago at the 2003 IUCN World Parks Congress in Durban, South Africa. By assembling a 'dream team' of veterinarians, ecologists, biologists, social and economic scientists, agriculturists, wildlife managers, public health specialists and others from across East and southern Africa, the Wildlife Conservation Society, IUCN, and a range of partners tapped into some of the most innovative conservation and development thinking on the African continent- and AHEAD was born. Since then, a range of programs addressing conservation, health, and concomitant development challenges have been launched with the support of a growing list of implementing partners and donors who see the intrinsic value of the "One Health" approach.

AHEAD is a convening, facilitative mechanism, working to create enabling environments that allow different and often competing sectors to literally come to the same table and find collaborative ways forward to address challenges at the interface of wildlife health, livestock health, and human health and livelihoods. We convene stakeholders, help delineate conceptual frameworks to underpin planning, management and research, and provide technical support and resources for projects stakeholders identify as priorities. AHEAD recognizes the need to look at health and

disease not in isolation but within a given region's socioeconomic and environmental context.

In short, *AHEAD* recognizes the importance of animal and human health to both conservation and development interests. Around the world, domestic and wild animals are coming into ever-more-intimate contact, and without adequate scientific knowledge and planning, the consequences can be detrimental on one or both sides of the proverbial fence. But armed with the tools that the health sciences provide, conservation and development objectives have a much greater chance of being realized – particularly at the critical wildlife/livestock interface, where conservation and agricultural interests meet head-on. *AHEAD* efforts focus on several themes of critical importance to the future of animal agriculture, human health, and wildlife health (including zoonoses, competition over grazing and water resources, disease mitigation, local and global food security, and other potential sources of conflict related to land-use decision-making in the face of resource limitations). Historically, neither governments, nongovernmental organizations, the aid community, nor academia have holistically addressed the landscape-level nexus represented by the triangle of wildlife health, domestic animal health, and human health and livelihoods as underpinned by environmental stewardship.

Nicky reminded the group of the agreed overall objective of the *AHEAD-GLTFCA* initiative:

“Facilitate development and conservation success in the GLTFCA through integrated understanding based on innovative inter-disciplinary applied research, monitoring and surveillance at the interface between wild and domestic animal health, ecosystem goods and services, and human livelihoods and wellbeing”

The 2007 “The *AHEAD-GLTFCA* Programme: Key Questions and Conceptual Framework Revisited” document (available at http://www.wcs-ahead.org/workinggrps_limpopo.html) outlines the basic framework based on six main themes (many of which have their own modules):

1. An overarching conceptual framework to facilitate integrated understanding through interdisciplinary approaches
2. Animal health and disease
3. Land use, ecosystem goods and services, and animal health
4. Human livelihoods, animal and ecosystem health
5. Policy support and capacity building at local, national and regional levels
6. Communications and outreach

The funding of the program was reviewed and recent successes catalyzed by WCS noted, with special thanks given to The Rockefeller Foundation, the John D. and Catherine T. MacArthur Foundation, and USAID. The Seed Grants initiative was discussed, noting that all 10 winning projects would be presenting their plans for the year at this meeting.

The new document, “As the Fences Come Down: Emerging Concerns in Transfrontier Conservation Areas” was briefly discussed. It was created as an overview of the *AHEAD-GLTFCA* Conceptual Framework for non-technical audiences, at the behest of the *AHEAD-GLTFCA* Working Group at last year’s meeting. The document has already been widely circulated in PDF, is freely available on the *AHEAD* website, and hard copies have been provided for attendees today.

The history of the previous eight major *AHEAD-GLTFCA* Working Group meetings was briefly reviewed, as was the range of health, development, and conservation challenges facing successful, sustainable development of the Great Limpopo TFCA. The to-date informal consortium nature of the *AHEAD-GLTFCA* Working Group was noted, with a growing number (more than 20) of institutional Letters of Understanding (LoUs) now signed and available on the *AHEAD* website at http://www.wcs-ahead.org/gltfca_lou/letters.html.

2.2 Overview of the current AHEAD-GLTFCA Conceptual Framework David Cumming

The Powerpoint presentation on the conceptual framework was essentially similar to that presented at the previous Working Group meeting and participants had received a printed copy of the 2007 paper entitled “AHEAD-GLTFCA Programme: Key Questions and Conceptual Framework Revisited” in their packs. Dr. Cumming emphasized that the framework needed to be reviewed, and critical comment and feedback would be welcome. In relation to the overall objective of the AHEAD-GLTFCA programme it was important to note that baseline information on which to assess the progress and impacts of the programme, particularly in relation to its development objectives, needed to be put in place.

3. UPDATE ON THE GLTP PROJECT AND FORMATION OF THE GLTFCA Elizabeth Mhlongo

Little progress was made on the official tri-national GLTP project during 2008. This is attributed primarily to the departure of the key officers tasked with implementation of this project. The GLTP Coordinator and other key positions were unfilled. These gaps have resulted in the loss of momentum in the project.

A decision on the location of the bridge across the Limpopo River, to link Gonarezhou National Park with Kruger and Limpopo National Parks has not yet been made. Three potential alternative sites were identified and consultation among stakeholders is still in progress. One of the sites is located along the Madimbo corridor along the Limpopo River to the west of the northern tip of the Kruger National Park. This area is under a land claim and there are different interests among the claimants with regard to future land use. Whilst some community members favour livestock rearing, others prefer to retain the conservation status of the area.

Four hundred and seventy animals were translocated from Kruger National Park to Limpopo National Park, bringing the total number of wildlife translocated to 5,470. To date, 50 km of fence has been removed between the Kruger National Park and Limpopo National Park. Removal of additional fence is planned in 2009. A resettlement programme in Limpopo National Park has commenced. Eighteen families from Nanguene village were resettled in Chinhangane area, south of the Olifants River. The Coordinator for the development of the South African component of the GLTFCA has been appointed and the planning process has commenced.

4. ANIMAL DISEASES AND DISEASE ISSUES IN THE GLTFCA

4.1 Progress in addressing animal disease threats (including zoonoses) and priorities in the GLTFCA: A JMB Conservation and Veterinary Sub-Committee Update on Challenges and Progress Markus Hofmeyr, Chris Foggin, Nazare Manguze and Roy Bengis

Feedback regarding some initiatives and activities relating to the veterinary committee of the GLTP is given below. This committee’s mandate includes:

- The identification of potential animal health issues and challenges related to expansion of the geographic range of wildlife and their pathogens.

This objective is being addressed with active and passive surveillance but additional health surveys are needed to get a better handle on what the current status is of important diseases, especially in livestock and pets and buffalo.

- Identification of potential conservation threats related to pathogens cycling in neighbouring livestock (in all 3 countries)

Currently BTB is still the most important threat - need better status understanding, especially in Mozambique and Zimbabwe – anthrax and rabies remain threats.

- Identification of the related human health and zoonotic issues.

Better understanding of current health status is required but anthrax (in Zimbabwe) and rabies in livestock and in dogs remain threats in all three countries.

- Inclusion of these veterinary issues in the development of a Joint Management Plan for the GLTP.

This plan is outstanding and in urgent need of updating.

- To advise the Joint Management Board (JMB) on the management of animal health challenges, and prioritise appropriate activity areas to address these issues.

This communication has not been effective and is a real concern to the Veterinary Sub-Committee.

Prioritisation of animal health challenges in the Great Limpopo Transfrontier Park

A) Infrastructural need

Basic veterinary monitoring and laboratory capabilities are lacking in all three countries, with diagnostic capability limited due to local lab capacity being compromised in all three. The Onderstepoort Veterinary Institute (OVI) is currently the main reference lab. There is potential for improving lab capacity in Skukuza (state veterinary office). Lab capacity is being developed in Malilangwe in Zimbabwe.

A centralised database with GIS capability and a data management system is in development by PPF, but has not achieved its optimum potential and is currently only being used in SANParks for capture related records – this issue needs to be re-addressed to determine if the PPF database is still serving the purpose that is required among the three GLTFCA countries.

Technical equipment – available in South Africa, reduced in Zimbabwe due to the lack of resources and slowly being obtained in Mozambique.

Training and capacity building – in process of developing training courses at various levels – first course will be presented to vets at the end of March 2009 at Onderstepoort. (See related Emily Lane *et al.* AHEAD-GLTFCA Seed Grant update later in the agenda.)

The development of a Wildlife Veterinary Unit in Mozambique is ongoing (Chokwe workshop) with the establishment of the Limpopo Veterinary Working group now in place and a meeting was held on 20 February 2009, with specific actions to be followed up for veterinary activities in Limpopo NP.

Support for Wildlife Veterinary Unit in Zimbabwe – reduced due to lack of support funding from PPF and other sources – this is very problematic as the unit is capable of doing most required work but lacks resources to do the work and the issue of continuation is essential in these troubled times in Zimbabwe.

B) Disease monitoring and management recommendations

General disease status surveillance in cattle, pets and other livestock is needed in all three countries – this is critical. Some very good projects are currently happening in all three countries but there is still too little direct involvement of the relevant state authorities, which ultimately have to embrace and enact some of the research outcomes. **The committee recognises that better communication is required and a workshop with key role players is scheduled to take place in 2009 to address the critical issues.**

Important disease issues dealt with or highlighted by the committee are as follows:

Bovine Tuberculosis (BTB) and Brucellosis

Monitoring of BTB and *Brucella* status of cattle in the Sengwe corridor – being repeated by CIRAD currently. Results are critical for understanding of the status of the disease, which will guide the risk and consequences analyses, resulting in possible interventions where required or possible. To date, *Brucella* positive cattle but no definitive BTB diagnoses made.

Buffalo tested and 2 post mortems conducted in Gonarezhou NP (February 2009) – suspicious lesions and awaiting culture results.

Monitoring of BTB and *Brucella* status of cattle on the KNP southern & western boundary – ongoing (no BTB found so far, but *Brucella* positive cattle).

Monitor the BTB dynamics of the KNP buffalo herds – survey planned for 2009 postponed to 2010. Survey in 2008 completed for the Shingwedzi area – prevalence between 4-8% and no BTB found in buffalo tested in Limpopo NP. No BTB has been found in cattle tested in Limpopo NP in 2008.

In the above surveys (Mozambique and Zimbabwe), funds are often lacking for compensation for positive cattle that must be slaughtered to confirm the diagnosis and for TB strain fingerprinting.

A disease modeling workshop is planned for mid-March 2009 in KNP on BTB in lions (see report out from the Seed Grant awardees for this project later in the agenda) and the outcome will guide further research and potential management actions required.

Foot & Mouth Disease (FMD)

Topotyping of foot & mouth disease viruses in buffalo in Gonarezhou (outstanding) and Limpopo National Park were completed for buffalo captured in 2007 & 2008. Some important projects are taking place in the SE Lowveld in Zimbabwe to determine FMD seroprevalence in both cattle and buffalo. Risk analyses of FMD are being conducted by CIRAD, information that is critical for the veterinary committee to have.

Blood and probang samples were taken from a number of buffalo in Gonarezhou (Wildlife Unit and CIRAD in 2008).

Large scale outbreaks in cattle seen in Zimbabwe in 2008.

Corridor disease:

Sporadic losses of cattle (low numbers) on the south western border of KNP and possibly in Mozambique but specific diagnosis lacking. Better understanding of this disease especially in cattle that interface with buffalo is needed. CIRAD is conducting research in the Zimbabwe SE Lowveld – knowledge of the outcomes is critical to the veterinary committee.

Anthrax

Last outbreak was a focal area in the NE of KNP in 2006, one case in 2008 in Pafuri area.

Sporadic cases in Zimbabwe with zoonotic risks.

Vaccination of cattle in all three countries may be current for this disease but the situation will be challenging should another outbreak occur, especially in Zimbabwe.

Trypanosomiasis

Tsetse flies and Nagana - monitoring of tsetse fly activity and spatial / temporal spread in Gonarezhou National Park is ongoing. Monitoring in the northern KNP and LNP for tsetse fly incursion - **no sign of fly revival or trypanosomiasis in livestock in 2008.**

Emerging diseases:

Avian Influenza: No sign of pathogenic strain in southern Africa yet.

Classical Swine Fever: Under control in South Africa and no evidence that it has established in wild pigs but monitoring is ongoing.

Crocodile deaths in Olifants Gorge: Cause still unknown but multifactorial and large scale program (Crocs) is planned to understand water related threats better. (See report further on in these minutes.)

Other diseases or system health issues?

We recognize that global environmental change is a major threat to biodiversity and that disease can be the final key driver to bring populations to low levels or even extinction where severe environmental stressors have influenced the species negatively.

C) Primary Animal Health Care at the interface

Vaccination of cattle against FMD and anthrax – suffering from logistical constraints both in Zimbabwe and Mozambique – cold chain problems, vaccine breakdown? Vaccinations did take place however in all three countries and further vaccinations are planned for 2009.

Vaccination of dogs against rabies and canine distemper – not adequately in place but large effort undertaken around Gonarezhou in 2009 and in South Arica but some resistance from local communities to having dogs vaccinated – **rabies is currently a major zoonotic threat in at least South Africa and Zimbabwe**

Deworming of dogs (including *Echinococcus*) – not in place adequately.

Regular dipping and inspection of cattle – not in place adequately in all three countries and innovative methods required to improve this.

As a final statement, the Veterinary Sub-Committee asks that all relevant projects relating to health and interface issues are shared with them as the results will influence risk analysis and intervention decisions by the Committee.

Mozambique:

The main activities that are being done by the veterinary service in Limpopo NP aim to control and prevent the occurrence and dissemination of infectious disease, including the zoonotic diseases. The main activities include:

- disease monitoring and surveys
- control and prevention of diseases
- building capacity within the wildlife department

The veterinary service has recently become involved in a project for sampling buffalo in LNP to investigate if the vaccine that has been used actually contains the strain(s) carried by the buffalo. SADC FMD project is supporting this study. We are also committed to the BTB survey in buffalo. This survey is done every year with SANParks, as part of a process of combining efforts to investigate and monitor diseases common to Mozambique and SA in the Transfrontier Park.

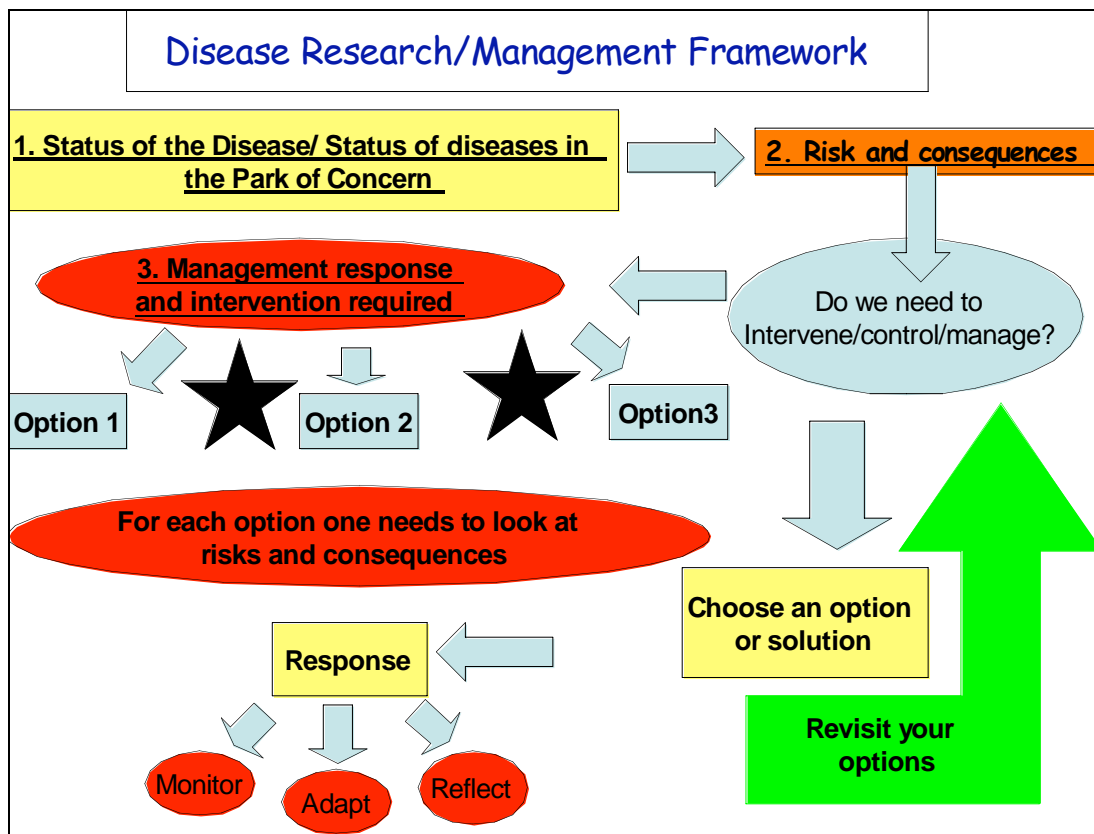
The veterinary authority is running a program of prevention of disease, basically based on vaccination against the following diseases:

- Foot and mouth disease
- Anthrax
- Blackquarter
- Rabies
- Newcastle

Obviously, one of our strongest commitments is to improve coordination and communication, with most of the stakeholders and key people and institutions involved in the GLTP, particularly regarding the monitoring, prevention and control of disease. Most of the institutions have been involved in capacity building and in improved communication during the establishment of the wildlife control department. Veterinary service has been working more closely with institutions such as National Directorate of Conservation Areas, WCS, SANParks, other NGOs *et al.*

4.2 A New Framework for Disease Research at SANParks – Markus Hofmeyr

(Developed by a multidisciplinary team at a workshop held in Skukuza on 22 January 2009)



The approach outlined above is aimed at highlighting key knowledge gaps for further research and monitoring at the level of status (diagnostics, inventory, surveillance), risks & consequences (for biodiversity, population persistence, human/livestock/wildlife interface, regulatory & land use planning) and management intervention/responses undertaken. The actual level of detail will be determined for each park and/or disease as the level of understanding will vary from area to area and will depend on what disease is relevant to the area/species/system.

A key aspect of the framework is to understand the risks and consequences of a particular disease or disease threat in order to guide management in determining if intervention is desirable or possible (or to inform any other form of management action, including doing nothing).

The Adaptive Management approach currently accepted by SANParks as the most relevant approach to dealing with the complex dynamics of ecosystems and park management will be applied to each intervention action, so that the desired outcome of the action/intervention/response actually meets the planned or expected outcome and can respond to better information or changing environment.

It will be necessary to frequently revisit management and monitoring options linked to the specific disease or disease threats, due to the rapid changes in environmental and disease variables as a result of global environmental change. Developing and adopting monitoring tools for diseases in parks will be vital to this ongoing evaluation of the level of threat posed by disease in parks.

SANParks also recognizes that disease is a key driver in global environmental change and that indicators need to be developed to help management become predictive when species/systems and communities may be under threat from disease related to environmental change. Biodiversity hot spots (especially invertebrates, aquatic organisms and plants) may be very vulnerable to disease impact and we recognize that our knowledge is lacking in this field.

4.3 Zimbabwe – The GLTFCA in Zimbabwe: A 10-Year Journey to Virtually Nowhere Chris Foggin

After 10 years of considerable effort and expense, it seems that the GLTFCA process in Zimbabwe has not resulted in any overall improvement in conservation status, economic upliftment, tourist visits, or human and animal health status. Some, but by no means all, of this failure is a result of factors beyond the control of the TFCAs processes.

Most of the wildlife areas in the GLTFCA in Zimbabwe, including the 'bridging' Conservancies between the Limpopo-Shashe and Great Limpopo TFCAs, have been under severe threat from illegal settlement and grazing of livestock, commercial and subsistence poaching, removal of fences (usually to be used for snares) and depletion of natural resources. Some Conservancies such as Chiredzi River and Bubiana, presently exist in name only. Commercial poaching of rhino and zebra has taken a particularly heavy toll.

In 2006, the Conservation and Veterinary Sub-Committee of the Zimbabwe TFCA programme finalized its Strategic Plan which identified the following goals, which each had a number of associated objectives and activities:

1. Conservation of biodiversity and promotion of the sustainable use of resources: mostly in Gonarezhou NP, but also in conservancies
2. Harmonization of land-use systems to improve ecosystem resilience, including the development of wildlife corridors
3. Facilitation of communities in the wildlife industry through private-public-community partnership
4. Improvement of the health of wild and domestic animal populations, which includes improving the capacity and delivery of services, as well as disease surveillance
5. Development of a new system of veterinary zoning, which would not jeopardize livestock production
6. Creation of a locally or regionally-based institution that would drive the above processes
7. It is concluded that few of the objectives have been achieved to date, although the insertion of a Frankfurt Zoological Society project into Gonarezhou NP has greatly assisted in the conservation effort there. Some veterinary surveillance has also been undertaken, with the assistance of NGOs. However many of the objectives remain completely unattainable under the present constraints at play in Zimbabwe. While no wildlife corridors have yet been developed, there is the possibility that a new, large-scale wildlife venture in south Wanezi may provide some linkage between Bubi Valley and Gonarezhou.
8. The most important short-term developments should then be:
9. A sustained flow of international tourists; this will require either regular air-services to the regions and / or a readily available crossing-point on the Limpopo river
10. Major political buy-in to the GLTFCA ideals, as well as a more active role by senior levels of the government administrators
11. Re-establishment of the integrity of the wildlife areas, even if those were to be of reduced area
12. Strengthening of local government implementing agencies to enable them to play their defined role
13. Bring some of the planned community participatory projects to fruition

Without rapid progress towards these goals, it is envisaged that the major result from the GL-TFCA process will be long-term disillusionment on the part of those very local inhabitants who initially believed they had the most to gain.

4.4. Discussion

1. The transfrontier park ideal is supposed to improve communication and coordination across boundaries yet there were no meetings of the TFCA Steering Committees last year. The Peace Parks Foundation (PPF) is supposed to be facilitating the development of the GLTFCA – where were they? There is a need to ensure political buy-in and commitment on the part of signatories to the Treaty. PPF are not even formally represented at this meeting. These concerns will be communicated to the PPF CEO.
2. The status of bovine tuberculosis in livestock and in communities surrounding the Kruger National Park (KNP) is not known. It was considered to be a low risk on the western borders of KNP, however, it was noted that a study of one area in Tanzania found that ~20% of human tuberculosis cases were due to bovine TB.

5. INTRODUCING TEN AHEAD-GLTFCA SEED GRANT AWARDEES: WHAT THEY WILL DO

5.1 Skills Development for Disease Monitoring in the Greater Limpopo Transfrontier Conservation Area (GLTFCA)- Capacity Building for Wildlife Disease Diagnostics

Emily Lane, Antoinette Kotze, Rosa Costa, Mary Louise Penrith and team, National Zoological Gardens of South Africa and collaborating institutions [Seed Grant]

The *AHEAD* initiative in the Great Limpopo Transfrontier Conservation Area (GLTFCA) aims to provide a forum to address the risks of disease transmission between humans, domestic animals and wildlife as well as ways in which the developmental needs of Africa can be realistically met without compromising its environmental heritage. This project aims to take important steps to improve our knowledge of wildlife diseases in the GLTFCA. While serological surveys detect pathogens that we already know are present, pathological surveys help monitor both infectious and non-infectious diseases and identify emerging diseases. Collection of veterinary pathology diagnostic samples is currently restricted by practical, capacity and resource limitations. This project is designed to develop the skills and resources of veterinarians and veterinary pathologists working with wildlife diseases in the GLTFCA, and maintain databases and stored research samples for retrospective and prospective research. The joint funding received from the Wildlife Conservation Society and US Fish and Wildlife Service will enable 6 veterinarians from each of Mozambique and South Africa to attend a practical wildlife disease investigation course offered by the Faculty of Veterinary Science, University of Pretoria in 2009, and to equip them each, as well as the laboratory of the Agricultural Research Institute in Maputo, with a necropsy tool kit. In addition, a training course on wildlife and exotic disease pathology will be developed for veterinary pathologists by the National Zoological Gardens of South Africa and the Faculty of Veterinary Science, University of Pretoria, and funds secured will enable 4 Mozambican pathologists handling cases from the GLTFCA to attend the course in 2009. The grant also covers the processing costs of 30 GLTFCA wildlife cases each for Mozambican and South African pathology laboratories. We hope that that this seed money will facilitate successful applications for funds from other sources for long-term wildlife disease monitoring in the GLTFCA.

5.2 Zoonosis at the Interface: Lion (*Panthera leo*) Bovine Tuberculosis Overview and Analysis Workshop

Yolan Friedman, Brenda Daly, Markus Hofmeyr and Peter Buss, Endangered Wildlife Trust and South Africa National Parks [Seed Grant]

Bovine tuberculosis has been diagnosed in a number of species in the Kruger National Park. Historically, however, the primary concern for South African National Parks (SANParks) has been determining and monitoring the disease prevalence, incidence of new infection, and spatial and temporal spread of tuberculosis in the main wild maintenance host, the Cape Buffalo (*Syncerus caffer*). As the primary predator of buffalo in the region, lions (*Panthera leo*) experience high levels of exposure to *Mycobacterium bovis* and this, together with their social structure, may facilitate transmission of the disease within and between lion prides. A Disease Risk Assessment Workshop will be held from 16 to 20 March 2009 at Kruger National Park Veterinary Wildlife Services facilities in Skukuza, South Africa, to thoroughly evaluate the current status of lions in the park, review and discuss current research and clinical findings, and investigate potential population outcomes through predictive simulation modelling efforts. The workshop will be facilitated by the International Union for Conservation of Nature's (IUCN) Conservation Breeding Specialist Group Southern Africa (CBSG SA) and the Endangered Wildlife Trust (EWT), and will be hosted by SANParks. Expected workshop outcomes include strategic directions for dealing with the threat of bovine tuberculosis in lions and improved decision-making for the management of bovine tuberculosis.

5.3 A Comparative Study of Institutional Arrangements for Small-Scale Livestock Farmers in Communities in the Great Limpopo Transfrontier Conservation Area

[along with an update of the CASS Community-Based Scenarios Project] Jeanette Manjengwa and team, University of Zimbabwe Centre for Applied Social Sciences) [Seed Grant]

Generally, communal livestock farmers have weak structural organisation and this has negative impacts on local ability to respond in times of crisis and change. Most communal farmers do not have the institutional capacity to organise for the procurement of dipping chemicals, market livestock or manage disease at the local level without external support. Consequently, the ability of local communities to address the challenges of ticks and diseases is limited, and herd growth and quality are negatively affected. This project investigates local institutional arrangements and capacity in small-scale livestock communities in the Great Limpopo Transfrontier Conservation Area (GLTFCA) to manage livestock and control livestock diseases so as to enhance production and marketing. The study will be carried out with two communities in the GLTFCA, namely Combomune Rio on the edge of Limpopo National Park in Mozambique, and Ward 15 in Chiredzi, next to Gonarezhou National Park in Zimbabwe. The project seeks to understand the institutional arrangements around livestock production and the factors affecting effective disease management and control in the selected communities. The project will explore the two communities' problems, challenges and opportunities concerning cattle-raising in the GLTFCA, as well as determine attitudes of small-scale livestock producers towards wildlife and the GLTFCA. Information gathered will contribute towards creating local-level scenarios and improved management plans. Finally, through dissemination workshops, meetings and literature, the project hopes to facilitate engagement between various types of stakeholders in order to assist communities to develop improved management plans and more effectively manage livestock and control animal disease in the GLTFCA. A better understanding of animal husbandry practices and examination of current practices, particularly in relation to disease prevention and problem animal control, will assist in the development and introduction of mitigating strategies.

5.4 Alternative Sustainable Futures for Post-Resettlement in the Limpopo National Park, Mozambique Jose Tanago, Ernesto Dimande for Ken Giller and Jessica Milgroom, [Seed Grant]

The Limpopo National Park (LNP) in Mozambique was established as an important step in the creation of the Great Limpopo Transfrontier Conservation Area (GLTFCA). The park is home to 27,000 people who depend primarily on natural resources for their livelihoods. Human-wildlife conflict and efforts to develop tourism in the park have necessitated the resettlement of eight villages situated along the Shingwedzi River to areas along the margins of the park. The first of these villages has been resettled near the village of Chinhangane in the Massingir district, and will be the location for the activities of this project. Resettlement commonly brings with it a set of risks for both resettled and host communities, including impoverishment and natural resource degradation. This integrated research and development project aims to improve understanding of the changes in livelihoods and subsequent impacts on natural resources of population resettlement. It aims to explore the opportunity for increasing *food security* through improved *seed security* and therefore mitigate some potential risks of resettlement. Seed security has been identified through previous research to be one of the key obstacles to attaining food security that does not depend on continued external support. To explore how residents adjust their livelihood activities in short-term response to resettlement, we will specifically monitor changes in dependence on natural resources, as well as livestock health. In order to put in place measures to improve seed security for both resettled and host residents, we will: (1) collect and describe local germ plasm of agricultural crops, (2) train farmers, SDAE and local NGO staff in techniques of seed multiplication, conservation and participatory varietal selection, among other topics, and (3) initiate a participatory varietal selection process comparing improved and local varieties. This project also aims to bring together researchers, NGOs, donors and farmers in a coordinated development effort.

5.5 Improvement of Village Poultry Health and Production by Communities in the Limpopo National Park Support Zone in Gaza Province, Mozambique Filomena dos Anjos, Robyn Alders and team [Seed Grant]

With the aid of an AHEAD Great Limpopo Transfrontier Conservation Area Seed Grant, the International Rural Poultry Centre (IRPC) will contribute to food security and poverty alleviation through the improvement of husbandry practices and disease control related to village chickens. Specific project objectives include:

- a) The control of Newcastle Disease (ND) in village poultry;
- b) Improved village poultry husbandry and management;
- c) The development of poultry products suitable for sale to tourist centres; and
- d) Improved household welfare, including improved nutrition and food security.

Rural farmers will be the clients of the ND control program and their participation in the implementation and monitoring stages of the project is critical to its success. The community will be involved with the selection of local farmers who will be trained to be community vaccinators. Community vaccinators will benefit from their work by protecting their own birds against ND and by receiving a small fee from neighbours when vaccinating their birds. Special attention will be given to ensure women's participation and that they share in benefits during all stages of the interventions.

A participatory rural appraisal will be conducted at the commencement of the project, and again a year later, to monitor progress in a participatory way. IRPC training will be based on adult learning processes and use methods that benefit from and respect the knowledge and experience of participants.

The IRPC is a subsidiary entity within the KYEEMA Foundation, a not-for-profit organization based in Brisbane, Australia. It offers teams of specialists involved in village poultry production and the control of Newcastle disease (ND) under village conditions available to deliver services and capacity building for rural poultry development activities internationally.

5.6 Discussion on the morning's presentations (Facilitator: Steve Osofsky)

1. *Poultry production.* Vaccinations for chickens used eye-drops and occurred at intervals of 4 months. Improved poultry production does not necessarily translate into reducing poaching; there is a behavioural and incentive component involved. Reference was made to the COMACO (Community Markets for Conservation) program in Zambia.
2. *Seed grants and permits.* It was noted that all seed grant proposals had received the necessary government permissions before the awards were made. This was a necessary pre-condition for all proposals submitted.
3. *Skills development.* The poultry programme is a tiered initiative and a "training of trainers" component is included.
4. *Bovine tuberculosis.* Bovine tuberculosis (BTB) is spreading in the region of the TFCA – are the authorities comfortable with this? Zimbabwe certainly does not want BTB, and a fence along the Limpopo could have prevented the spread from KNP but it is now too late. Disease control in Mozambique is still limited and the disease may be there already. It was noted that the spread of BTB was inevitable despite the fact that simple management interventions could have solved the problem had it been identified in time. This factor emphasizes the need for research capacity at crucial times. However, we have to recognise that it will never be possible to completely exclude disease.
5. *Conceptual Framework.* What is the framework intended to achieve? Its primary purpose is to facilitate and promote an inter-disciplinary research programme for the GLTFCA, focusing on the interface between wildlife, livestock and human diseases while contributing to improved health of the entire system – the "One Health" approach. The programme, with its six themes and modules within these, is summarized in a Table that was used in previous meetings to update what was being done and where the gaps were. Although many of the projects fall within this framework we are still some way from developing a full range of truly inter-disciplinary projects – which is a worry, as is funding.

The framework is also a vision and an essential backdrop to the programme that so far has managed, between its various partners, to raise some U.S.\$2 million, in part because partners and donors can see that larger issues have been thought through, if not yet all implemented. One component that is missing is the baseline data on which to assess progress on development (and disease-related) issues and objectives.

It was noted that the document had not yet been translated into Portuguese, something DNAC would help address.

6. *JMB Meetings and political buy-in.* The AHEAD-GLTFCA programme has received Letters of Understanding from various government agencies but does not have direct contact with immigration, tourism, and security agencies. Contact with government agencies such as immigration, security and tourism was beyond the remit of the AHEAD-GLTFCA programme and fell within the responsibility of the Joint Management Board. The establishment of TFCA involves high transaction costs and governments have not found the resources to maintain the early momentum in the development of the TFNP or TFCA. Of the three visionaries who promoted the formation of the GLTFNP, two have passed away and one is unwell – there is a need for new champions to move the process forward.

While political will regarding TFCAs may be waning there is, within South Africa, the opportunity to revive it, following the elections in April 2009, and the appointment of a new government. The land claims issue with regard to KNP has recently been resolved with claimants receiving compensation in lieu of land. There will however be continuing efforts to ensure people living adjacent to parks receive benefits. Some communities are now seeking to have parts of their land included within the KNP but are concerned that this will preclude hunting in areas where game-viewing tourism is not feasible. Moves towards wildlife-based land use adjacent to protected areas in South Africa are expected to escalate.

7. *Transfrontier parks and conservation areas.* The initial vision was to establish transfrontier national parks (Peace Parks) and in the case of the Great Limpopo this involved three national Parks – Kruger, Limpopo and Gonarezhou. Superimposed on this vision was that of a transfrontier conservation area that would encompass the matrix of communal land surrounding these parks and also provide a link with Banhine and Zinave national parks and several conservancies. Within the communal land matrix three legs of development have been identified, namely, intensification of agriculture through irrigation, livestock, and wildlife-based tourism. An important feature of wildlife-based industries is that they are primarily service industries and not based directly on production.
8. *Role of private enterprise.* The primary areas of focus of this meeting are research and management needs, but there is clearly a lack of funding both for research and for development of the GLTFCA. There is clearly a need for more private sector involvement. These are, however, issues that fall within the responsibility of government rather than the AHEAD-GLTFCA programme. Issues of tourism development, for example, are dealt with in other forums.
9. *Boundless initiative.* “Boundless” is a brand of the South African Department of Environment and Tourism that was launched last May and is an attempt to include private investors and to contribute to the development of TFCAs beyond South Africa’s borders. A meeting on the initiative was presently taking place in South Africa.

6. SURVEILLANCE AND DISEASE MANAGEMENT IN THE GLTFCA

6.1 Pathogens, Parks and People: The Role of Disease in TFCA Development Elissa Cameron, Claire Geoghegan and team [Seed Grant]

Disease is a major burden for conservation and regional development in sub-Saharan Africa. Many countries struggle to control human infectious diseases like tuberculosis and HIV/AIDS, and consequently underestimate the impact that emerging and zoonotic diseases have on livelihoods, the environment and economic sustainability. As the development of the Great Limpopo Transfrontier Conservation Area continues, it is essential that the potential for disease transmission between wildlife, livestock and human populations is assessed and that information gathered is used to inform disease management programs and policies. Using a range of participatory health techniques, and in collaboration with partners and stakeholders in Mozambique, South Africa and Zimbabwe, this project will quantify the roles of local agriculture and other land uses, livelihood strategies, and cultural practices on disease risks within the GLTFCA. We will delineate the practical risk factors for

bovine tuberculosis and other zoonotic disease transmission between wildlife, livestock and human populations, as well as record the current disease concerns and levels of awareness of local people and health service providers in the proximity of protected areas. Finally, we will provide: estimates of the current and potential impacts of zoonotic disease on the health of communities and livestock; a summary of community perceptions of the GLTFCA initiative; and an assessment of how these linkages may affect the long-term success of the GLTFCA from a multi-stakeholder perspective. In summary, this project will encourage the incorporation of a health perspective into conservation planning in southern Africa, supporting livelihood needs in the context of the development of one of the largest transfrontier conservation areas in Africa and the world.

6.2 Wildlife / Livestock Interface in the SE Lowveld of Zimbabwe: First Results on Distribution and Contacts between Wild and Domestic Ungulates Michel de Garine-Wichatitsky, F. Zengeya, M. Zvidzai, A. Murwira, P. Zisadza, A. Caron.

Within the framework of the research platform, "Production and Conservation in Partnership," several studies have been conducted since 2008 on disease transmission at the wildlife / livestock interface in the South East Lowveld of Zimbabwe. The main objectives are to evaluate the prevalence of the main diseases in livestock and wildlife, and to identify potential pathways for their transmission between wild and domestic ungulate populations. We formulate the hypotheses that the community of pathogens hosted by ungulates are mainly determined by two factors: i) the species composition and dynamics of wild and domestic herbivore communities; ii) the distribution and (direct or indirect) contacts between wild and domestic herbivore populations.

Four studies have been initiated to characterize the interface and quantify interactions in three contrasted sites of the Chiredzi District in Zimbabwe: i) road counts of wild and domestic ungulates (line transect) in protected area (Gonarezhou National Park, GNP) and neighbouring communal lands; ii) water hole surveys (12/24 hour counts) at five contrasted sites in Malipati communal land, GNP and at the boundary; iii) a survey of the permeability of veterinary and game fences in selected areas around GNP and Malilangwe Conservancy; iv) radio tracking using GPS collars to monitor buffalo (12 collars) and cattle (12 collars) movements and interactions.

All studies are ongoing and most of them are linked with disease monitoring in domestic and wild ungulate populations (see presentation by A. Caron et al.). The preliminary results suggest that direct contacts between wild and domestic ungulates are uncommon, both at waterholes and during grazing on shared pastures, although local movements across the boundaries of protected areas do occur both ways. Detailed information on direct and indirect contacts between domestic and wild ungulates will help identify periods and areas at risk for disease transmission, which could lead to appropriate management recommendations to alleviate one of the major constraints to wildlife-livestock coexistence.

6.3 The Wildlife / Livestock Interface in the SE Lowveld of Zimbabwe: First Results on Disease Prevalence. Surveys in Wild and Domestic Ungulates A. Caron, C. Gomo, L. Jomane, D. Pfukenyi, C. Foggini, T. Hove, M. de Garine-Wichatitsky

The creation of TFCAs is supposed to be a conservation solution for biodiversity and ecological processes and an economic solution for surrounding communities and the government (through tourism). This still has to be proved. A specific issue is the free movement of diseases through the wildlife / livestock interface: the GLTFCA in between Zimbabwe, South Africa and Mozambique, means sharing wildlife, tourists and potential pathogens. After a one-year project investigating farmers' constraints in the Malipati area in the South East Lowveld of Zimbabwe, we started a disease survey in livestock, coupled with a wildlife survey for multiple diseases. During the dry and rainy season, we sampled cattle and, occasionally, goats and sheep in two areas (Malipati and Pesvi dip tank). In October 2008, we organized a wildlife capture and sampling and we occasionally sampled wildlife species shot for rations by National Parks; we also utilised other capture opportunities. In summary, we sampled 1006 cattle, 88 buffalo, 34 impala and 24 greater kudu. We present the preliminary results of our multi-pathogen screening for tick-borne diseases, bovine tuberculosis, foot-and-mouth disease and brucellosis. We develop our theoretical framework in order to investigate host-pathogen interaction at the wildlife / livestock interface. These preliminary results suggest a

sharing of the pathogen community between wild and domestic populations and suggest transboundary crossings by pathogens.

6.4 Haemoparasites Infecting African Buffalo (*Syncerus caffer*) in Kruger National

Park, South Africa Kimberly Kanapeckas, Elissa Cameron, Vanessa Ezenwa and Anna Jolies

Bovine tuberculosis (BTB) is capable of altering fitness of many mammalian species, with particular ramifications for the African buffalo (*Syncerus caffer*), an important wildlife species for tourism and farming, and thus a valuable economic resource for many African countries. Chronic diseases such as TB render infected hosts more susceptible to environmental stressors and infection by other parasites. Haematological studies examining blood parasites in free-ranging buffalo have been few and limited in scope.

In this study, we examined patterns of haemoparasite infections in BTB positive and negative buffalo in Kruger National Park (KNP), South Africa. We screened 200 individuals for blood parasites using Giemsa-stained thin-film blood smears, assessing blood parasite prevalence and parasitaemia. Veterinary health parameters such as haematologic values, body condition, nematode egg count, and reproductive status were also documented.

Three haemoprotzoan parasites, *Anaplasma*, *Babesia*, and *Theileria*, were identified in the study population, and 22.5% of buffalo screened were positive for at least one microparasite. Nine of 29 BTB-infected buffalo (31.0%) were infected with blood parasites, compared to 34 of 171 BTB-negative buffalo (19.9%), suggesting that BTB-infected hosts are not more likely to be infected with blood parasites ($\chi^2 = 1.827$; $P = 0.0882$). *Babesia* was the most common parasite identified; of the buffalo testing positive for haemoprotzoans ($N=45$), 33 (73.3%) were infected with *Babesia*. Eleven of the 45 haemoparasite-positive buffalo (24.4%) exhibited co-infections with more than one genus of parasite (5.5% of the study population). Babesial co-infections with *Anaplasma* occurred in 4.5% of the population; 9 of the hosts infected with *Babesia* harboured *Anaplasma* as well. Theilerial co-infections occurred in only 1% of these buffalo.

Forthcoming analyses will investigate possible associations between these blood microparasites and haematologic values, host condition, pregnancy status, macroparasite infections and tick burdens, to explore potential effects of haemoparasites on overall host health. Studies of parasite prevalence in relation to BTB status and host demographic variables will help improve our general understanding of the ecology of infectious diseases in mammal populations harbouring multiple parasites.

6.5 The Rabies Outbreak in the Nsikazi Region of the Mpumalanga Lowveld Bjorn Reininghaus

Rabies is a viral disease, caused by an enveloped RNA virus, belonging to the genus *Lyssavirus* of the family Rhabdoviridae, with classical rabies being represented by the globally distributed genotype 1. The mongoose/viverrid and canid biotypes (maintained in Herpestidae and Canidae families respectively) are found in the RSA, where it is a state controlled animal disease (Animal Diseases Act, 35 of 1984). Affecting warm-blooded animals, including man, it has been cited as having the highest case fatality rate of any known infectious disease, causing encephalitic disease and being believed to be responsible for more than 25,000 human deaths per year on the African continent alone. It represents a truly transboundary disease, with regards to inter-specific disease transmission and geographical spread, therefore necessitating transboundary control approaches.

Mpumalanga Province has a blend of canid and viverrid / "mongoose" rabies, with the latter being concentrated in the central and south-western areas, and the former in the eastern parts of Mpumalanga, along the borders with Swaziland and Mozambique, with a regular occurrence and apparent endemic stable situation in the Nkomazi area. Prior to 2008, only sporadic and isolated animal rabies cases (with links to transboundary origin) were encountered around Nelspruit, excluding the Nsikazi area, which consists of communal settlements along the western border of the southern Kruger National Park. Though traditionally a rural farming area, it has largely become

increasingly urbanized, featuring expanding and concentrated human settlements, associated trends in the local dog population, and a high degree of deficient infrastructure.

In 2008 a massive rabies outbreak occurred in the said Nsikazi area, with the first two cases being diagnosed within the first week of April 2008 and originating from the north western part of Nsikazi. By the end of the year 2008 a total of 53 animal rabies cases (52 dogs and one goat) were diagnosed, with the majority originating from the eastern and central Nsikazi area and all belonging to the canid biotype. Spill-over cases were encountered in neighboring residential and commercial farming areas, as well as the southern sections of the KNP (four dog cases). An emerging isolated focus on the western edge of residential Nelspruit is assumed to have been created by anthropogenic dog movements. A further spread into the neighboring Bushbuckridge area in the north could be documented by the end of the year.

To elucidate the source of the outbreak, phylogenetic analysis of positive samples from Nsikazi was undertaken at the OVI, demonstrating a high degree of genetic similarity to recent samples from the neighbouring Nkomazi region and thus giving an indication of its origin.

An extensive dog vaccination and awareness campaign was launched immediately after the occurrence of the index case and continued until the end of the year, being turned into a provincial campaign with recruited additional officials from July until October 2008. Advertised fixed vaccination spots, together with rabies vaccine supplied to local veterinary practices for inoculations free of charge, was used in residential areas. A mobile house-to-house approach, with incorporated additional fixed spots, mainly at schools, was employed in the communal areas. A total of 26184 animals (including 24,851 dogs, 987 cats, 176 cattle, 155 goats, 13 pigs and 2 horses) were vaccinated up to Dec 2008. Inter-disciplinary cooperation and liaison focused intensively on the human health sector, consisting of information sessions, following up of dog bite reports, tracing of (bite) contacts, advising human contacts and referring for PEP (post-exposure prophylaxis) treatment etc., with one diagnosed human death being recorded during the said period.

With vaccination and awareness activities having to be carried out on an ongoing base, cooperative approaches with a variety of local role-players is of great importance to ensure effective reporting, the facilitation of logistical aspects, sufficient vaccination coverage, addressing of associated issues such as primary animal health care and dog population control, and thus an efficient framework for combating and controlling this dangerous zoonotic disease.

6.6 Arena virus and Cholera: Public Health Management of New and Old Culprits

Lucille Blumberg

A cholera outbreak at Beit Bridge, Zimbabwe and in asylum seekers in Musina, Limpopo Province South Africa was confirmed in mid-November 2008 following on a complete breakdown in medical services and water and sewerage systems in Zimbabwe. Cholera treatment centres were established in Musina and at border crossings to manage the large number of patients. By December 2008, local transmission of cholera was identified in Limpopo villagers who sourced water from contaminated rivers. A large outbreak also affected Mpumalanga Province and followed on sewerage spills into rivers. By February 2009 a total of 11000 cases and 52 deaths had been reported within South Africa, those persons outside of Limpopo and Mpumalanga provinces all having a history of travel to Zimbabwe. Villages alongside and within the GLTFCA have been particularly affected due to a long-term lack of provision of safe water and adequate sewerage systems. Public health responses to the outbreak included activation of outbreak response teams, case management, health promotion and provision of safe water. Faecal contamination, including the presence of cholera organisms was reported in a number of rivers flowing into the Kruger National Park. Ecological niches for the long term survival of *Vibrio cholerae* has not been confirmed in these rivers.

A new arenavirus was identified as the cause of a nosocomial outbreak that resulted in the death of four of five persons affected. Fever, rash, hepatic dysfunction and thrombocytopenia, but not bleeding, were features common to the affected patients. The index patient was a Zambian resident from Lusaka with suspected tick bite fever who was transferred to a Johannesburg hospital for treatment. Three fatal secondary cases -a paramedic, a nurse and a cleaner, and one tertiary case in a nurse were identified. This latter patient responded well to ribavirin and intensive care. The secondary and tertiary cases resulted from close contact with blood and body fluids. Although initial laboratory

tests for a number of infectious agents, including those causing viral haemorrhagic fevers, were all negative, once an outbreak was recognised, infection control measures were instituted and close contacts were monitored for 21 days. The causative agent was identified (initially by immunohistochemistry on liver tissue) as a previously unrecognized member of the arenaviruses, proposed name Lujo virus. Its distribution and reservoir host still need to be characterised. The index case lived on the outskirts of Lusaka, close to an area where wheat fields had been newly established, with possible effect on rodent populations and dynamics.

Arenaviruses cause chronic infection in wild rodents (multimammate mice) with excretion of virus in urine, which can contaminate human food or house dust. There was no previous evidence that arenaviruses pathogenic to humans were present in Southern African rodents.

6.7 Discussion (facilitator: Lucille Blumberg)

1. *Rift Valley Fever*. There were two human cases in KwaZulu-Natal in mid-February, one was the veterinarian who dealt with the case and the other was a farmer. An outbreak was expected after the rains but did not occur.
2. *Communication between health sectors*. Has this improved in SA since the issue was raised last year? The level of communication between human and animal health sectors varies from province to province but has become more formal and the Department of Agriculture does inform the Ministry of Health. Cooperation has been effective in the case of rabies. Avian flu has helped build bridges between animal and human health sectors, and WHO has produced a document supporting a "One Health" approach. There is also a new journal "Transboundary and Emerging Diseases" that is available online.

6.8 CORUS Project Update - Development of an Epidemiological Network for Monitoring the Dynamics of Foot and Mouth Disease within the GLTFCA: An Update of Year 1 Activities Ferran Jori and Peter Thompson

The CORUS project has been funded by the French Ministry of Foreign Affairs since late 2007 and was launched in February 2008. Its overall objective is to facilitate the development of an international network of scientists working in the field of FMD with emphasis on the development of methods, tools and strategies to improve the epidemiological monitoring of FMD in the GLTFCA. To achieve this goal, the project specifically aims to:

1. Contribute to the development of different integrative epidemiological tools to clarify the dynamics of FMD in the region and to assist in decision-making regarding its management and control at a regional level;
2. Provide training opportunities and scientific support for improved human resource capacity building in the region;
3. Facilitate the exchange of information between the different role players involved in the field of epidemiology and control of FMD at a regional level.

The proposed international network is comprised of three SADC partners: the University of Pretoria (RSA), University of Zimbabwe, and the Mozambican Institute of Agricultural Research (IIAM); and two European Community partners: CIRAD, and the Faculty of Veterinary Science, University of Utrecht in the Netherlands. After one year, the following activities related to each of the objectives above have been achieved:

1. A good prototype of a quantitative risk analysis model has been produced. It allows one to estimate the risk of at least one cow in the buffer zone with vaccination from the Kruger National Park (KNP) region being infected by infected buffalo inside or outside the park boundaries. The inputs were gathered from the literature available on the subject, data on buffalo population from KNP; data on buffalo escapes and cattle vaccination were gathered by Provincial State veterinarians. Gaps of information available such as cattle/wildlife contacts inside and outside the park were gathered through questionnaires and introduced as inputs in the model.

The model uses commercial risk analysis software (@Risk, Palisade Corporation, Inc.) based on a stochastic Monte Carlo simulation process and provides a final quantitative estimation of risk (a probability distribution) that takes into account variability and uncertainty of the different inputs in the final outcome.

But the main advantage of this model is to simulate and compare various risk scenarios that can lead to cattle infection such as different numbers of buffalo escaping KNP, cattle getting inside the park, different frequencies and times of contacts between cattle and buffalo and different degrees of vaccination coverage of cattle at herd level.

2. The project is also about to launch two MSc research protocols on vaccination efficiency of currently used vaccines in the region. They will be implemented in the interface of Gonarezhou National Park and Limpopo National Park. In those areas, vaccinated and control herds will be longitudinally monitored for 18 months in order to follow antibody kinetics in areas with low and high interface, with the collaboration of regional veterinary laboratories and the SADC FMD project.

3. The third important activity of the CORUS project is networking and co-ordination. In that sense, a newsletter is produced every 6 months and sent to different bodies and persons interested in project activities. Moreover, the first annual meeting was held in February 2009 in Dinokeng area, Gauteng Province. Different aspects of FMD control strategies such as fence permeability and vaccination impact were discussed among relevant researchers in the region, vaccine producers, veterinary laboratories and field veterinarians. The meeting was also a great opportunity to liaise and strengthen links with key role players in terms of FMD research and control in the SADC region.

6.9 The FIRM Programme in Kruger National Park: An Update Ken Ferguson, Ferran Jori, and Laura Adams

Fences represent a pervasive and increasing facet of protected landscapes in southern Africa. Attempts to remove fences and allow the free transboundary movement of wildlife between transfrontier parks have been beset by problems relating to the necessity of fences as a primary mechanism for blocking wildlife-livestock disease transmission and human-wildlife conflict. Defining the patterns and processes of wild animal movement across this interface, and quantifying the responses of the authorities and communities, is vital for the long-term mutual protection of both parks and people. Fence policy, within the KNP and GLTP, is currently inconsistent – and can only be improved by the harmonisation of fence strategies based on the quantitative results of fence monitoring systems and a comprehensive study of the attitudes of fence stakeholders. Hitherto, the lack of research and coordination on the impacts of park and veterinary fences on biodiversity and people was the identification point for this project. Our research has so far highlighted the importance of elephant and carnivore egress across the western boundary fence of Kruger National Park.

6.10 Discussion (Facilitator: Nicky Shongwe)

1. *Fences and rivers.* Cattle may use rivers to enter the park and how effective were fences across waterways? Waterways can represent a critical challenge for fencing but movement through these is being monitored.
2. *Fences, disease risks, and cost/benefits.* In the case of the re-introduction of buffalo to the Save Valley Conservancy, which was surrounded by a double fence, a risk assessment indicated no immediate risk but the analysis overlooked the high seroprevalence of FMD in kudu that jumped the fences and resulted in an outbreak of FMD in the neighbouring communal area within six months. During the 1980s and 1990s Zimbabwe invested heavily in fencing to control FMD and protect a beef export markets, while safari hunting, with minimal government support and no subsidies, was earning far more in foreign currency.

Questions of the costs and benefits of fences in SA do not seem to have been addressed and neither has the issue been addressed in relation to when the fences come down. There are also social and political issues that will need to be addressed and, in looking at a cross-section

of those attending this meeting, the key players (communities and landowners) are not all here.

There is a clear need for a workshop on the issues relating to the cost and benefits, and risks, of fencing and the removal of fences. And these will also involve ecological issues and the provision of ecosystem goods and services.

3. *Drivers of fence breaking.* The drivers of fence breaking need to be examined and understood. What drives elephants, for example, to break fences and leave their home ranges?

Day Two: Thursday 6th March

7. COMMUNICATIONS AT DIFFERENT SCALES

7.1 The Critical Role that Local Media Production and Dissemination Can Play in Facilitating Communication about Human Health and Wildlife Conservation

David Weiner

INCEF, the International Conservation and Education Fund, is a five year-old media production NGO. It was founded by Cynthia Moses who determined, after many years of producing high-end conservation films for American broadcast, that in order for conditions to change at the intersection of conservation, public health and development, there needed to be a focus on reaching audiences at the front lines, the people whose daily activities had the most direct impact on the health and well-being of all species. INCEF's creation is due to the revolutionary change in communications technology and the fact that the barriers to production and dissemination – technical, physical, financial – have either disappeared or have been greatly reduced. We intend to take our work to scale worldwide but, to date, our efforts have been concentrated in the Congo Basin.

We have a message in our work. It is that every project aimed at transforming behavior needs to include strategic communications as an integral and fundamental component in order for people to be ready to deal with the toughest questions they face.

One observation we've made upon which we base our production planning is that it cannot be overstated how little awareness rural villagers have of the fauna in their midst; how few of them have actually seen the animals of their regions in the wild.

(A minute or so of the film "Chimpanzees" was shown at this point.)

The INCEF mantra is "local:" local languages, locally-recognizable characters or archetypes, local determination of issues or subjects, local production teams. Our work tends to fall within the body of communications thinking known as media advocacy. In its most basic formulation the concept is that actual change is not likely to occur unless people profoundly understand the risk to their health and well-being and also have a sense of what they can do – or need to do – for prevention. The films incorporate many styles of production but probably the most critical element is first-person testimony. This has proven effective across the board but never more so than with the films that deal with zoonotic diseases particular to the Congo Basin: Ebola and monkeypox.

(Segments of "Ebola: Testimony" and "Monkeypox: Testimony" were screened.)

The films are conceived in modules. The fourteen films of the package produced for the Republic of Congo project (from which the segments being shown are derived) were collected in four modules which helped greatly to organize the education component that is also basic to our work. The Forest Elephant module of three films starts with a natural behavior film like the "Chimpanzees" film; a second film, "The Price of Ivory," that tries to shape the appreciation for this species a little further and incorporates some more complex questions such as, "Are the Elephants the only victims of poaching?" and, finally, a third film shown at the point that people are perceived to be ready to consider the truly central issue they face. That film is called "Human-Elephant Conflict."

(Sequences from the latter two films were shown.)

In one way or another the behavior that all the films must deal with relates to hunting - no matter whether the specific issue is about zoonotic disease, bushmeat, poaching or sustainability.

(A segment of "Hunting" was played.)

Although media presentations - such as mine here - tend to focus on the actual productions, the critical matter in this kind of work is the dissemination – how the films will be shown and to what end. INCEF films are taken into the field by teams of two trained educators. They require serious political skills, first of all, just to get accepted into the communities because, by necessity, they often arrive unannounced. They then conduct discussions around the screenings and, subsequently, hold focus group and individual interviews using a standardized methodology for evaluation purposes.

We've been gratified – and surprised - to see at such an early stage, indications of real behavior change - hunters are reporting carcasses rather than taking them back to the village to eat or sell, for example. The work of dissemination / education is as arduous as it is necessary. INCEF's education teams have done it with great dedication.

(The concluding clip was a piece from "On the Road.")

7.2 Community Theatre as a Communications and Outreach Tool to Support Local Level Scenario Planning Initiatives within the GLTFCA Kule Chitepo, Webster Whande and team, [Seed Grant]

The WCS-AHEAD-RA - Theatre Outreach Program in Bennde Mutale

(Power point presentation by Chunky Phiri & comment on scenario planning by Michael Murphree).

Introduction

This project seeks to promote the use of theatre and related artistic media in bridging the communications gap between policy makers, public and non-governmental institutions, the private sector and local communities, in the context of conservation, sustainable use of natural resources, climate change and scenario planning.

The Bennde Mutale community lives in an arid area and close to the geo-political boundary zone of Madimbo Corridor, which is a very remote, poor and marginalized area.. This project, through theatre, will help the Bennde Mutale community to articulate their needs, aspirations, challenges and successes.

The Objectives

- To use culturally appropriate and creative communication and facilitation tools such as theatre and dance to showcase ongoing local level scenario planning processes within the GLTFCA, with Bennde Mutale community (SA) acting as a pilot site and hopefully, in the long term, extending into Mozambique and Zimbabwe.
- Select and train 6 actor-facilitators from within the Bennde Mutale community to research key drivers of change from local perspectives – and in particular with regard to natural resource issues (water, land, climate change) and social and health issues (HIV-AIDS, malaria, etc.)
- To produce short plays based on this participatory research to gather wider views and then develop a 1- hour play for provincial performances and performances in Mozambique and Zimbabwe.
- To assess in this pilot phase the value of community theatre in village scenario planning and in addressing information exchange on climate change and health issues.

Auditions were held, and they were characterized by a large attendance of women compared to men. Out of 60 participants 5 were men and the rest women. From this exercise we managed to select the final 6 actor/facilitators.

At our internal workshop with the actors we raised issues and challenges that the community is facing. HIV-AIDS, malaria, cholera, and the high level of illiteracy came up as the main challenges in this village. We took our research to the community where we conducted door-to-door surveys and the very same issues came out of it.

These were the issues that we used to develop the 15-minute play. The aim of developing a 15-minuter was to perform the play in the community and ignite debate, which will help to facilitate and identify more relevant issues and key drivers related to scenario planning and climate change in particular. We have started performing the 15-minuter and at the same time we have started working on the 1-hour play, which should be ready for showing by the end of March.

We will perform the 1-hour show in the villages around Bennde Mutale before we take it to some provinces in SA. This will help the actors /facilitators to gain confidence to perform for different audiences as well as help to further advance the quality and issues in the play in relation to the audience reaction. So far the group has been invited to perform at Malamulele vocational school as one of their warm-up performances. The school principal visited one of the group's rehearsals and marvelled at the use of theatre as a communications tool and at the same time as a means of livelihood. He is even planning to add theatre arts as part of the curriculum in his school.

After the shows in the provinces we will undertake and be ready to visit GLTFCA areas in Mozambique and Zimbabwe in May and June. The shows will work as a catalyst to start two similar groups in Mozambique and Zimbabwe, funds permitting. The Bennde Mutale project will be used as a yardstick to measure the effectiveness of using this tool in communicating issues on scenario planning.

In conclusion, I believe we all agree that these marginalized, poor and disadvantaged communities will also be impacted by climate change, which may contribute further to the inequities in health, access to clean water, food and other resources. In the midst of all the challenges these youths from Bennde Mutale face, they have engaged well in raising awareness and educating the community and there are good opportunities to diversify from this pilot model to other communities within GLTFCA. Resource Africa, with support from AHEAD, has managed to establish this vibrant group of youths engaged in innovative communications and research activities in a very remote and marginalized community. It is up to us as NGOs, donors, governments and the private sector to help these youths who are willing to continue to use theatre as a means of livelihood.

7.3 AHEAD's Use of the World Wide Web and Related Tools: Fodder for Discussion

Steve Osofsky

Steve provided more background on the origins of the AHEAD initiative and the importance of bringing the "One Health" approach to the conservation table. The AHEAD program beyond the Great Limpopo was briefly discussed, and it was noted that participants importantly come from a wide range of disciplinary backgrounds- key to successful AHEAD initiatives. While veterinarians were a core constituency from the start, it is important to note that veterinarians are not even in the majority in terms of the AHEAD-GLTFCA Working Group membership, for example.

Steve quickly provided an overview of ways AHEAD has been utilizing the World Wide Web. He showed images of the AHEAD homepage (<http://www.wcs-ahead.org/>), which links to a number of resources including, for example, the **SADC Regional Biodiversity Strategy** as well as the AHEAD launch book (**Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health**). The 2003 Durban IUCN World Parks Congress AHEAD launch itself is well documented with video and audio files of all presentations.

Steve then focused-in on the resources available specifically for the AHEAD-GLTFCA Working Group (http://www.wcs-ahead.org/workinggrps_limpopo.html). All documents related to every Working Group meeting, as well as other materials produced by the initiative (including the "As the Fences Come Down" primer, which is actually available on the AHEAD home page given its broader applications beyond the Great Limpopo) are made freely available as downloadable PDFs on the site. Meeting agendas and PDFs of meeting presentations are also made available. All AHEAD-GLTFCA Letters of Understanding are available for viewing and / or downloading (<http://www.wcs->

ahead.org/gltfca_lou/letters.html), and abstracts of all Seed Grants are available (http://www.wcs-ahead.org/gltfca_grants/grants.html).

An important new addition to the AHEAD-GLTFCA Working Group section of the website is the **AHEAD-GLTFCA Projects Table** (http://www.wcs-ahead.org/gltfca_projects/projects.html). This table (using Google technology) is a living document. Instructions for adding one's own projects, contact details, etc. have previously been disseminated to the Working Group, and are always available from Steve or Nicky. The idea was to create an open access platform that would allow anyone interested in "who is doing what" in the GLTFCA to be able to see an up-to-date list of projects, to be able to contact colleagues involved in such work, and to be able to add other projects going on in the GLTFCA that are not currently listed. This need grew out of a recognition last year, after the Lindsay report on the GLTP, that a living table was likely needed given how quickly projects come and go, and how hard it is for any one entity to be able to keep tabs on this very basic and important information.

Such a system is only as robust as the willingness of the end-users to contribute and make use of it. The open access table is thus still an experiment, with the goal of facilitating information-sharing and collaboration among GLTFCA stakeholders. Hopefully, AHEAD-GLTFCA Working Group members and others will enter their projects at their earliest convenience. Several already have.

The AHEAD Update e-newsletter was also discussed, and the recent upgrade to a more professional email system was discussed. Anyone can now auto-subscribe to the AHEAD Update right on the AHEAD homepage. The Update goes out about every 3-4 months, and depends on AHEAD collaborators and any other interested parties for cutting-edge information on relevant projects, funding opportunities including fellowships, policy, new literature and web resources, etc. Attendees were urged to consider sending in brief blurbs for potential inclusion in future AHEAD Updates. The Updates currently go to a wide cross-section of interested parties (there are already more than 1,000 subscribers and the list continues to grow, mostly by e-word of mouth). Many of the recipients are in southern and East Africa, and besides practitioners the recipients include donors, policy-makers, and other relevant parties in government, nongovernmental organizations, multilateral organizations, academia, etc.

7.4 Panel Discussion: Do we need more and / or better approaches to communications among TFCA stakeholders? Panelists: Nicky Shongwe, Madyo Couto, Michael Murphree, Raoul du Toit, David Weiner and other volunteers

1. *Research coordination and policy.* Veterinary issues are dealt with very effectively in AHEAD-GLTFCA meetings but there is a disconnect between the projects going on in the Great Limpopo TFCA and the priorities for the GLTFCA and, as discussed earlier, even in relation to the AHEAD priorities. There is thus a need for a formal policy to guide research and for the JMB to formalize arrangements relating to research in the GLTFCA. There are, however, sensitivities regarding who, or what body, should grant permissions and select priorities.
2. *Communication between sectors.* Mozambique is still in the early stages of understanding and developing communication within the GLTFCA but discussion between the various disciplines and departments is improving. Communication between veterinary services is more open. There are still serious difficulties relating to border crossings for tourists and payments on either side of the boundary.
3. *Communication strategy.* In developing a communications strategy for AHEAD there is a need to be very clear about what the strategy is for, whom it is directed at, and what the end point or objective of the strategy is. Measurable outputs and objectives are needed.

Coordinated communication strategies are required for (a) the TFCA process, and (b) the AHEAD-GLTFCA programme. As David Weiner pointed out, people won't change behaviour unless they understand the risks involved in their current behaviour and those

involved if they change. For the TFCA, there is a need to achieve better understanding of the full range of threats/risks, strengths/opportunities involved in its development. There is also the necessity to manage over-expectations regarding the potential benefits the TFCA may realise. The communications we have heard about today have been innovative (e.g. village plays) but how much of that “community theatre” gets diverted to tourists and to World Conservation Congress performances? How replicable is it on the spatial scale of TFCA? We must also not overlook the use of conventional media, e.g. news reports in provincial newspapers, and be ready to provide a steady drip of information that raises awareness.

There is also a need to distinguish between internal AHEAD communications and communication with the rest of the world.

4. *Information, policy and decision makers.* For the most part, decision makers lack good information on the state of ecological, economic and social conditions (and their diversity) on the ground in the TFCA and more research (including surveys, monitoring and surveillance) is needed to fill this gap. High-level policies also tend to be formulated without engaging communities. Appropriate research can also serve to inform expectations regarding the development of the TFCA and its potential benefits.
5. *Film on AHEAD's work.* The possibility of producing a film, or films, on aspects of AHEAD's work should be considered.

8. CLIMATE CHANGE, BIODIVERSITY, HEALTH AND LIVELIHOODS: A “ONE HEALTH” APPROACH (Facilitator: Mike Kock)

8.1 Crocodiles and the Great Limpopo TFCA - Sentinels for River Basin Health?

Danny Govender and Danie Pienaar

In late May, 2008, crocodiles in the Olifant's River Gorge started dying. Mortalities peaked at 20 carcasses seen per week during June & July and have since started tapering off. A total of 170 carcasses were counted by late November and it is thought that this may be a huge under-representation of the actual mortalities. Post-mortem examinations revealed that carcasses had yellow-orange coloured hardened fat in their tails – a condition known as pansteatitis. As a clear cause-effect relationship could not be established, a multi-institutional collaboration to establish a research program was set up to try to understand this. Water, sediments, fish and crocodile tissue were analyzed for possible toxins and chemical compounds at laboratories both locally and abroad. Though many heavy metals and persistent organic pollutants (POPs) were detected, none were found above legal allowable limits.

The Olifants River originates outside Witbank and passes many major industrial and mining areas, before it finds its way into the Kruger National Park. The river is also impacted by extractive irrigation and multiple bulk water infrastructures along its course. As the river makes its way east in the KNP it cuts a deep gorge through the Lebombo Mountains. It is here that the Nile crocodile has found one of its largest breeding grounds. Once a pristine area made up rapids and pools, it has now become a stagnant pool due to the damming up of the river at Massingir Dam in Mozambique. The altered flow has resulted in massive increased sedimentation in the area of the gorge and the deep pools where large fish populations once concentrated are progressively silting up.

There is a common belief among experts that there has been a chronic degradation of the Olifants river system with some unknown event tipping the system over the edge resulting in the crocodile mortalities.

SANParks has therefore joined forces with leading researchers, scientists, conservationists and wildlife pathologists to start an integrated programme dedicated to answering the perplexing questions surrounding the death of crocodiles in the Kruger National Park's Olifants Gorge as well as contributing to improved river health monitoring programs. A crucial part would be to gain a better understanding of issues relating to livelihood dependencies of the communities living around the Massingir Dam who are largely dependent on fish harvested from the dam.

This initiative will be known as the Consortium for the Restoration of the Olifants Catchment (CROC).

8.2 Discussion (Facilitator: Mike Kock)

1. *Human demographics and movements.* There is need to consider human demographics in the GLTFCA and so far this has not been tackled head on. In the South East Lowveld of Zimbabwe, for example, cultural and work patterns have taken climatic variability into account but, as a result of migration and off-farm employment, the support for livelihoods is generated outside the area. The conflicts associated with human movements are likely to escalate and be a major problem within ten years.
2. *Climate change and adaptive capacity.* Climate change is likely to be difficult to deal with. People do not like being confronted with new paradigms and the current scenarios suggest that resources will be increasingly limited, with the result that there will not be sufficient resources for everyone to have more. The need to develop the adaptive capacity of communities in the face of climate change is crucial but current policy frameworks provide severe constraints to achieving this. The freedom to experiment and learn is constrained and thus greatly reduces resilience to the shocks and surprises likely to accompany a changing, increasingly variable climate. SEASAG, a group at the University of Cape Town, are looking at climate change and adaptability in the Limpopo Province, and Wilderness Safaris are exploring carbon payments – see point 3 below.
3. *Carbon emissions and sinks.* The potential for realising benefits to parks and to communities from carbon sequestration and offsets in the GLTFCA needs to be explored. The contribution of livestock to carbon emissions is being investigated along with the promotion of reducing meat consumption – a factor that could affect livestock enterprises in the future.

9. LIVELIHOODS AND GOVERNANCE IN A TRANSBOUNDARY CONTEXT

9.1 Balancing Ecotourism and Livestock Production- Implications for Livelihoods and The Environment Cheryl McCrindle and Petronella Chaminuka [Seed Grant]

Diversification of rural livelihoods through ecotourism is a possible strategy to address problems of low income and unemployment in rural households in South Africa. However, the engagement in ecotourism by rural communities in the Greater Limpopo Transfrontier Conservation Area (GLTFCA) will likely exacerbate competing claims on land and capital investment by a range of stakeholders in these areas. The *AHEAD* conceptual framework highlights the need to carefully examine alternative land-based livelihood options through research on alternative options and via community engagement. The main objective of this study is to develop, in consultation with various local stakeholders, a framework for evaluating land-use options and trade-offs related to improved livelihoods that combines socio-economic and bio-physical considerations. This framework will then be applied to evaluate ecotourism and livestock production land-use options. The potential economic benefit of ecotourism is investigated through choice modelling techniques, and then integrated into a bio-economic model to discern possibilities for improved livelihoods, together with data collected earlier on the economics of livestock production as a land-use possibility. The study area is the Mhinga traditional authority on the north western side of the Kruger National Park, where livestock- and wildlife- based tourism ventures are competing for land and capital investment. The key project members are a multidisciplinary team comprising agricultural and environmental economists, public health veterinarians and animal production specialists. The project, which combines key themes in the *AHEAD* programme, is expected to input into sustainable land-use decisions locally and also facilitate capacity building at various levels. Overall, this programme will contribute towards better understanding of the range of sustainable socio-economic opportunities available to communities living in the GLTFCA.

9.2 Land Use Alternatives and Livelihood Viability in Ecosystems at Risk of Emergent Animal Diseases

Brian Child, Gregory Parent and Jessica Musengezi [Seed Grant]

Many southern African countries have moved beyond cattle and agricultural systems to promote wildlife utilization as a strategy to improve environmental sustainability and to expand economic opportunities in dry savannas. These countries are using wildlife's biophysical and economic advantages to generate a steady stream of benefits to landholders and local communities, thereby incentivizing the conservation of wildlife and the ecosystems in which they are present. This has led to a substantial uptake of wildlife enterprises on private land, as well as in some communal lands. In the GLTFCA, for example, large areas of park and private land are used for wildlife, and there are plans to improve the connectivity of wild areas by taking down fences and to extend this land-use model to more communal areas. This connectivity also increases the opportunities for interactions between wildlife, livestock and humans.

As wildlife utilization and conservation programs expand in southern Africa, this changes ecosystems and land uses, and in turn alters the interaction between disease pathogens and various hosts. Such alteration can lead to emergence of infectious animal diseases that have substantial economic and biological costs. Our contribution to understanding this changing human, wild and domestic animal interface requires understanding of how livelihoods systems are adapting, and the vulnerability of these changing systems to emerging diseases. Therefore, working on private and communal lands in the GLTFCA, we will:

1. Evaluate the economic trade-offs and synergies between agro-extractive (i.e. livestock and agriculture) and bio-experience (i.e. tourism and hunting) land-use enterprises, using the Policy Analysis Matrix (PAM) framework;
2. Investigate how institutional policy (e.g. resource entitlement structures) affects the magnitude and adaptability of enterprises and livelihood systems at different scales; and
3. Assess the vulnerability of livelihoods to disease emergence through the building of econometric models.

9.3 Governance: Assessing Accountability and Livelihood impacts for CBNRM Success- An Update

Gregory Parent, Brian Child

No Abstract available.

Discussion

1. *Village economies.* Compared to West Africa, village economies are very weak in southern Africa. Most of the economic benefits go to urban commercial centers and this applies to tourism revenues, as well as those from curios and other rural artifacts. There is also a leakage of wage earnings from the village to urban centres.
2. *What is the connection between vulnerability studies and game farms?* The major connection is in terms of labour and the spatial interconnectedness of game farming and eco-tourism. There are separate issues relating to households and their direct involvement in wildlife ecotourism which raise questions about the balance between livestock and wildlife, governance and participation, and the level to which households have control over their incomes and resources.
3. *Research fatigue.* With several studies employing questionnaires there is a need to avoid duplication and overlap, the risk of fatigue and the loss of trust on the part of communities involved in the research.

9.4 Livelihood Enhancement through Transboundary Natural Resource Management in the Limpopo Corridor (Limpopo Transboundary Programme)

Paolo Caroli

An Italian Cooperation Support Programme to the Great Limpopo Transfrontier Conservation Area being implemented by IUCN and executed by CESVI

Within a mosaic of land use, diverse management plans and man-made barriers to wildlife movement, the southern African region represents a challenging environment where rich resources and ecosystems adjacent to each other are separated by international borders.

Communities living there have often been marginalized by national development processes resulting in high unemployment rates and missed opportunities for improvement.

Fragmentation of ecosystems, uncoordinated policies and misuse of resources are threatening the biodiversity value of this rich area, reducing its capacity to optimally deliver ecosystem services. In this context people are missing important sustainable development opportunities based on sound natural resource management.

Transfrontier conservation areas (TFCAs) have gained attention in the past as a means of addressing these constraints and developing the enormous potential that is present in these large ecosystems, through co-ordinated joint planning, adaptive management and development initiatives. There are clear advantages to coordinated management processes, harmonization of land and resource use, and removal of obstacles to ecosystem function and wildlife movements.

Areas adjacent to parks and other protected areas are mainly settled by rural populations that have an important role to play in the TFCA process. Local communities need to be involved in the planning framework and process. To succeed, tangible economic benefits should reach people residing within and around conservation areas.

There is a mutual inter-dependence of TFCAs and associated communities but so far communal lands and their rural communities are the forgotten pieces of the TFCA puzzle. Focus and attention has mainly been on the conservation agencies and the private sector wildlife-based industries. Equitable sharing of resources and meaningful participation of communities in resource management has been limited and few initiatives have been promoted so far to fill this gap.

This Italian Cooperation funded programme intends to help fill this important gap in the planning and development of rural areas outside the core of the Great Limpopo Transfrontier Park by converting the community-oriented rhetoric into reality and ensuring the interests of the rural communities are safeguarded. At the same time, the programme intends to support the gradual development of a broad planning framework for the TFCA through policy analysis and dialogue.

The programme's overall development goal is to: *improve the standards of living of people adjacent to protected areas in the GLTFCA*, and its expected outputs are:

- Development of enabling policy frameworks for transboundary natural resource management
- Identification of ecological, economic and social advantages of TBNRM
- Implementing natural resource management projects in the three countries

The programme has three national components involving Mozambique, South Africa and Zimbabwe and is implemented through IUCN, while CESVI is the selected executing agency.

The programme has a time span of three years and is due to start in 2009.

9.5 The LOCAL Initiative: New Partnerships for Wildlife-Based Land Use in the Lowveld Region of Zimbabwe Raoul du Toit

As outlined at the last (8th) AHEAD-GLTFCA meeting, it has been agreed in principle by stakeholders in the Lowveld that they need to develop a forum for achieving better coordination. This consensus emerged from several meetings of representatives of conservancies and Rural District Councils. The initial concept that was agreed to was a Lowveld Wildlife Association (LWA), with its immediate priorities seen as: 1.) the development of a constitution; 2.) acquisition of information on the spatial pattern of land-use in the Lowveld and on wildlife distribution; 3.) issues related to foot

and mouth disease control (very important for zonation of wildlife-based land uses). During 2008, little progress was made on implementing this concept, due to lack of staff-time on the part of the main motivators during the worsening economic and political crisis in Zimbabwe.

This crisis has continued to impact biodiversity and land use in the Lowveld through: 1.) major poaching losses; 2.) loss of habitats; 3.) loss of spatial connectivity between wildlife areas (in turn creating problems of human-wildlife conflict); 4.) spread of wildlife diseases via cattle that were introduced into conservancies as their perimeter fences were destroyed and converted into snares; 5.) reduced investment in resource management.

Particular problems have arisen for rhino conservation. Over the last three years, commercial poaching of rhinos in the Lowveld has increased on an exponential scale. During 2008, the poaching of at least 40 rhinos in the Lowveld conservancies and in Chipinge Safari Area offset reproductive gains, so that for the first time since the conservancies were established, there has been no net population growth. The rhino poaching to date in 2009 continues on a scale that, if unchecked, will soon cause the Lowveld rhino populations to slip into decline.

In response to this crisis, and in accordance with the growing interest by the European Union (EU) in supporting projects that diversify livelihoods, the EU recently invited stakeholders to apply for funding (within a new funding programme for enhancing food security) to facilitate the formation of public-private-community partnerships (PPCPs) for wildlife enterprises in the Lowveld. A concept outline has therefore been developed, and is currently being reviewed by the EU.

The thrust of this proposal is to facilitate the establishment of appropriate local institutions to achieve adaptive co-management of the natural resources of the Lowveld, maximizing and sustaining ecosystem goods and services for human welfare. At an overall Lowveld level, a LOCAL Forum (Lowveld Conservation and Livelihoods) is proposed for establishment, to subsume the earlier concept of the LWA and to broaden the scope of awareness and co-ordination to a full range of resource management issues, instead of a focus primarily on wildlife. A useful precedent for this kind of broad stakeholder coordination is the Laikipia Wildlife Forum in Kenya.

As a ground-breaking initiative, particular emphasis will be placed on developing a Public-Private-Community Partnership for rhino conservation, thereby better conserving this charismatic and endangered species as a flagship for the Lowveld's wildlife industry, and demonstrating how a flow of community benefits (especially to vulnerable households) can be generated from innovative "win-win" approaches in wildlife operations. Other PPCPs are proposed for initiation within Gonarezhou NP, as part of the resolution of the Shangaan land claim in this park, and at least two PPCPs are to be planned at the interface between commercial conservancies and their neighbouring communities.

The beneficiaries will primarily be the Lowveld's rural communities who are directly involved in these partnerships, but if these communities are brought into a formula of incentives-based conservation that links them to other stakeholders (in the commercial and public sectors) the entire wildlife industry will benefit, along with the wildlife populations and the habitats that this industry conserves. The proposal tackles EU objectives of reducing the dependency of the Lowveld's communities on food aid through an integrated and diversified approach that conserves the environment, generates economic opportunities and increases the households' resilience to risks such as wildlife/livestock diseases, greater aridity due to global climate change, and over-dependency on fragile soil resources and "bushmeat" resources that are currently being overharvested.

9.6 The Mnisi Community Programme: An Integrated Interface Programme. Nick Kriek, Richard Burroughs

There are a number of global issues that affect the health and welfare of human communities. Numerous policy documents deal with the broad context of biodiversity, a sustainable environment, poverty alleviation, land-use options, ecosystem services, health, and the impact of climate change on these matters.

The impact of many of these factors at interface areas is becoming increasingly important. At the wildlife / livestock / human interface, emerging and re-emerging diseases, zoonoses, access to

ecosystem services, varying land-use options and the needs of rural agriculture are critical matters to investigate and address.

From a veterinary perspective, the issues of food safety and security, sustainable livelihoods based on livestock agriculture, land-use, disease management, and the conflict with conservation initiatives (particularly those involving transboundary conservation areas) are critical matters to deal with.

The broad objective of the Mnisi Community Programme (MCP) is, from a veterinary perspective, to improve the health and welfare of a community at an interface while investigating the long-term drivers of the dynamics of this system.

Various institutions are involved in the programme and include the following: The Mnisi Traditional Authority, University of Pretoria (Faculties of Veterinary Science, Natural and Agricultural Sciences, and the Faculty of Health Sciences), Mpumalanga Provincial Government, the Institute for Tropical Medicine (ITM), Antwerp, Belgium, and National Emerging Red Meat Producers Organization.

The study site is a rural area of 29,500 hectares close to the Orpen Gate of the Kruger National Park. The community participates in small-scale subsistence agriculture. The area is at the interface with the Kruger National Park and various provincial and private game parks, and it reflects various levels of poverty. The community is well structured and is under the authority of the Mnisi Traditional Authority. More than 40,000 people live in the area and in excess of 1,000 stockowners own mostly cattle and goats.

A Provincial Community Animal Health Centre at Hluvukani has been made available to the University of Pretoria and specifically its Veterinary Faculty from which to manage the community programme. Clinical services are offered here, and it is both the base for an ambulatory service, and the local headquarters for the research programme.

The programme incorporates the following activities on an integrated basis: formal undergraduate training, postgraduate research projects with the focus on primary animal health care, public health, interface issues, land-use issues, socio-economics, and communication and extension, and it is expected to have a duration of at least 15 years.

In order to address the veterinary needs of the community, the following aspects form the basis for an integrated research programme: socio-economics, agricultural production systems, animal health, human health including food safety, environmental health and sustainability, and indigenous knowledge.

9.7 Livelihood Dynamics in the Limpopo National Park Multiple Use Zone. Nicia L. Givá

The interaction between humans and nature is often characterized by the socio-economic, political and biological dilemmas due to conflicts between biodiversity goals and local livelihood needs. Nature provides means of livelihoods for rural people through utilization of natural resources (land, water, fauna and flora), whereas conservationists note that unsustainable use of natural resources will cause natural resource degradation and loss of biodiversity. As a response towards biodiversity conservation, protected areas, reserves and national parks are being widely spread in the world and the conservation approaches being implemented vary from strict protection and preservation to multiple use and sustained production. The last recognizes the positive human-nature interaction resulting in co-management or co-production initiatives, while the strict protection imposes rules and regulations that restrict utilization of natural resources, resulting in serious conflicts between local people and protected area authorities. The acknowledgment of this biophysical and social interaction has resulted in the concept of a buffer zone, emphasizing its importance in protected areas' management. The buffer zone is the area where protection management takes place, while strict protection happens within the protected zone itself. Buffer zones are considered to be a way of lessening pressure and reducing infringement on protected areas by allowing rural people to use needed / vital natural resources.

This approach led to the creation of the Limpopo National Park (LNP) in 2002, as part of the Great Limpopo Transfrontier Park, which comprises 1,123,316ha, from Pafuri in the North, following the Limpopo river eastwards, meeting the Elephants river which forms the southern border with the

Kruger Park, through the international border with South Africa to the West. The land 5 to 7km inwards from the Elephants and Limpopo rivers constitutes the buffer zone, or so called multiple use zone (MUZ), covering 234,941ha, where 54 villages and about 20,000 to 30,000 people are distributed along the rivers.

Since the MUZ is located inside the Park according to the attributed boundary (Limpopo River), there are conservation and tourism policies that restrict resource utilization in the MUZ. Therefore, the objective of this study is to assess to what extent the communities living inside the buffer / MUZ depend on natural resources and to what degree these conservation and tourism policies affect their livelihoods. The question is underpinned by the hypothesis that households explore resources differently based on their capabilities, knowledge, and assets and that the livelihoods in the MUZ zone of Limpopo National Park will therefore be differently affected by the restriction of natural resources uses due to the conservation policy. To address the questions above, a combination of methods and techniques were applied in two distinct villages (north and south) in terms of biophysical and socio-economic characteristics. Participatory rural appraisal was used to understand the communities' history, natural resources characterization and uses, and description of livelihood activities through life history. Also used were focus group discussion, village and resource mapping, transect walk, and semi-structured interviews. Results show that the main natural resources that built people's livelihoods in the multiple uses zone, in both research sites, are water and soil. Three main characteristics of land and water systems shape the agricultural activity (wetland, middle humid land and upland or "Mananga"). The seasonal dynamics of natural resources (dry and wet season) contribute much to the livelihood variability within and between north and south villages, as well as other factors such as location, population density, infrastructure, accessibility to district towns. The amount and the length (months) of rainfall greatly influence people's seasonal behaviour. Regarding the park restriction policies, two dimensions were noted, the immediate impact and the mid- / long-term impact. The first is related to human-animal conflict, where the southern side of the park is being highly affected by the crop damage caused by elephants. The second is also important for the south due to the expected competition for grazing and land between the concentrated villages along the Limpopo and Elephant Rivers and wildlife. On the other hand, in the north the pressure on the natural resources is still unfelt due especially to low population density (2 hab/km²) and the distance between villages. For that reason, different threats should be considered for the buffer / multiple use zone management plan.

9.8 Identifying Priority Conservation Areas in Mozambique: Preliminary Results for the Great Limpopo TFCA Bob Smith, *et al.*

Systematic conservation planning is the most widely used approach for designing protected area networks and other conservation landscapes or seascapes. It generally involves using computer software to identify priority areas for conservation and the most commonly used program is Marxan, which was developed by researchers from the University of Queensland. Such analyses are: (i) based on spatial data; (ii) target driven; (iii) use the concept of complementarity, and; (iv) explicitly minimise conflict with other user groups by incorporating financial or opportunity cost data. Here we discuss preliminary results from a project to design conservation planning systems (CPS) for the Chimanimani, Great Limpopo and Lubombo Transfrontier Conservation Areas (TFCAs). We focus on the Great Limpopo CPS which will be used for land-zoning, identifying corridors and new conservation areas and for potentially redrawing the boundaries of existing PAs. The eventual CPS will include data on habitat types, species and ecological processes but our initial analysis was based on habitat types alone. We combined broad landcover and soil maps to identify 58 habitat types and set targets based on similar work from South Africa. We used distance to agriculture and roads as the cost layer and the analysis identified a number of important areas for meeting the targets whilst minimising costs. The results showed that there was a great deal of flexibility in the location of the priority areas because most habitat types were relatively abundant. It is expected that this flexibility will be reduced once other data on species, ecological processes and conservation opportunities and constraints are added. There is also great potential for including data on the occurrence and spatial dynamics of disease into the Great Limpopo CPS, so it is hoped that this information can be captured spatially and used to increase the relevance of this decision support tool.

9.9 Discussion (Facilitator: Nicky Shongwe)

1. *Links between Mnisi project and Wits Rural Facility?* Wits University has a comprehensive database linking veterinary and medical inputs but they do not focus on zoonoses as is the intention in the Mnisi project.
2. *Rhino conservation and communities.* There is a need to improve communication and feedback to communities on rhino conservation efforts and incentives to communities. Xavier Poshiwa reported a conversation with an elder who said to him “My son, we hear they expect us to live in harmony with the rhino.”

Poaching is being carried out by well-organised outsiders and not by people within rural communities. The result is damaging the value of rhinos for local communities and the model being developed does have their support, although it clearly requires effective coordination between the stakeholders involved.
3. *Fencing policy for Limpopo NP.* Initially it was intended that people would live within the park and fencing would not be needed, but now it is being considered along the buffer zone, with gaps to allow wildlife access to the river. The main crop damage is by elephants although in some cases it is buffalo, and lions occasionally take livestock.
4. *Priority conservation areas.* The Marxan programme allows one to weight important species and to include cost data. It also allows one to work almost entirely from remotely sensed data and permits ongoing iterations. It is also the only way to deal with very large areas such as the 96,000 km² of land presently being planned. An analysis has not yet been run to detect areas of charcoal production but it could and should be done. The software has not been used for planning resettlement, which requires different data sets.

10. HUMAN-WILDLIFE CONFLICT IN THE GLTFCA

10.1 Holistic Predator Management as a Component of the Conservation Economy Booi Smuts

This project has been developed and implemented since 2004 in areas of the Eastern and Western Cape, South Africa. It is focused on commercial rangeland farms. (Jackal Connect has worked across South Africa and is doing research in Madikwe – North West Parks.) The specific objectives of the efforts are to:

- Stabilize predator populations on farms
- Decrease livestock damage from predators
- Increase livestock farming profits through holistic predator management strategies
- Restore biodiversity patterns and processes through elimination of indiscriminate predator control options
- Create jobs through husbandry management, e.g. develop shepherding skills and jobs
- Continue research, education
- Develop market mechanisms, and
- Guide legislation with respect to management of damage-causing animals

The project has 5 core outputs (the research component and promotion of non-lethal controls are developed in partnership with Jackal Connect):

1. Rescues, Rehabilitation and Releases: Since the leopard and predator project began in 2004, 20 leopards have been rescued from certain death at the hands of commercial agriculture in a small area stretching from Uniondale in the Western Cape, to Addo National Park in the Eastern Cape, and mostly around the Baviaanskloof Reserve. Seven of these cats were locally translocated to Addo

National Park, and 13 released back *in situ*. This is an area where leopard populations are severely under threat.

2. Research on Leopard and Jackal: Landmark Foundation, with academic supervision from Rhodes University, has recently supported an MSc study. This research indicated that the population estimates in the 300,000 hectares Baviaanskloof Reserve and surrounding natural area is down to about 30 resident and territorial animals, with concerns around genetic isolation of a small source population. A PhD is underway to establish whether the Garden Route and Zuurberg areas have similar source populations and whether the sink areas have genetic linkages between the various source populations. There are currently 10 GPS collared leopards. A PhD is underway to investigate the population ecology of leopards and the potential of regional translocations as a potential mitigation management tool.

Jackal Connect is far advanced in its jackal research, which recognises the importance of non-disturbance of territorial animals as a core component of predator impact management on agricultural landscapes.

3. Developing Non-Lethal Predator Management Practices: Jackal Connect has demonstrated the scale of the impact of lethal predator controls across South Africa over the last 100 years. This includes the killing of thousands of non-target animals and the fact that the Net Present Value of the jackal fencing programme in South Africa and Namibia is R11 billion, yet together with the bounty system, these vast expenses have not resulted in solving the problem. On the contrary, the data supports a position that lethal controls have created the massive problem of predation on livestock farms, and an increase in jackal and caracal numbers. The departure from lethal predator management strategies to non-lethal, ecologically and ethically acceptable practices is promoted and implemented in certain pilot areas.

Since April 2004 there has been a focus on predator management practices in the region and beyond, using leopards as an iconic species to highlight predation as a beneficial biological process in agriculturally productive landscapes. More than 150,000 hectares of farming land have newly been incorporated into predator-friendly initiatives. This has included the use of deterrent techniques like sheep protection collars, and the use of guard animals like Anatolian dogs and alpacas. Financial results have indicated dramatically improved production returns. The Landmark Foundation has published a practical farming manual on holistic, non-lethal and ethical management that it has drafted (2008), *Predators on Livestock Farms*.

4. Advocacy and Consumer Campaign: National impact on trying to change retail practices has been achieved. Media exposure dealing with the ecological, financial and ethical components of the issue has been used to garner consumer support for ethical produce through production changes, and retail practices, and impact on legislation.

5. Developing an Ethical Brand: A wildlife friendly brand, Fair Game™, will be launched in 2009. This brand will be for red meat and animal fibre produced on rangelands that comply with wildlife friendly production criteria, which will be third party audited.

10.2 Human / Wildlife Conflict Mitigation Strategies in the GLTFCA Context

Malvern Karidozo

Human wildlife conflict is arguably one of the most pressing conservation issues across the Great Limpopo Transfrontier Conservation Area (GLTFCA) where people live in areas that abut wildlife range. Managers and farmers attempting to reduce crop and livestock damage by wildlife encounter a range of complex technical and social issues. Commercial and subsistence farmers bear most of the costs associated with maintaining wildlife populations and this can confound interventions designed to improve the livelihood security of farmers, threatening the ideals of conservation. This paper presents a review of human-wildlife conflict mitigation strategies that have been in use across the GLTFCA and recommends other methods yet to be explored, focusing more on the issues that influence the success and failure of methods, and suggests that an integrated approach combining both high and low tech methods will be the most sustainable solution to this conflict.

In conclusion it is noted that one intervention alone will never ameliorate HWC and there is need to address the problem at all levels, to study more thoroughly and respond more directly to the human

dimension of HWC. The successful long-term management of HWC requires solid support from all levels of government. It is also imperative that long-term management of HWC demands clear policies and legal frameworks at the local, district and national/regional levels and that conflict mitigation receives strong local participation and is integrated with other wildlife and land management activities.

10.3 Communities, Human / Wildlife Conflict, and Win-Win Opportunities in the GLTFCA Livingstone Makuleke

No Abstract available.

10.4 Socioeconomic Costs of Predation and Diseases at the Wildlife / Livestock Interface along the North Western Boundary of the Kruger National Park

Petronella Chaminuka, C. McCrindle and H. Udo

At the wildlife / livestock interface, livestock production can be constrained by predation and high risk of disease transmission. The objective of this study is to examine the socio-economic impacts of these issues on livestock production systems and food security. The study was conducted in the communal cattle grazing areas located along the northern border of the Kruger National Park next to the Punda Maria gate. The study method used in the area was based on informal and structured interviews with randomly sampled cattle owners (n=270). Based on analysis of records of livestock predation reported to the Hlanganani Forum between 2005 and 2008, as well as state veterinary records of disease outbreaks and mortalities, it was found that predation costs were higher than previously predicted. The main predators were lions, although leopards, hyenas and jackals were also described by community members. Livestock diseases described by the farmers included an outbreak of foot and mouth disease in 2006, as well as cases of heartwater, brucellosis and lumpy skin disease. The data obtained from the state veterinary annual reports was different to that reported by the farmer. This, however, was not unexpected as not all cases are reported to the state veterinarian and farmers are not always fully aware of the extent of outbreaks of notifiable diseases such as foot and mouth or brucellosis as the information is confidential until reported to the World Animal Health organisation (OIE). The study reports predation costs per livestock owner household per year as well as costs to households due to livestock mortality from contagious and notifiable diseases, which could have originated from contact with wildlife. When it is considered that cattle are also a form of savings and have considerable cultural value, the socioeconomic costs of losses can be seen as high in relation to income.

10.5 Discussion on Human /Wildlife Conflict, with an emphasis on key gaps in current mitigation efforts (Facilitators: David Cumming, Nicky Shongwe)

1. *Impacts of predators vs. disease on livestock.* Diseases are generally responsible for higher mortality in livestock than predators. Chris Foggin noted that, in one study, five times as many cattle died from disease as from predators. A study in Kenya (see chapter 17 of **Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock and Human Health**, available at http://www.wcs-ahead.org/wpc_launch.html) indicated that the costs of losses from disease were about ten times greater than those from wildlife. Similar data have been obtained from south eastern Zimbabwe. It is also important to note that not all livestock diseases are related to wildlife.
2. *Ranking of disease impacts.* Why should FMD emerge as the most important disease and yet mortality is generally very low? The effects of FMD may be greater in communal areas where animals have to move long distances to water but we do not know whether communal livestock are more heavily impacted by the disease than those on commercial farms. The effects of FMD on market access may also be a contributory factor in the high importance attributed to the disease.
3. *Perceptions of wildlife related crop damage.* A 2-year study in the Binga District of Zimbabwe revealed that the primary predator of grain crops was Quelea birds, followed by

baboons and then large herbivores. However, in questionnaire surveys, crop losses tend to be attributed to elephants.

4. *Predator control problems.* In Limpopo, people appointed by the Department of Agriculture hunt problem lions. Permits are issued independently of CITES. Young lions will disperse or get killed and there may thus be good reason to use them to generate revenue for communities. The use of mobile kraals, both in Zimbabwe and in Kenya has been very effective against predators, including lions.

11. INFORMAL PRESENTATIONS / POSTER PRESENTATIONS (Facilitator: David Cumming)

11.1 Understanding the Distribution of Cattle at the Cattle-Wildlife Interface using GPS Collars and Satellite Remote Sensed Data Fadzai Zengeya

The study was using GPS collars attached to cattle to investigate the movement of cattle in relation to their potential contact with wildlife and with buffalo in particular. After outlining her study the following points were raised in discussion.

1. Cattle are moving in the Gonarezhou National Park and it would be important to know how many are doing so and where they go when they leave the park. Information on these large-scale movements of livestock has important implications for the spread of FMD and BTB. On flights over the park hundreds of cattle have been seen grazing within the park.
2. This study is focused in the south of the Gonarezhou National Park, what is happening in the north of the park?
3. Another component to the dynamics of livestock movement in the area is the theft of livestock that are then driven into Mozambique and sold there. Some 30% of livestock have been stolen in recent times from the study area.

11.2 Tick Diversity and Abundance and Tick-Borne Infections in Domestic and Wild Animals in South Eastern Zimbabwe Lenin Jomane

The study being carried out in the Malipati area in the Sengwe Communal in south-eastern Zimbabwe was outlined and some preliminary results presented. Ten tick species were found on cattle, five on buffalo and kudu, and four on sheep and goats. More ticks were found on animals in summer than during the colder months. There were more ticks at Pesvi, where there has been no dipping, than at other sites. Serological tests indicated that 40 -60% of animals had been exposed to diseases.

The short presentations generated the following questions and comments.

1. We need to think beyond clinical disease in considering the wildlife-livestock interface and the effects of sickness on animals' fitness. Animals use bodily resources in fighting disease and this has knock-on effects on reproduction and digestion.
2. Have you tried to correlate tick presence and abundance with dipping? As veterinarians we are interested in whether our dipping regimes are effective.
3. The question of maintaining endemic stability needs to be considered. When high frequency dipping systems broke down in the late 1970s there was massive mortality in cattle in Zimbabwe because immunity to diseases had been lost. This experience resulted in less frequent dipping and the maintenance of immunity in herds.
4. There is an urgent need to develop integrated health plans and to standardise terminology and analysis to allow effective comparisons across countries.

11.3 Information transmission – a postscript to today's discussion on information Marshall Murphree

To quote Kule Chitepo, “The man on the other side of the fence is ignored” and I would like to suggest some useful field techniques to counteract this syndrome; they involve no additional cost. My underlying premise is that communication is not just about information but also about the transmission of Incentive to people. Communication between different disciplines is not easy and the AHEAD forum is one of the most interdisciplinary, and you need to be congratulated on that score.

Regarding communicating with communities, let me start with a story. Some fifteen years ago David Cumming and I were travelling from the south to the north of the Gokwe District in Zimbabwe and decided to follow the newly erected FMD buffalo fence from the SE to the NE of the district. It took us a couple of days and involved sleeping along the fence on the way. The area was very sparsely populated. We came to a very level area on a plateau with good soil and saw a farmer ploughing right up to the buffalo fence. “Why don’t you go over to the other side of the fence too?” we asked. “It is the rule – that side belongs to wildlife” he replied. “Why is it the rule?” “Because the wildlife are loved by the District Council (i.e. the Bureaucracy) and white people (i.e. the technocrats).” It was apparent the wildlife itself didn’t mean anything to him.

We all have to recognise that wildlife will only survive if it is perceived to have value. Are there ways to communicate to people not only information but attitudes and incentives that change their interest, their sense of ownership? The following suggestions may help;

1. In working in villages and using questionnaires one of the first things to do is to use local researchers.
2. Train the researchers.
3. Analyse the data right there with the researchers in the field.
4. Get your researchers to report back to the village – have a field day with the locals (people suddenly possess knowledge and power).
5. There are many simple innovations that can serve to empower villagers. For example, give the village a rain gauge and a notebook to record rainfall.
6. Finally, aim for a joint publication with the people – this is the heart of participatory research. Have a chapter by one or more local people. A very good example is a book recently published by Louise Fortman and which includes such chapters.

12. SUSTAINABILITY, THE AHEAD-GLTFCA WORKING GROUP AND INSTITUTIONAL ARRANGEMENTS: Steve Osofsky, Nicky Shongwe and David Cumming

The AHEAD-GLTFCA programme has, so far, been maintained via ample good will and collaboration. We now have to consider the financial realities of the coming financial year. The Seed Grant funds are secure. The Rockefeller Foundation and the MacArthur Foundation covered the funding for things like this meeting, but we currently have no follow-up funding for the annual AHEAD-GLTFCA Working Group Meeting next year. There is therefore a need to find new ways to make it possible to hold these collaborative meetings.

The future sustainability of the programme needs to be considered and structures need to be in place that will ensure its continuity should Steve and / or Nicky not be available to continue their work for whatever reason. The several dozen Letters of Understanding signed by participating institutions help, but more are needed.

The cost of the Annual Working Group Meeting is about US\$ 25,000, and the possibility of seeking private sector support needs to be explored.

The institutional framework of the AHEAD-GLTFCA programme has been discussed many times before and, despite a lack of resolution on the matter, the programme has continued to function. The programme remains a loose informal network. The need to establish a formal relationship with the JMB is, however, an outstanding issue that needs to be tackled without further delay.

Since the programme operates in many ways like an IUCN Specialist Group, it was suggested that this avenue could be explored since it could provide a level of formal recognition akin to that of a Specialist Group. One difficulty with such an approach is that it may overlap with the existing Sustainable Use Specialist Group and the Veterinary Specialist Group of IUCN.

13. SCENARIO PLANNING APPROACH

13.1 Exploring Future Ecosystem Services: A Scenario Planning Approach to Uncertainty in the South East Lowveld of Zimbabwe Cees Leeuwis, Chaka Chirozva and team [Seed Grant]

Scenario planning is a promising tool for dealing with uncertainty surrounding the future, but one that has been under-utilised in ecology and conservation. The use of scenarios to explore ecological dynamics of alternative futures is currently being promoted by a range of donors and scientists in the Great Limpopo Transfrontier Conservation Area (GLTFCA). This study explores the use of participatory scenario planning in three selected wards in the South East Lowveld of Zimbabwe. The overall study objective is to develop insights on the dynamics surrounding local level participatory scenario planning and to explore how this methodology can enhance self organisation, learning and empowerment of marginalised stakeholders, as well as promote negotiation in the evolution of the GLTFCA. Scenarios are seen as a means of empowering marginalised local populations and facilitating a more equitable balance of power among communities within the GLTFCA on the one hand, and governments, technical planners, et al. on the other. The study will explore the livelihood strategies of the area, develop community scenarios and relate them to other scenarios developed at a technical level. Concerns such as livestock / veterinary disease control and tourism will be addressed, with the aim of developing multi-scale scenarios in the long term. The study will collect a block of data on key system processes, drivers and interactions that will likely impact the future of the Lowveld as a social-ecological system. This is critical in exploring alternative scenarios for the GLTFCA at several scales, from the local to regional, in order to promote dialogue and negotiation amongst stakeholders in the evolution and development of the GLTFCA.

13.2 Scenarios - The Amalinda Stories Mike Murphree, Mike Kock

The Amalinda scenarios are the result of a scenario planning exercise that was run as part of the LNP - Veterinary Needs Assessment in June 2007. The Amalinda scenarios are narratives that describe two alternative futures for a young woman coming from a village in the LNP. The underlying theme in the Amalinda story is the interaction between people, livestock and wildlife. At this interface there are a range of issues and complex “cause-effect” relationships that are critical for the healthy co-existence of all.

In 2008 at the request of the Director General of IUCN, the Amalinda scenarios were adapted into a slide show story to demonstrate the human and animal health issues at the interface. This slide show was run during the opening of the “Healthy People, Healthy Environment” workshop stream at the Barcelona World Conservation Congress. The Amalinda scenarios also provided the basis for a poster presentation that described the “One Health” philosophy of the AHEAD-GLTFCA programme.

The use of the Amalinda scenarios in the slide show and poster presentation demonstrated the adaptability and effectiveness of scenarios in communicating complex issues to a wider audience.

13.3 The Crocodile Scenarios Mike Murphree, Danie Pienaar

In June 2008 a significant number of crocodile mortalities were observed in the Olifants River Gorge in Kruger National Park (see relevant presentation earlier in the agenda). This reason for this die-off was not clear, beyond the fact that the crocodiles were dying with a condition known as pansteatitis. This condition results in the progressive hardening of body fat, which cannot be metabolised by the animal. The absence of anti-oxidants in the body such as vitamin E is believed to cause the condition.

In response to the crocodile mortalities a multidisciplinary team at Kruger began to investigate the possible causes. As part of this process, a “rapid response scenario” workshop was held at Skukuza. This intensive workshop took about four hours and concentrated on aspects of scenario planning that could be useful in guiding the team’s research approach. Key elements were:

- Identifying the Key Question – this was important to ensure that the research team agreed on the target of their investigations. The key question was determined as: “*What causal factors are triggering pancreatitis in crocodiles in the Kruger National Park with an emphasis on the Olifants River.*”
- Analysing possible drivers in order to determine “what we know” and “what we want to know”.
- An initial examination of possible causal relationships.
- Comparison with a similar event in Loskop Dam (on the same river) in 2007 to explore the possibility that the two events were linked.
- Possible consequences of this event both short and long term.
- Required actions.

The rapid response scenario workshop did not reveal the cause of the problem but it was able to provide a sounding board for ideas and provide an initial framework from which subsequent investigations could be developed.

14. FIVE+ YEARS OF AHEAD-GLTFCA Nicky Shongwe

Nicky Shongwe said, “It is important to have celebrations in life.” These added significance to life, created memories and encouragement for the future. Many people have provided support in kind to the programme through their enthusiasm and we would like to recognise their contribution over the last five years.

Certificates of recognition were awarded to the following ten members of the AHEAD-GLTFCA Working Group: Emily Lane, Michael Kock, Michael Murphree, David Cumming, Claire Geoghegan, Nazare Manguze, Markus Hofmeyr, Petronella Chaminuka, Madyo Couto, and Jeanette Manjengwa.

Michael Kock paid tribute to the hard work and enthusiasm that Steve Osofsky and Nicky Shongwe contributed to the programme and recognised the presence of Marshall Murphree and his early contribution to the programme.

15. NEXT STEPS, ACTIONS AND RESPONSIBILITIES (Facilitator Nicky Shongwe)

1. Fund-raising – a small group will meet tomorrow morning, 8th of March, to discuss the matter in greater detail.
2. David and Meg Cumming would write up the record of the meeting by May 2009.
3. Participants were urged to add their projects and contact details to the Projects Table on the web site at http://www.wcs-ahead.org/gltfca_projects/projects.html .

16. NEXT ANNUAL WORKING GROUP MEETING IN 2010 Nicky Shongwe

Jeanette Manjengwa of CASS offered to host the next meeting in Zimbabwe if the situation in that country was conducive to holding the meeting there.

17. THANKS AND CLOSURE

Nicky Shongwe thanked Dr. Pariela and Dr. Soto for hosting the meeting in Mozambique. She thanked WCS and SANParks for supporting the meeting and Dr. Osofsky for his tireless efforts on behalf of the programme. Thanks were also extended to Merle Whyte, Michael Kock, Michael Murphree, and David Cumming, and to Meg Cumming and Raoul du Toit for taking notes throughout the meeting.

Nicky Shongwe also extended special thanks to those who had travelled from afar and those who had attended under their own sponsorship.

The group thanked Nicky for all of her efforts.

The meeting closed at 1205.

ANNEX 1: PARTICIPANT LIST

AHEAD GL PARTICIPANT LIST : 4- 6 MARCH 2009

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ANNEX 2: AGENDA

9th AHEAD-GLTFCA Working Group Meeting
4th – 6th March, 2009
Venue: Xisaka Hotel
Namaacha, Mozambique

NOTE: *Listed presenters of technical topics are kindly asked to prepare a one to two page summary ahead of time and circulate these and any additional material before the meeting, or have materials ready to distribute at the start of the meeting. Thank you in advance for your time and contribution.*

Day One: Wednesday 4th March

- 0900 Welcome** (Francisco Pariela, Nicky Shongwe)
- 0910 Introductions- around the room
- 0920 Brief introduction to *AHEAD, AHEAD-GLTFCA* and background; Objectives and format of the 9th Full Working Group Meeting and adoption/adjustment of agenda **(Nicky Shongwe)**
- 0940 “The *AHEAD-GLTFCA* Programme: Key Questions and Conceptual Framework Revisited” Presentation, basic overview of current Framework and “As the Fences Come Down” documents **(David Cumming)**
- 0955 “Update on the GLTP Project and Formation of the GLTFCA,” **(Elizabeth Mhlongo)**
- 1010 “Progress in Addressing Animal Disease Threats (including Zoonoses) and Priorities in the GLTFCA- a JMB Conservation & Veterinary Sub-Committee Update on Challenges, Progress, Current vs. Desired Capacity” **(Markus Hofmeyr, Chris Foggin, Nazare Manguzeze, Roy Bengis)**
- 1020 “A New Framework for Disease Research at SANParks” **(Markus Hofmeyr)**
- 1030 “Zimbabwe- Recent Disease Dynamics and the Status of Wildlife Conservation” **(Chris Foggin)**
- 1045 Tea/Coffee break**
- Introducing Ten AHEAD GLTFCA Seed Grant Awardees- What They’ll Do**
(10-12 min. presentations with time for discussion)
- 1115 “Skills Development for Disease Monitoring in the Greater Limpopo Transfrontier Conservation Area (GLTFCA): Capacity Building for Wildlife Disease Diagnostics” **(Emily Lane, Antoinette Kotze, Rosa Costa, Mary Louise Penrith and team, National Zoological Gardens of South Africa and collaborating institutions) [seed grant]**
- 1130 “Zoonosis at the Interface: Lion (*Panthera leo*) Bovine Tuberculosis Overview and Analysis Workshop” **(Yolan Friedman, Brenda Daly, Markus Hofmeyr and**

Peter Buss, Endangered Wildlife Trust and South Africa National Parks)
[seed grant]

1145 “A Comparative Study of Institutional Arrangements for Small-Scale Livestock Farmers in Communities in the Great Limpopo Transfrontier Conservation Area [along with an update of the CASS Community-Based Scenarios Project]” (Jeanette Manjengwa and team, University of Zimbabwe Centre for Applied Social Sciences) [seed grant]

1200 “Alternative Sustainable Futures for Post-Resettlement in the Limpopo National Park, Mozambique” (Jose Tanago, Ernesto Dimande for Ken Giller and Jessica Milgroom, Wageningen University) [seed grant]

1215 “Improvement of Village Poultry Health and Production by Communities in the Limpopo National Park Support Zone in Gaza Province, Mozambique” (Robyn Alders, Filomena dos Anjos and team, International Rural Poultry Centre, KYEEMA Foundation) [seed grant]

1230 Q & A, group discussion (Facilitator: Steve Osofsky)

1300 Lunch

Surveillance and Disease Management in the GLTFCA

1400 “Pathogens, Parks and People: The Role of Disease in TFCA Development” (Elissa Cameron, Claire Geoghegan and team, University of Pretoria Mammal Research Institute) [seed grant]

1415 “The Wildlife / Livestock Interface in the SE Lowveld of Zimbabwe: First Results on Distribution and Contacts between Wild and Domestic Ungulates” (Michel de Garine-Wichatitsky *et al.*)

1430 “The Wildlife / Livestock Interface in the SE Lowveld of Zimbabwe: First Results on Disease Prevalence Surveys in Wild and Domestic Ungulates” (Alexandre Caron *et al.*)

1445 “Haemoparasites Infecting African Buffalo (*Syncerus caffer*) in Kruger National Park, South Africa” (Kimberly Kanapeckas, Elissa Cameron, Vanessa Ezenwa and Anna Jolles)

1500 “The Rabies Outbreak in the Nsikasi Region of the Mpumalanga Lowveld” (Bjorn Reininghaus)

1515 “Arena Virus and Cholera: Public Health Management of New and Old Culprits” (Lucille Blumberg)

1530 Tea/Coffee break

- 1600 Q & A, group discussion (facilitated by Lucille Blumberg)
- 1630 [“CORUS Project Update- Development of an Epidemiological Network for Monitoring the Dynamics of Foot and Mouth Disease within the GLTFCA and A Questionnaire for Assessing Contacts Between Kruger National Park Wildlife and Cattle” \(Ferran Jori et al.\)](#)
- 1645 [“The FIRM Programme in Kruger National Park: An Update” \(Ken Ferguson, Ferran Jori, and Laura Adams\)](#)
- 1700 Q & A, group discussion (Facilitator: Nicky Shongwe)
- Adjourn for dinner (dinner provided by WCS)- *Please come back for early start on Day 2!***
- 1830 **Microflights: a voluntary, relaxed and informal session to air and share proposals, ideas, news, etc.**

Day Two: Thursday 5th March

Communications at Different Scales

- 0830 “The Critical Role that Local Media Production and Dissemination Can Play in Facilitating Communication about Human Health and Wildlife Conservation” (David Weiner)
- 0900 [“Community Theatre as a Communications and Outreach Tool to Support Local Level Scenario Planning Initiatives within the GLTFCA” \(Kule Chitepo, Chunky Phiri, Webster Whande and team, Resource Africa\) \[seed grant\]](#)
- 0915 [“AHEAD’s Use of the World Wide Web and Related Tools: Fodder for Discussion” \(Steve Osofsky\)](#)
- 0930 **Panel Discussion with Q & A:** Do we need more and / or better: are approaches to communications among TFCA stakeholders adequate? (Panelists: Nicky Shongwe, Madyo Couto, Kule Chitepo, Michael Murphree, Raoul du Toit, David Weiner, and other volunteers)

Climate and Other Environmental Change and ‘One Health’

- 0945 [“Climate Change, Biodiversity, Health and Livelihoods: A One Health Approach” \(Mike Kock\)](#)
- 1000 [“Crocodiles and the Great Limpopo TFCA- Sentinels for River Basin Health?” \(Danie Pienaar, Danny Govender\)](#)
- 1015 Q & A, group discussion (Facilitator: Mike Kock)
- 1030 **Tea/Coffee break**

Livelihoods and Governance in a Transboundary Context

- 1100 [“Balancing Ecotourism And Livestock Production- Implications For Livelihoods And The Environment”](#) (Cheryl McCrindle and Petronella Chaminuka, University of Pretoria and Wageningen University) [seed grant]
- 1115 “Land Use Alternatives and Livelihood Viability in Ecosystems at Risk of Emergent Animal Diseases” (Brian Child, Gregory Parent and Jessica Musengezi, University of Florida) [seed grant]
- 1130 “Governance: Assessing Accountability and Livelihood Impacts for CBNRM Success: An Update” (Gregory Parent, Brian Child)
- 1145 Q&A, group discussion (Facilitator: Nicky Shongwe)
- 1200 [“The CESVI Programme: Addressing Transboundary Livelihoods in the GLTFCA”](#) (Paolo Caroli)
- 1215 [“The LOCAL Initiative: New Partnerships for Wildlife-Based Land Use in the Lowveld Region of Zimbabwe”](#) (Raoul du Toit)
- 1230 [“The Mnisi Community Programme: An Integrated Interface Programme”](#) (Nick Kriek, Richard Burroughs)
- 1245 Q & A, group discussion (Facilitator: Nicky Shongwe)
- 1300 Lunch**
- 1400 [“Livelihood Dynamics in the Limpopo National Park Multiple Use Zone”](#) (Nícia I. Givá)
- 1415 [“Identifying Priority Conservation Areas in Mozambique: Preliminary Results for the Great Limpopo TFCA”](#) (Bob Smith, Cornelio Ntumi)

Human / Wildlife Conflict in the GLTFCA

- 1430 “Holistic Predator Management as a Component of the Conservation Economy” (Boel Smuts)
- 1445 [“Human / Wildlife Conflict Mitigation Strategies in the GLTFCA Context”](#) (Malvern Karidozo)
- 1500 “Communities, Human / Wildlife Conflict, and Win-Win Opportunities in the GLTFCA” (Livingstone Maluleke)
- 1515 [“Socioeconomic Costs of Predation and Diseases at the Wildlife / Livestock Interface along the North Western Boundary of the Kruger National Park”](#) (Petronella Chaminuka)
- 1530 Tea/Coffee break and GROUP PHOTO**
- 1615 Group Discussion on Human / Wildlife Conflict, with an emphasis on key gaps in current mitigation efforts (Facilitator: David Cumming, Nicky Shongwe)

Adjourn for dinner (dinner provided by WCS)- *Please come back for early start on Day 3!*

Day Three: Friday 6th March

- 0830 Plenary session: report back from Day 2's afternoon sessions, discussion, and feedback on other sessions from Day 2 (Facilitator: David Cumming)
- 0845 Brief informal presentations / poster presentations / updates by proponents of other concepts / projects developed so far / ideas arising from microflights sessions, etc. (Facilitator: David Cumming)
- 0915 Sustainability, the *AHEAD* GLTFCA Working Group and institutional arrangements: brainstorming on ideas for bringing other donors to the table, etc. Q & A, group discussion. (Steve Osofsky, Nicky Shongwe, David Cumming)
- 0930 ["Exploring Future Ecosystem Services: A Scenario Planning Approach to Uncertainty in the South East Lowveld of Zimbabwe"](#) (Cees Leeuwis, Chaka Chirozva and team, Wageningen University) [seed grant]
- 0945 ["Scenario Planning and the Amalinda Stories"](#) (Mike Kock, Mike Murphree)
- 1000 "The Crocodile Scenarios" (Mike Murphree, Danie Pienaar)
- 1015 "Five+ Years of AHEAD-GLTFCA" (Nicky Shongwe)
- 1100 Tea/Coffee break, check out**
- 1145 Next steps, actions and responsibilities (Facilitator: Nicky Shongwe)
- 1200 Next meetings and Annual WG Meeting in 2010- where, volunteer host(s), funding? (Facilitator: Nicky Shongwe)
- 1215 Thanks and closure (lunch provided)**

March 6, 2009 final agenda