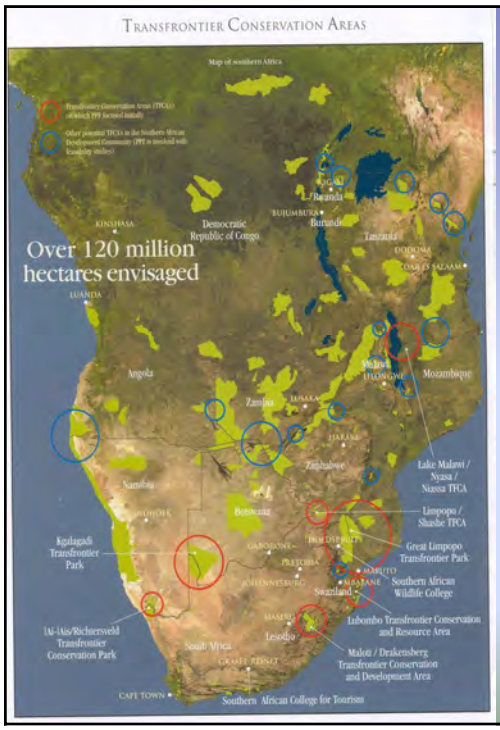


Disease at the wildlife / livestock interface: The challenge to harmonize wildlife conservation and human livelihoods in the GLTFCA context – lessons learnt

Markus Hofmeyr &
GLTP Veterinary
Committee

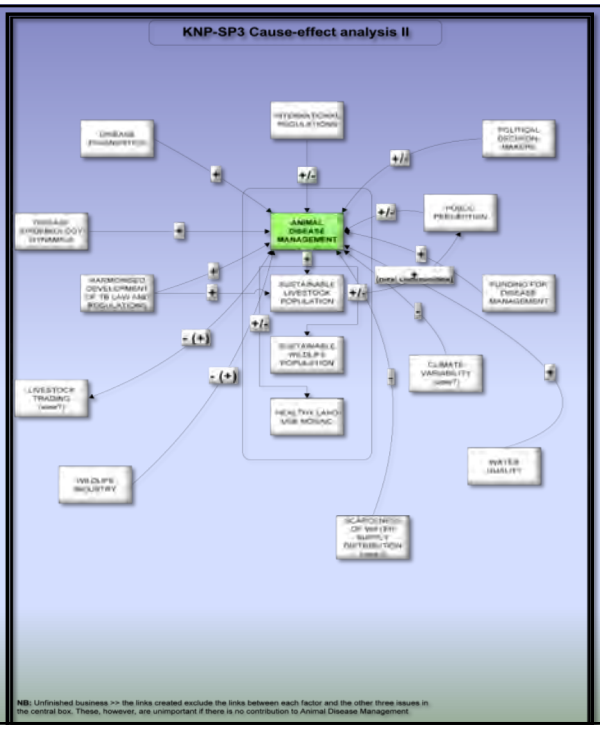
Challenges related to livestock/wildlife disease interventions – lessons learnt GLTFCA Vet Committee

- Challenge of changing officials on veterinary / animal health committee resulting in plans and progress often delayed due to lack of continuity of decisions and plan implementation
- Agricultural policies and regulations not aligned well for cross border livestock and wildlife movements
- Difficulty in implementing cross border disease surveillance and research
- Poor understanding of disease risk management generally and how to manage this across borders
- Almost impossible to move biological samples for disease testing across borders – short period in 2008-2012 when Skukuza State Vet office became receiving office for GLTFCA disease testing samples

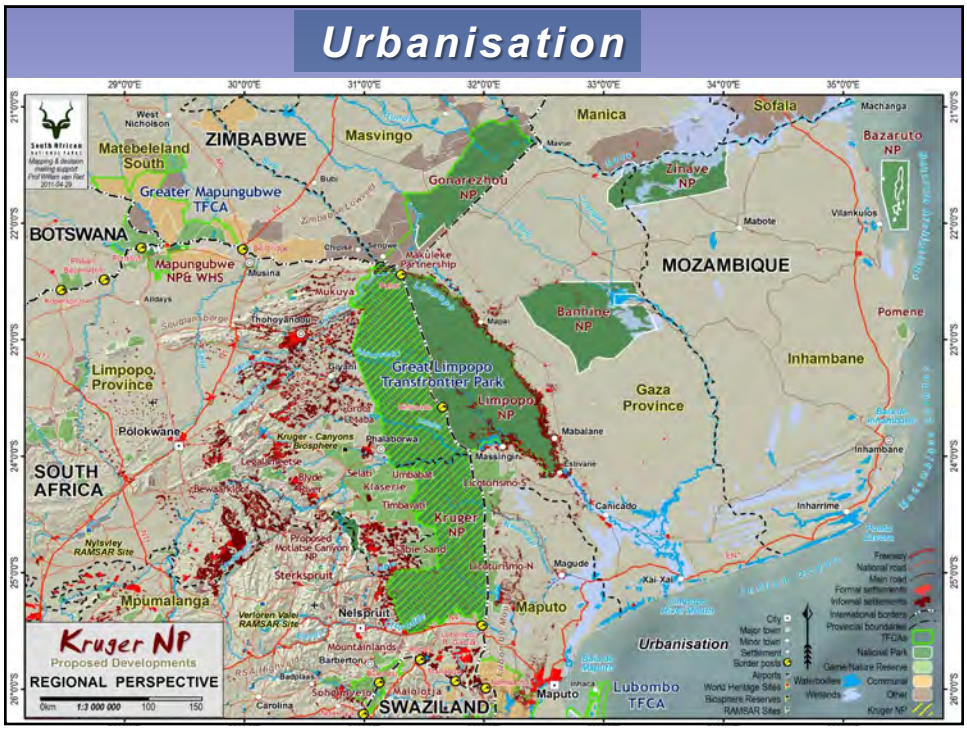
- To overcome negative perceptions and regulatory blockages that exists in relation to livestock & wildlife disease interface issues, a coordinated cross-boundary disease risk management approach needs to be taken
- To have truly cross-boundary animal health intervention, risk management and cross border planning, we will need real & on the ground cross border projects supported by the TFCA & national structures
- Typically there has been a wildlife focus to disease issues in the GLTFCA but livestock management and herd health as well as community livelihood improvement are key to successful conservation outcomes – bigger focus on this area now happening (H4H, Meat Naturally, Wildlife economy etc)

POLICY OPTIONS FOR WILDLIFE, LIVELIHOODS & TRANSBOUNDARY ANIMAL DISEASE MANAGEMENT IN SOUTHERN AFRICA
Steven A. Osofsky, DVM\

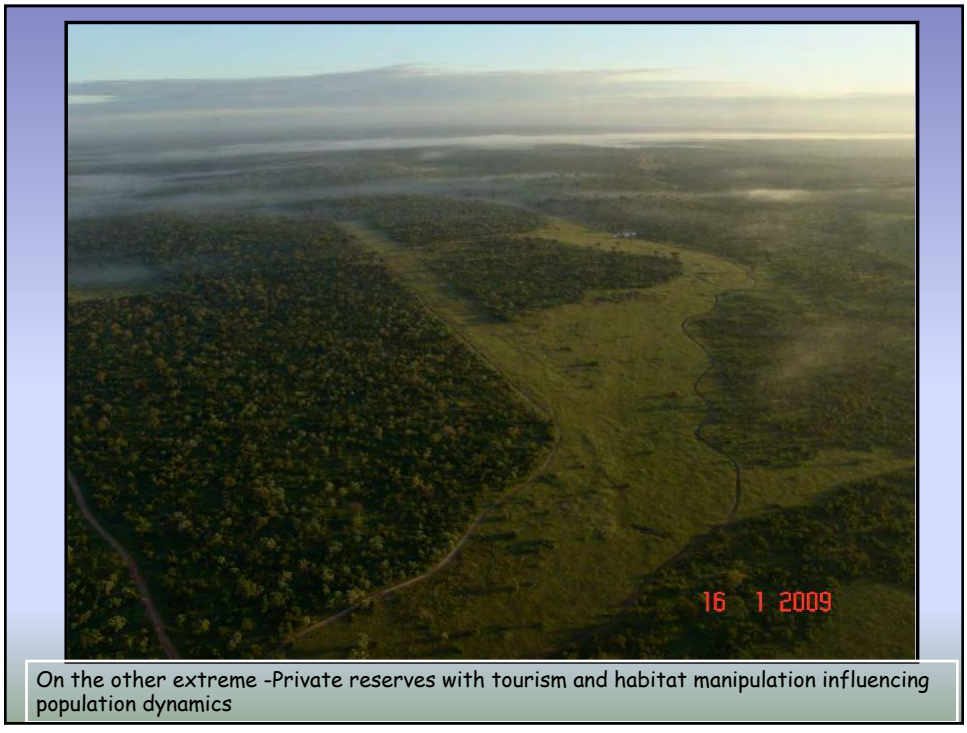
& Many other documents available!



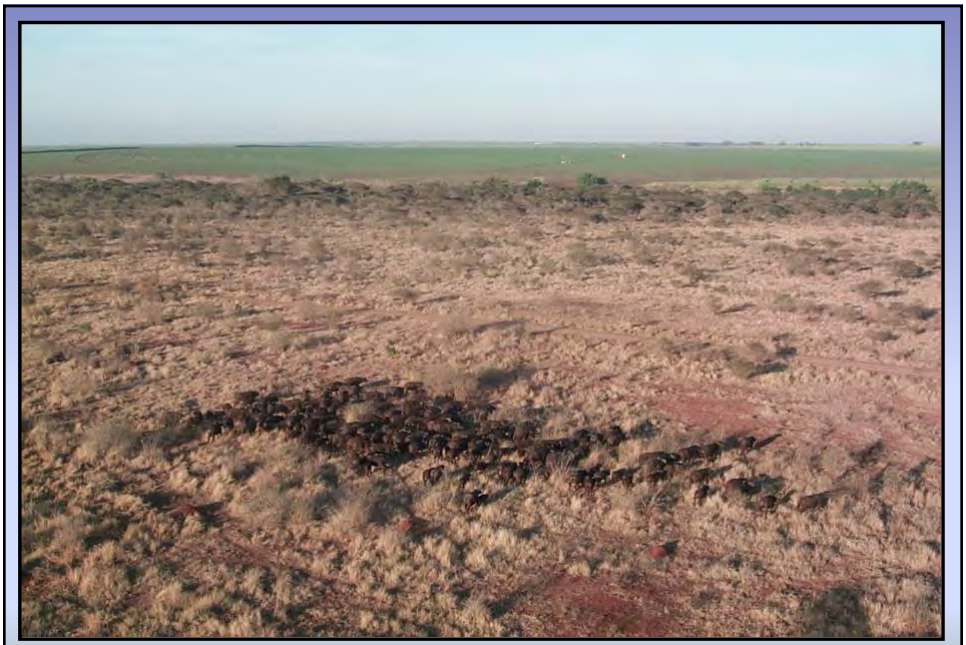
Urbanisation



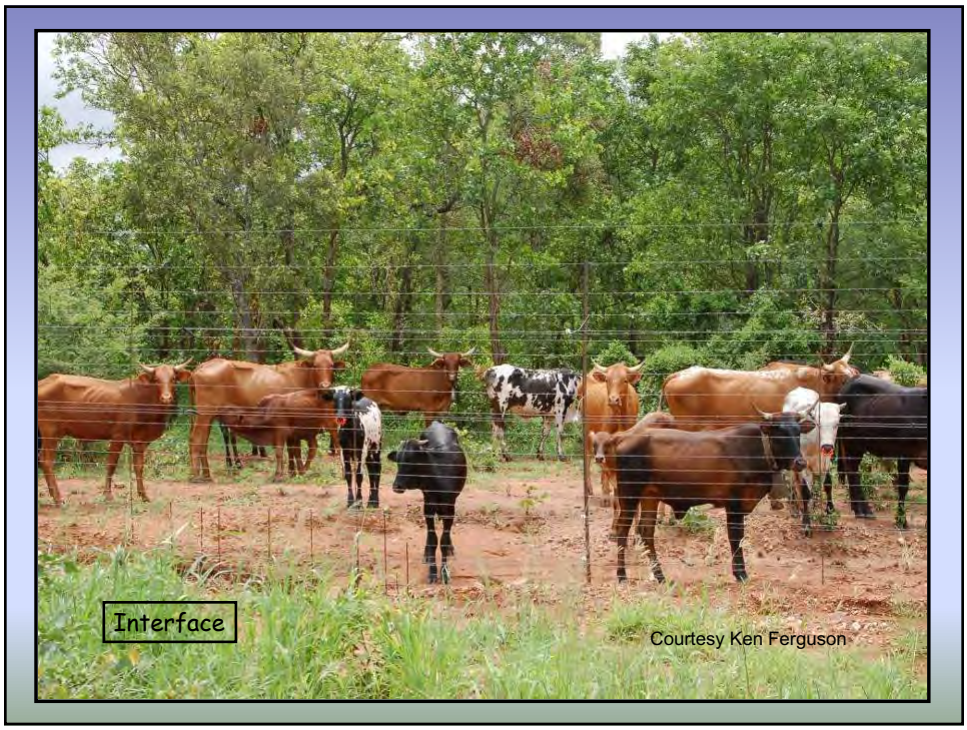

Vastly different and logistically challenging environment to have uniform disease surveillance and management intervention
Courtesy Lisa Marabini and Keith Dutlow


16 1 2009
On the other extreme -Private reserves with tourism and habitat manipulation influencing population dynamics

Intensification of wildlife ranching for commercial use – diseases of intensification, e.g. Rift valley Fever deaths



Extreme interface - Agriculture on interface leads to human/wildlife conflict


Interface
Courtesy Ken Ferguson


Interface - wildlife human conflict one of the biggest challenges facing conservation management
20 10 2004

Back to the interface

Interface

Courtesy Ken Ferguson

Fence removal key component of the TFCA concept – with resultant movement of wildlife into areas previously retricted

Reintroduction of wildlife in areas where they have been poached/overutilised

Interface

GLTFCA vet committee approach to dealing with health issues and understanding disease in wildlife and recent emerging challanges and research and case studies:

GLTP Vet Committee Positions Statement Final.pdf

GLTP vet committee priority listing Nov 2009 final.xls

Disease diagnostics course – train the trainer

Disease Research/Management Framework

1. Status of the Disease/ Status of diseases in the Park of Concern

2. Risk and consequences

Do we need to Intervene/control/manage?

3. Management response and intervention required

Option 1

Option 2

Option3

For each option one needs to look at risks and consequences

Choose an option or solution

Revisit your options

Response

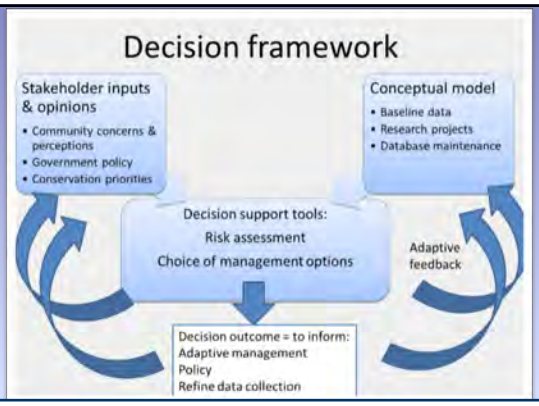
Monitor

Adapt

Reflect

Key Objective: Animal and human health risk analysis

- What are the real & perceived issues?
- Need to qualify and quantify disease risks
- Through development of conceptual models incorporating:
  - Identification of indicators, drivers & trends
  - Quantitative risk assessment & predictive models
- So as to inform:
  - Control measures
  - Research & refinement of baseline data collection
  - Policy development based on best current scientific knowledge



Data sources (human & animal)

- Key baseline data:
  - Active and passive surveillance: syndromic surveillance
  - Census data
  - Economic data, land use activities
  - Water distribution & seasonality
  - Climatic data
  - NVDI data (National vegetation density index)
- Research data

Disease monitoring

- Bovine Tuberculosis prevalence and impact in buffalo and lion in KNP
- Diagnostic test improvement and development
- Vaccine trails

BTB Surveys:
•Regular TB surveys in buffalo in KNP (1992-2008) and Limpopo NP (2006-2008) , three countries area 2010-11– effective but expensive. Some surveys in Gonarezhou NP (2008/9/11).

•Livestock surveys are patchy and incomplete due lack of state veterinary capacity and funding in all three countries (Mpumalanga province exception)

Population dynamics and disease impact on lion

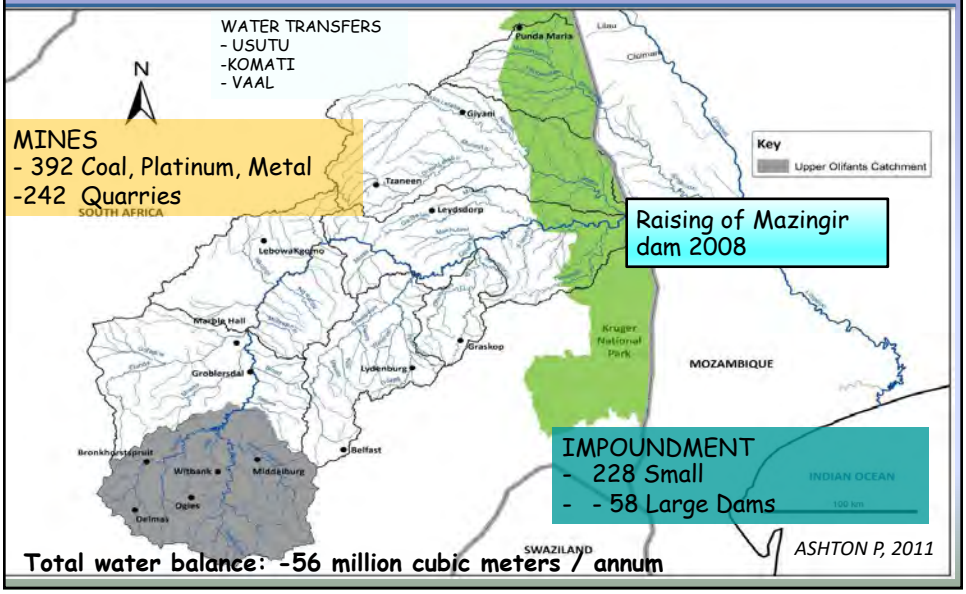
Crocodile deaths in Olifants & Sabie Rivers

Other diseases or system health issues?

- We recognize that global environmental change is a major threat to biodiversity & human livelihoods

Previously healthy river system in eastern KNP

The Olifants River in Context



Zoonisis

NATIONAL HEALTH LABORATORY SERVICE
NATIONAL INSTITUTE FOR COMMUNICABLE DISEASES

07 February 2012
Dear Mr Roland Petsch,
Your email has been passed on to me by Dr Markus Hofmeyr (General Manager: Veterinary Wildlife Services, Kruger National Park) and relates to your recent bat encounter in Skukuza Camp in the Kruger National Park. I am the medical consultant in the human rabies reference unit at the National Institute for Communicable Diseases (NICD) in Johannesburg, and have been asked to respond to some of your questions. I can fully appreciate your concerns and am so sorry that you experienced this incident on your visit to the Kruger Park. The species of bat in your photograph has been identified as Mops *condylurus (Angolan free-tailed bat),* a common insectivorous bat in the Kruger Park. This bat has never been associated with rabies transmission in South Africa or elsewhere in the world .
Bat -related rabies is very different in South Africa as compared to other parts of the world where vampire as well as insectivorous bats are important in rabies transmission. The subject of bats and rabies is well studied in South Africa both by internationally recognized research groups at the University of Pretoria, the NICD rabies unit and the rabies unit at the national veterinary institute at Onderstepoort and the information from the research studies and the monitoring programmers is very reassuring. Rabies monitoring in animals in is routinely carried out in South Africa, the extent of the programme does vary across the country, but within the Kruger there has been ongoing monitoring.

Facts on the Fly!

BAT CONSERVATION INTERNATIONAL
www.batcon.org

ANSWERS TO QUESTIONS ABOUT BATS AND PUBLIC HEALTH

How dangerous are bats?

Bat rabies accounts for approximately one human death per year in the United States. Thus, some people consider bats to be dangerous. Nevertheless, dogs which often are considered "man's best friend," attack and kill more humans annually than die from bat rabies in a decade. Statistically speaking, pets, playground equipment, and sports are far more dangerous than bats. Clearly, bats do not rank very high among mortality threats to humans. Nevertheless, prudence and simple precautions can save lives.

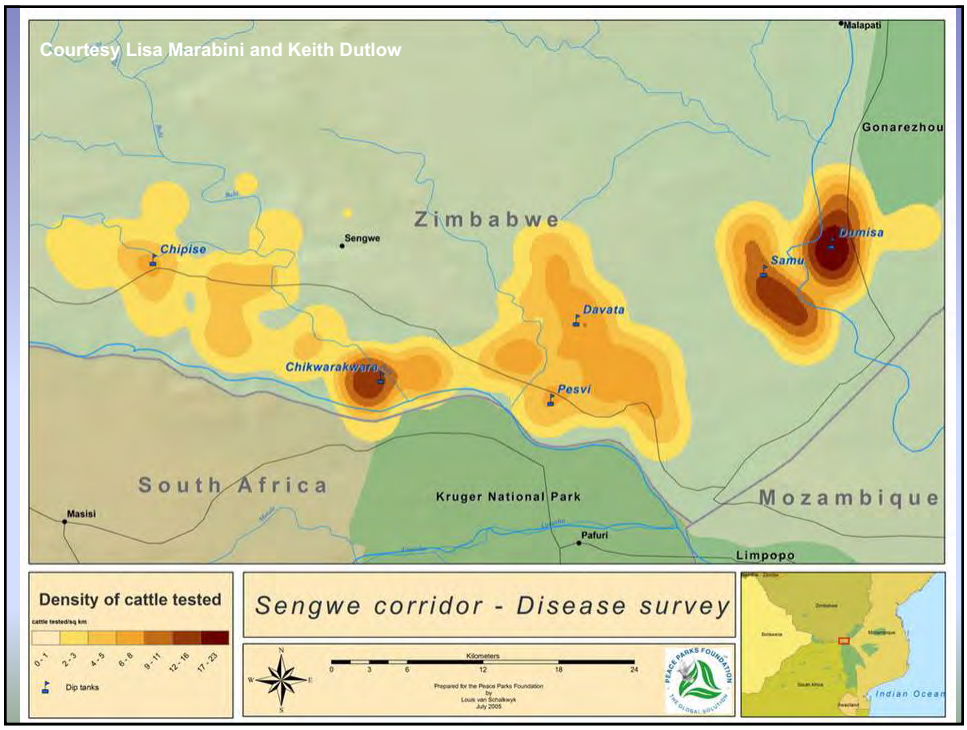
Which bat variances of the rabies virus have been

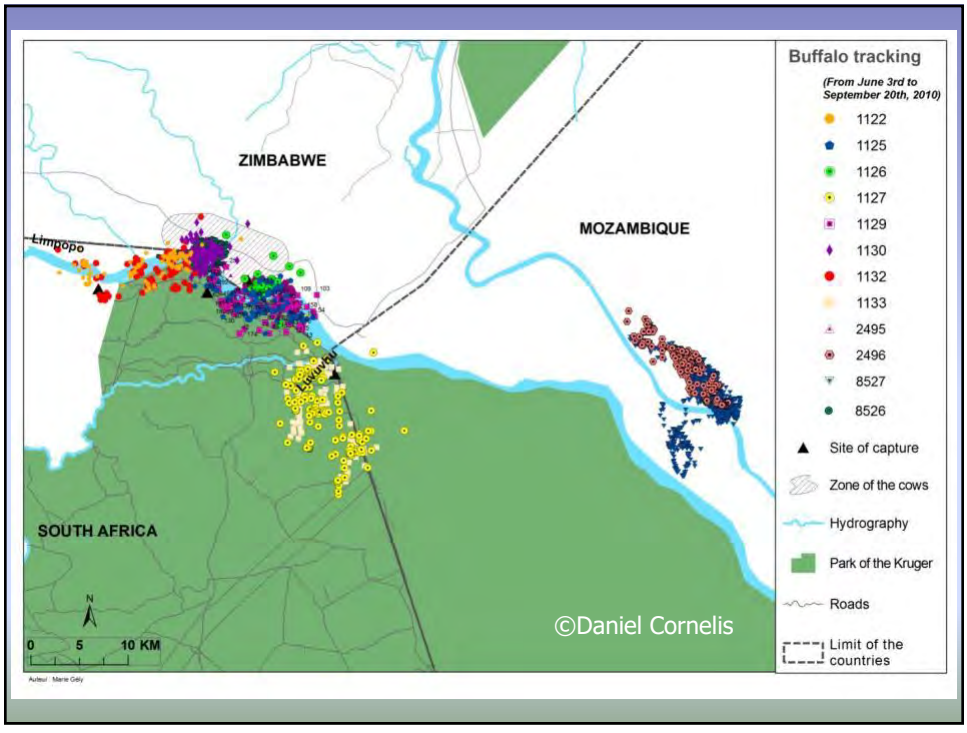
of birds.

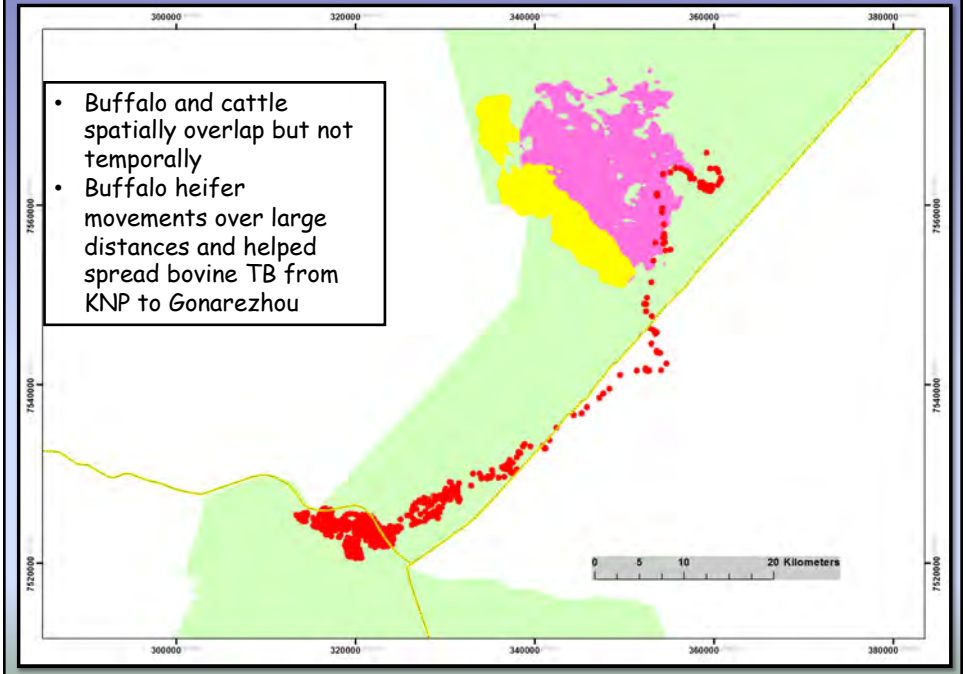
Are there reasons for conserving bats?

Most bats are valuable allies, well worth protecting. Worldwide, they are primary predators of vast numbers of insect pests that cost farmers and foresters billions of dollars annually and spread human disease. In the United States, little brown bats often eat mosquitoes and can catch up to 1,200 tiny insects in an hour. An average-sized colony of big brown bats can eat enough cucumber beetles to protect farmers from tens of millions of the beetle's rootworm larva each summer. Large colonies of Mexican free-tailed bats eat hundreds of tons of moth pests weekly.

Understanding disease interface risk – buffalo & cattle


Courtesy Lisa Marabini and Keith Dutlow
Malapati
Gonarezhou
Zimbabwe
Sengwe
Chipise
Dumisa
Samu
Davata
Chikwarakwara
Pesvi
South Africa
Kruger National Park
Mozambique
Masisi
Pafuri
Limpopo
Density of cattle tested
cattle tested/sq km
0 - 1
2 - 3
4 - 5
6 - 8
9 - 11
12 - 16
17 - 23
Dip tanks
Sengwe corridor - Disease survey
Kilometers
0 3 6 12 18 24
Prepared for the Peace Parks Foundation
by
Louis van Schalkwyk
July 2005
PEACE PARKS FOUNDATION
THE GLOBAL SOLUTION
Indian Ocean

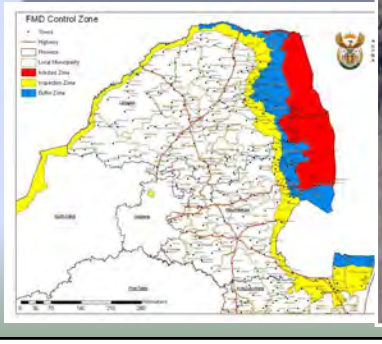

ZIMBABWE
MOZAMBIQUE
SOUTH AFRICA
Limpopo
Buffalo tracking
(From June 3rd to September 20th, 2010)
1122
1125
1126
1127
1129
1130
1132
1133
2495
2496
8527
8526
Site of capture
Zone of the cows
Hydrography
Park of the Kruger
Roads
Limit of the countries
N
0 5 10 KM
©Daniel Cornelis



The GLTFCA is an example of where F&MD regulations have had a restrictive effect on animal movement within and from the TFCA, which has impacted negatively upon local livestock-based livelihoods and wildlife-based enterprise alike.

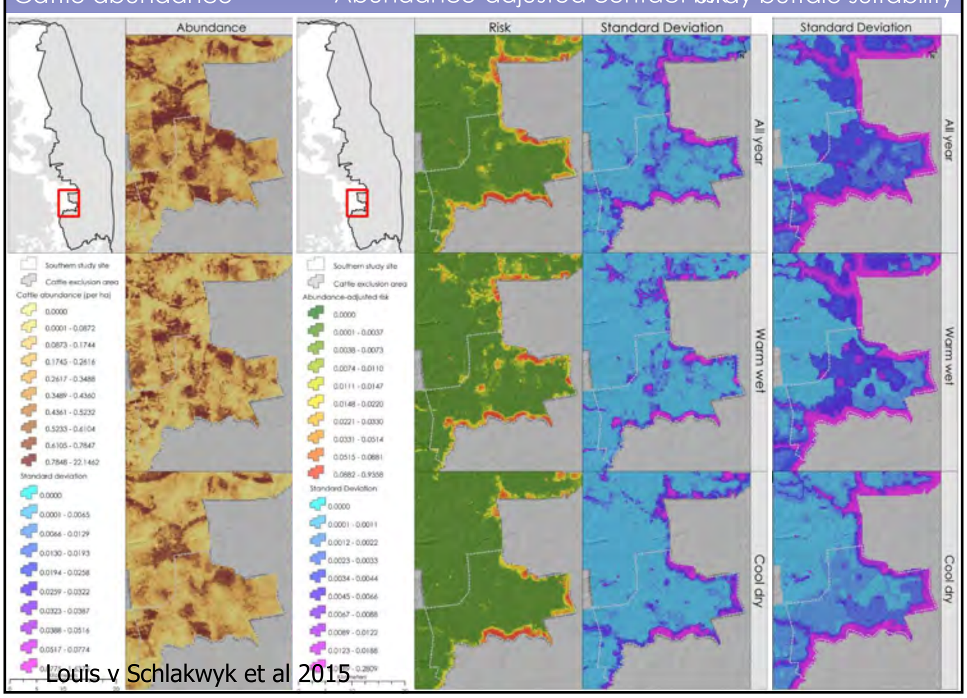
- Dynamic, area specific, risk-based management of animal diseases, particularly F&MD, at a local level is required
- This must be geared to addressing trade issues from the perspective of affected communities and stakeholders
- In this context, regulatory requirements focusing primarily on keeping cattle and buffalo apart will need to be re-assessed as both species make important economic and food security contributions to local, national and regional economies.

Could not demonstrate F&MD transmission between cattle and buffalo in boma situation – additional work being done to understand F&MD dynamics in cattle

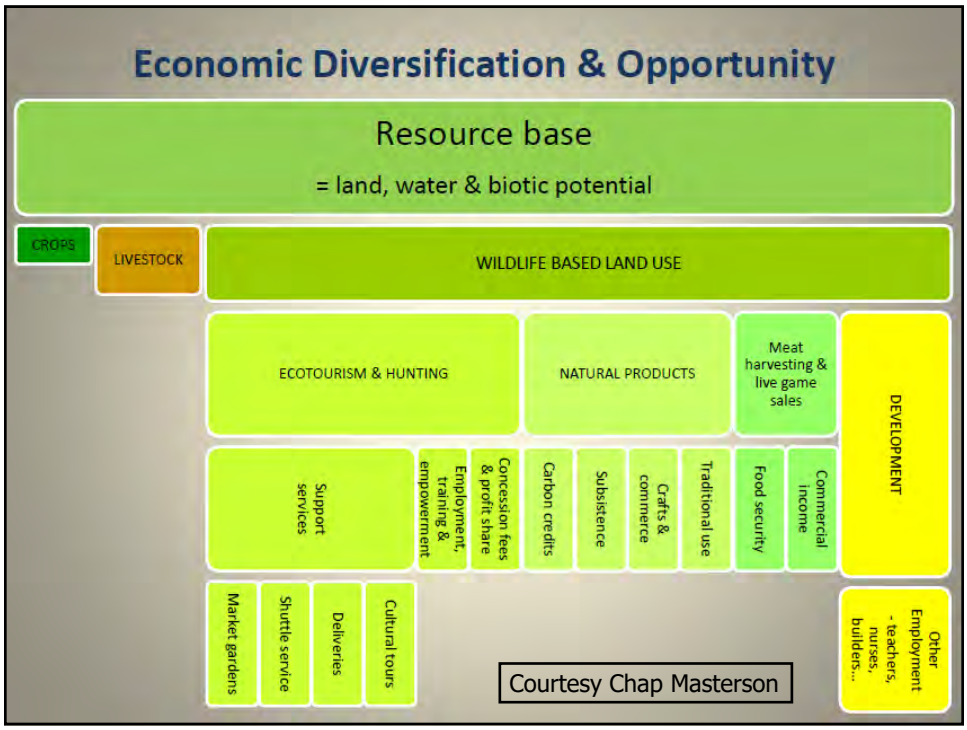


Buffalo F&MD transmission study

Cattle abundance | Abundance-adjusted contact risk | Stray buffalo suitability



Louis v Schlakwyk et al 2015


Economic Diversification & Opportunity
Resource base
= land, water & biotic potential
CROPS
LIVESTOCK
WILDLIFE BASED LAND USE
ECOTOURISM & HUNTING
NATURAL PRODUCTS
Meat harvesting & live game sales
DEVELOPMENT
Support services
Employment, training & empowerment
Concession fees & profit share
Carbon credits
Subsistence
Crafts & commerce
Traditional use
Food security
Commercial income
Market gardens
Shuttle service
Deliveries
Cultural tours
Other Employment - teachers, nurses, builders...
Courtesy Chap Masterson


People movement – most significant human disease vector in the GLTFCA
Courtesy Mike Kock

General health issues in humans – HIV, Human TB, GIT disturbances, Malaria, malnutrition, basic hygiene & cleanliness, food product storage and handling

Courtesy Clair Geoghegan

Cholera

Cholera Outbreak 2009:

- Affected tens of thousands
- Resulted in thousands of deaths in Zimbabwe and hundreds died in South Africa
- Rapid spread due to migrant movement (legal and illegal) from Zimbabwe
- Rivers contaminated flowing into KNP but no major outbreak in the camps due to water purification systems
- Communities to the west of the park badly affected

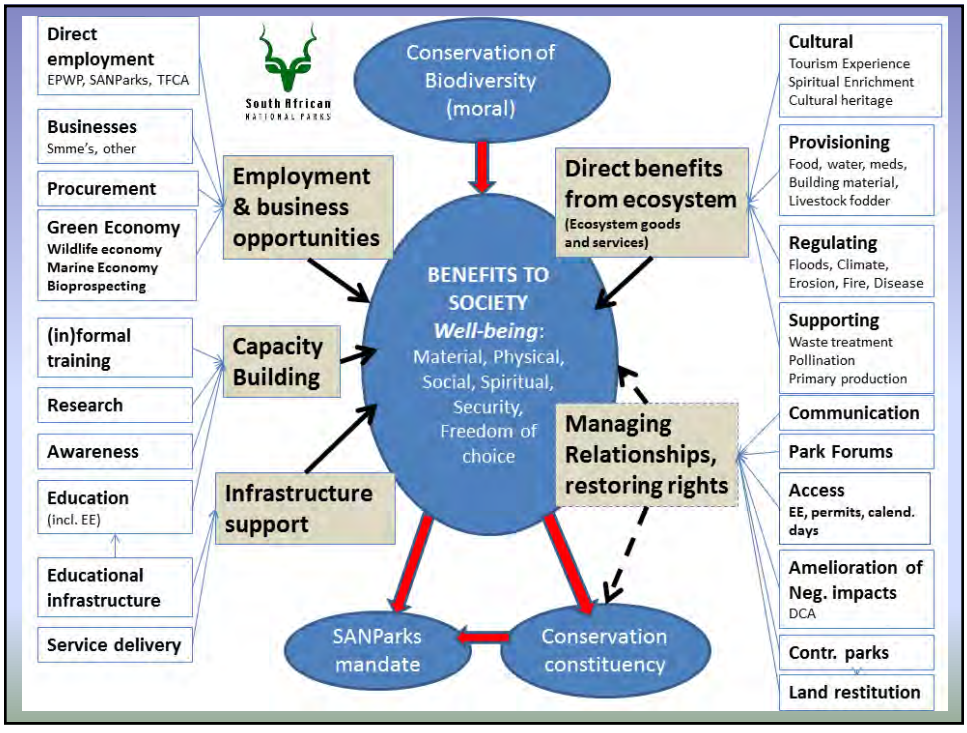
Courtesy Lucille Blumberg

A GLOBAL CHALLENGE

If we cannot adress the socioeconomic disparities and inequalities we will loose our biodiversity heritage to illigal wildlife trade – the biggest ecosystem challange (especially in a mammal context):

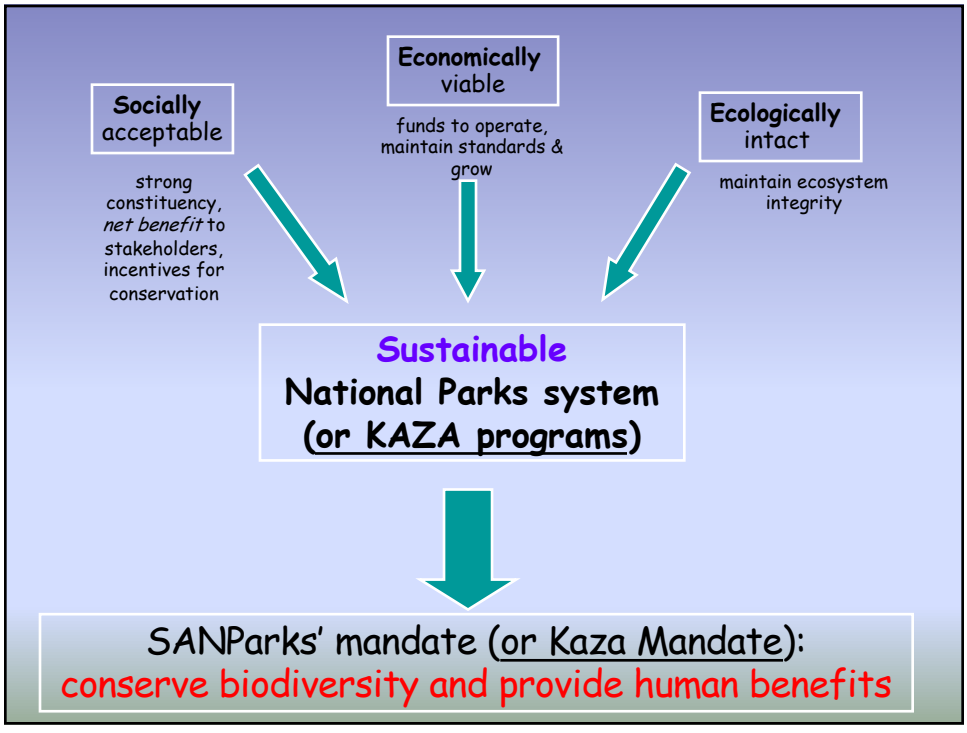
POACHING

Due to economic disparities within the countries organized crime have exploited the opportunities to harness poverty in communities much more effectively than formal government structures – this is a significant threat to the future of the TFCA – breakdown of TFCA collaboration and progress

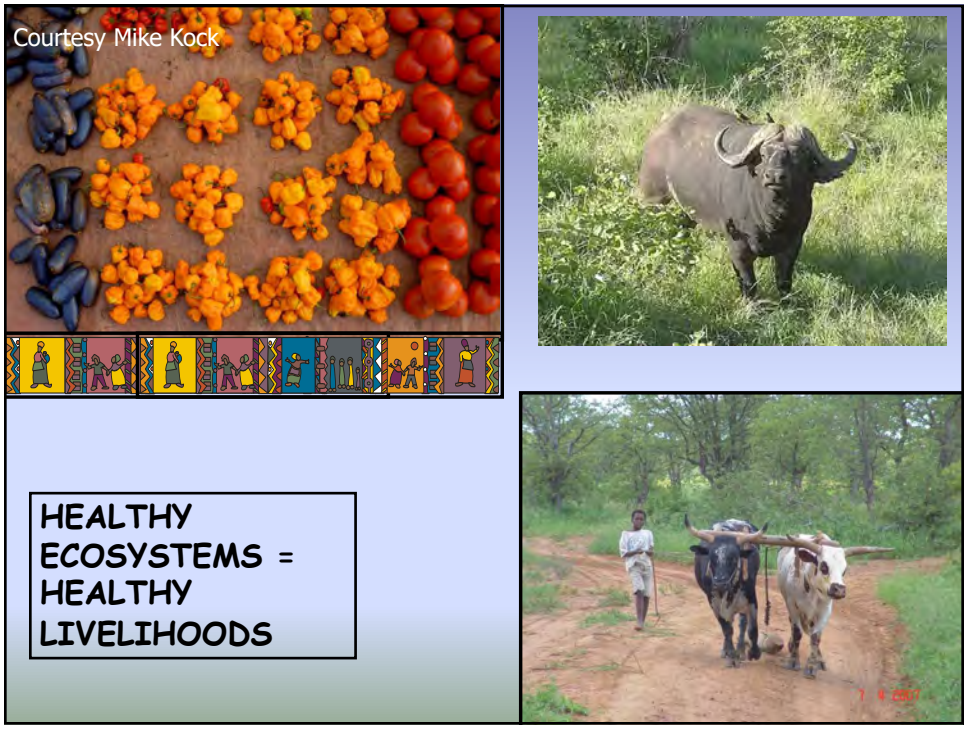


Conclusion & way forward:

- We have to be very aware of the socio-geo-ecological and economic drivers of Africa and how global drivers are affecting our ability to sustain conservation effort (and research) into the future
- African inhabitants (and global extractionists) will place ever increasing demands for ever dwindling resources and this in an unpredictable political environment (due to complete erosion of experienced and qualified & experienced leadership)
- A large percentage of promises/plans made are not achievable at the interface – creating unrealistic expectations and potential backlash from stakeholders to conservation (longer term) sustainable solutions requiring measured and sustained rational input to ensure sustainable integrated land use planning
- Regulatory environment completely incongruent at the wildlife / livestock / human interface – research and management interaction need to adress this
- Interdiciplinary, practical and applied research is needed to best adress these very basic of challanges at the livestock/human/wildlife interface (new approach to training and capacity buidling)




Understanding the basics will go a long way to finding practical solutions for the complex problems we face
6 4 2007


Courtesy Mike Kock
HEALTHY ECOSYSTEMS = HEALTHY LIVELIHOODS

Thank you and always remember to keep the bigger picture in mind!