

# Southern and East African Experts Panel on Designing Successful Conservation and Development Interventions at the Wildlife/Livestock Interface: Implications for Wildlife, Livestock, and Human Health

## **AHEAD Forum, September 14–15, 2003 Durban, South Africa**

### Working Group Notes

*Editors' note:* These Working Group Notes reflect brainstorming sessions held within the *AHEAD* forum. They do not necessarily reflect the official opinions of any of the institutions or sponsors involved in the forum. The listing of a particular organization anywhere below does not mean that that organization consented to participate in any particular activity; it simply means that a meeting participant felt that the listed organization was one that should be involved in the process to further develop project ideas being discussed (should those ideas move forward).

Each Working Group focused discussion on the following (please see World Parks Congress *AHEAD* Agenda on p.xv for the detailed instructions that were provided to working groups):

- Prioritized Protected Areas/Complexes
- Challenges and Threats
- Proposed Projects

WORKING GROUP	REGION(S)	PRIORITY AREAS SELECTED
<b>Group A</b>	South Africa and contiguous areas	Great Limpopo TFCA; Hluhluwe-Umfolozi; Shashe-Limpopo
Facilitator/Recorder: Roy Bengis/Philip Nyhus		
Members Day 1:	Paul Bartels, Koos Coetzer, Jacques Flamand, Wayne Getz, Markus Hofmeyer, Nick Kriek, Anita Michel, Banie Penzhorn, Wilna Vosloo	
Members Day 2:	Paul Bartels, Koos Coetzer, David Cumming, Raoul du Toit, Jacques Flamand, Chris Foggin, Wayne Getz, Markus Hofmeyer, Nick Kriek, Neo Mapitse, Anita Michel, Banie Penzhorn, Wilna Vosloo	
<b>Group B</b>	Botswana Namibia Zimbabwe	Four Corners; Etosha
Facilitator/Recorder: Mike Kock/Bob Cook		
Members Day 1:	Jan Broekhuis, David Cumming, Holly Dublin, Raoul du Toit, Chris Foggin, Guy Freeland, Neo Mapitse, Laurie Marker, Rowan Martin, Norman Mukarati, Gary Mullins, Chris Weaver	
Members Day 2:	Jan Broekhuis, Guy Freeland, Rowan Martin, Norman Mukarati, Gary Mullins, Chris Weaver	
<b>Group C</b>	Kenya	Ewaso-Laikipia; Tana
Facilitator/Recorder: Richard Kock/Elizabeth Wambwa		
Members Day 1:	George Gitau, Fumi Mizutani, Elizabeth Muthiani, Jacob Mwanzia, Jesse Njoka, Helga Recke, Kenneth Waitiru	
Members Day 2:	George Gitau, Simon Kinyaga, Tim Leyland, Fumi Mizutani, Elizabeth Muthiani, Jacob Mwanzia, Jesse Njoka, Helga Recke	

WORKING GROUP	REGION(S)	PRIORITY AREAS SELECTED
<b>Group D</b>	<b>Tanzania Uganda Albertine Rift</b>	<b>Gombe-Bwindi; Akagera Basin</b>

Facilitator/Recorder: Billy Karesh/Karen Laurenson

Members Day 1: Philippe Chardonnet, Sarah Cleaveland, Gladys Kalema-Zikusoka, Titus Mlengeya, Pete Morkel, Nicole Muloko, Craig Packer, Robin Reid, Chris Rutebarika, Innocent Rwego, Claudia Schoene, Sue Welburn, Michael Woodford

Members Day 2: Philippe Chardonnet, Gladys Kalema-Zikusoka, Nicole Muloko, Craig Packer, Chris Rutebarika, Innocent Rwego, Claudia Schoene, Sue Welburn, Michael Woodford

<b>Group E</b>	<b>Tanzania +</b>	<b>Greater Maasailand/Tsavo; Selous-Niassa-W. Tanzania</b>
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Facilitator/Recorder: Sarah Cleaveland/Elizabeth Muthiani

Members Day 1: Philippe Chardonnet, Holly Dublin, Robert Fyumagwa, Tim Leyland, Titus Mlengeya, Pete Morkel, Jesse Njoka, Robin Reid

Members Day 2: Philippe Chardonnet, Holly Dublin, Mark Eisler, Robert Fyumagwa, Tim Leyland, Titus Mlengeya, Pete Morkel, Jesse Njoka, Robin Reid

*Note: Working Group E grew out of an originally larger Working Group C.*

<b>Group F</b>	<b>Zambia Mozambique Malawi</b>	<b>Zambia-Malawi-Mozambique Triangle; Kafue</b>
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Facilitator/Recorder: Laurel Neme/Rod de Vletter (Day 1)/Victor Siamudaala (Day 2)

Members Day 1: Mark Eisler, Dale Lewis, Tim Leyland, Misheck Mulumba, Victor Siamudaala, Bartolomeu Soto

Members Day 2: Dale Lewis, Tim Leyland, Misheck Mulumba, Bartolomeu Soto

## WORKING GROUP A

**Region: South Africa and contiguous areas**

### Prioritized Protected Areas/Complexes

- 1) Greater Kruger NP Complex + TFCA partners (GLTFP)
- 2) Hluhluwe/Umfolozo NP
- 3) Limpopo/Shashe TFCA

Marikela NP  
Lebombo TFCA  
Madikwe, etc.

### Challenges and Threats

#### Rank 1: GLTFP: Greater Kruger NP Complex + TFCA partners

- Unfenced border, many people along edge, moving into reserve
  - There will be zones of less and less protection
  - Issue of management may be different on both sides of the border, although once underway management is supposed to be more similar on both sides
  - Diseases: tsetse/Nagana/sleeping sickness, BTB, *Brucella*, FMD, ASF, MCF, corridor/ECF, rabies, RVF, canine distemper, AHS, anthrax, *Echinococcus*, neosporosis/toxoplasmosis, EMC
- Should tsetse be managed?

Suggestion to organize by wildlife, livestock, human health problems:

**Prioritized health-related challenges/threats roughly ranked by importance**

Wildlife	Livestock	Human
BTB	FMD	BTB
Anthrax	Theileriosis	Anthrax
Rabies	MCF	Rabies
Distemper	BTB	<i>Echinococcus</i>
Trypanosomiasis??	Anthrax	Neosporosis/toxoplasmosis
RVF	ASF	RVF
	Tsetse	
	<i>Brucella</i>	
	RVF	

*Brucella*: not common but a lot of money invested in eradication

Rift Valley fever: seasonally every 15 years or so, Kruger on edge of range, comes when major flood events, wild animals can get infected (would be in all three columns). (Big outbreak in East Africa in El Niño 2000–2001, many human deaths)

***Chosen as a priority area because:***

- Important conservation area
- Human interaction – human conflict potential when opened up
- High political profile
- Classic example of multiple interactions at various levels
- Important economically – regionally and for the country
- Social, economic, security issues as well
- Q: wondering if option is to remove people or livestock as well
- Majority of parks will face fence-related decisions/issues
- Issue: regionalization of country
- Export zones – Southern Africa has some of the few countries with export zones
- What happens in Mozambique is going to be important – hard to control what is happening on other side of border, but can control on South African side as well
- Because of expanding areas, need to anticipate

**Rank 2: Hluhluwe/Umfolozi NP**

***Chosen as a priority area because:***

- Important tourist area
- Neighbours – high concentration
- Completely surrounded by communities
- One of the biggest rhino sanctuaries in world
- Different genetic pool of buffalo than Kruger GLTFP (FMD-free)

**Prioritized health-related challenges/threats roughly ranked by importance**

Wildlife	Livestock	Human
BTB	BTB	BTB
Rabies	Theileriosis	<i>Echinococcus</i>
Distemper	Trypanosomiasis	Rabies
	African swine fever	

### Rank 3: Limpopo/Shashe

*Chosen as a priority area because:*

- Transfrontier park with three countries
- Important linkage park
- Surrounded on two sides by local communities
- Has all aspects of wildlife – commercial, community
- Semi-arid, bushveld complex
- No buffalo
- Diffuse area

#### Prioritized health-related challenges/threats roughly ranked by importance

Wildlife	Livestock	Human
Rabies	FMD (Zimbabwe)	Rabies
Distemper	Anthrax	Anthrax
Anthrax	ASF	
ASF	MCF	

### Proposed Projects

#### Priority Area: GLTFCA

#### Project Title: “Monitoring and Management of Diseases in the GLTFCA”

##### Phase 1

Integrated survey of the major diseases and related elements common to wildlife, domestic stock, and people in the component regions of GLTFCA.

#### Key Questions to Address for Each Disease:

- What species are carrying BTB? What species are (maintenance) hosts?
- What is the current spatial distribution in GLTP of these species?
  - Where are they?
  - How are they moving around the landscape? (i.e., what is their basic biology and epidemiology?)
  - What is the spatial distribution of potential hosts? (e.g., are there potential gaps among species?)
  - What are the reservoirs and dynamics?
- What is status of BTB in human hosts? What is distribution of human habitation/activities?
- What is the susceptibility of people?
- What is the BTB status and distribution of livestock?
- What is the potential for spread – what are risks for areas that are not infected? (first need to determine above)
- What are potential management options?
- What information is necessary to make a decision?
  - Spatial: We need a better picture of the landscape at interface of three country borders
  - Need to look at land use patterns
  - Q: What to do when we have this information?

#### Important Considerations

This needs to be a regional project. It will not work if it is piecemeal. We need to identify what data we have and what data we need to gather.

## Possible Outcomes

Supply information essential for future decision-making for:

- National Regulatory Authorities
- TFCA Joint Management Board (JMB) and conservation agencies

## Additional Notes

- Need to understand the role of kudu in the epidemiology of FMD (brought up from Zimbabwe side)
- Considerable discussions around role of fencing on the Zimbabwe side of border and its impact on livestock, etc.; discussion of different scenarios
- Concern was expressed that as the parks become more and more connected, it will become more difficult from a regulatory standpoint to control disease (i.e., if the parks are connected, disease will spread). This will open up many challenges.
- Concern was expressed that there is a need to discuss social issues, that landscape is broken down into different land tenure types, etc.

## Additional FMD Projects

- Topotype status of buffalo in the three contributing countries
- The role of kudu as reservoirs and vectors

## Options for Control/Containment of BTB

The following were identified as currently existing strategies for control of BTB:

- Fences at interface (barriers)
- Total or zonal depopulation
- Vaccines
- Development of diagnostic tests for a range of species

The issue of fences (and their effectiveness) came up several times in discussions.

## Project Leaders/Coordinators

**Champion/Leader: David Cumming**

### Others:

Paul Bartels (Biomaterial Banking [WBRC])

Roy Bengis (SA Dept. Vet Services)

Chris Foggin (Zimbabwe)

Wayne Getz (UC Berkeley)

Markus Hofmeyr (KNP)

Nick Kriek (Onderstepoort)

Anita Michel (OVI)

Bartholomeu Soto (Mozambique TFCA Coordinator; to be confirmed)

## Priority Area: GLTFCA

**Project Title: “Disease Status in Wildlife, Livestock, and People in the Three Contributing Areas (South Africa, Zimbabwe, and Mozambique)”**

## Conservation and Development Importance

Zimbabwe claims to be BTB free. What is the status on the Limpopo?

What is the BTB status in wildlife populations and livestock in these three areas?

Does *M. bovis* occur in human populations? Should we check late-stage HIV/AIDS positive people? (sputum culture)

Need to look at Sengwe Corridor (foot and mouth also problem)

**(Why don't they want these diseases? – Tsetse fly and rabies are of risk to South Africa; BTB for Zimbabwe; BTB and foot and mouth to Mozambique)**

Assumption that if corridors/fences taken down, then by and large expect same diseases in entire area that may now be distinct (with caveat that some biological boundaries may limit some spread)

## **Objectives**

### **BTB surveillance**

- Sengwe – cattle sentinels (Zimbabwe side)
- Limpopo – cattle sentinels (Mozambique side)
- Includes western boundary interface

For all, should culture the organism and be able to type it – which strain is it?

### **Leaders**

Each country should do this – JMB Veterinary Subcommittee should be the leader of the work (subcommittee of the Conservation Committee). This relates just to this park.

Driven by Veterinary Subcommittee of JMB (this is just advisory committee).

Ideally, should have consortium of people, including government and academic (scientific consortium).

The people who would have to do this would be authorities or, if funds unavailable, funds raised by researchers, etc.

### **Basic methodology**

There needs to be a common protocol so not done in its own way in each country

Intradermal Comparative Tuberculin Test (cattle) / ? Gamma Interferon (buffalo)

(Cattle and buffalo; buffalo will be much more expensive)

People: culture (possible sputum culture), radiographs

### **Proposed timeframe**

One year if just animals, possibly longer if with people (for initial test)

Longer-term/follow-up monitoring necessary as well

### **Definition of success (monitoring/evaluation) during the project and at its conclusion**

Results – by doing this, possible to improve health of local communities, because better able to manage the health of the people and animals

Recommended outputs to JMB

Capacity of neighbouring countries (Zimbabwe and Mozambique) to monitor the disease will be enhanced

### **Key partners (governmental, communities, and otherwise)**

- Directorates of Animal Health
- Communities
- Consortium of academic institutions or NGOs
- Department of health
- Conservation committee

### **Political obstacles/vested interests that could impede project success**

Three different countries – political

(BTB and foot and mouth have had some impact on development of Peace Parks)

Politicians are concerned that disease may introduce disease/trade barriers

Issue of land-use planning – disease becomes less important if zoned. If fragmented, then everyone is exposed.

Must consider SADC (Southern Africa Development Community) objectives

Agreement by animal health regulators

### **Critical training needs for success and sustainability**

Community-based animal health technicians (two-week courses available, but need people)

### **Will new or improved legislation be needed for project success?**

There is already a joint treaty – a treaty has been ratified (improved legislation is in place)

### **Anticipated project communications needs/support (outreach, print media, radio, television, web)**

Argument is we want healthy cattle and to reduce the risk

Need to “win the hearts and minds” of local people

Need to convince local people (should be obvious that they die from this)

May be suspicion that if there is high incidence of disease, animals will be slaughtered.

Initially would have to purchase a sample of positive cattle for slaughter (research basis) to determine genetic differences. Will need samples from different areas if find disease in separate areas to see if same or different types.

Would need people who speak Portuguese because these areas are very remote

### **Budget (what funds are already available, from whom?)**

Transport, training and extension, subsistence, equipment, laboratory space, consumables, labor, salaries, compensation for slaughtered animals (purchase of animals), and coordinating committees

Limited funds available from Peace Parks Foundation budget

Limited funds available for strain identification from academic institutions

Directorate of Animal Health would cover western boundary

### **Prospects for long-term (post-project) success (sustainability)**

Not applicable, because depends on results of tests

May require repeat monitoring in the future

### ***Additional Discussion Points***

- Why do we want the Peace Parks? Increase pool of biodiversity, enhance livelihoods of local people.
- With our current technology, almost impossible to manage BTB.
- Discussion about who should do this – advisory group or informal group of scientific/NGO community.
- Roy mentioned value of survey – prevalence and primary detection survey (part of policy-making process). But Wayne and others brought up question of management – what can be done if BTB, etc. found? Are there options? Roy responded that currently we don't really have an answer, but valuable to have the information.
- Idea that “we have to accept” (Roy) that once the conservation areas are brought together (fences etc. brought down), the disease will become issue in all areas. Unless vaccine becomes available, really no way to keep from spreading to entire area.
- Need to come back to issue of containment – can/should it be done?

### **Priority Area: GLTFCA**

#### **Project Title: “Monitoring of Tsetse Fly – Expansion of its Range”**

### **Conservation and development importance**

If we allow the tsetse to come down through Kruger, we will have all the negative spin-offs and will lose cattle; possible to suppress if we know tsetse are there.

Tsetse in Gonarezhou and North of Save River

KNP and LNP are currently free

Need to try to limit to Zimbabwe side – can suppress if know it is there

### **Objective**

Surveillance of tsetse fly

### **Leaders**

Wildlife Unit, Zimbabwe Veterinary Services and Trypanosomiasis Control Branch

Mozambique Veterinary Services

RSA Vet Services – Kruger

### **Basic methodology**

Strategic traps and targets (it may be possible to manage the spread; possible to suppress but not possible to eradicate)

### **Proposed timeframe**

Extended monitoring (longer-term than for BTB)

## **Definition of success (monitoring/evaluation) during the project and at its conclusion**

Success = Results (Suppression of spread)

## **Key partners (governmental, communities, and otherwise)**

National Departments

Communities

Conservation Authorities

Academic institutions

## **Political obstacles/vested interests that could impede project success**

No, treaty has been ratified.

## **Critical training needs for success and sustainability**

Community-based-servicing and monitoring of traps/targets

Dipping of cattle in mobile traps

## **Will new or improved legislation be needed for project success?**

No

## **Anticipated project communications needs/support (outreach, print media, radio, television, web)**

Communication between regulatory agencies, animal health technicians, and communities

## **Budget (what funds are already available, from whom?)**

Transport, training and extension, subsistence, equipment, laboratory space (minimal), consumables, labor (higher than for BTB), and coordinating committees

## **Prospects for long-term (post-project) success (sustainability)**

Good

# **WORKING GROUP B**

**Region: Botswana, Namibia, Zimbabwe**

## **Prioritized Protected Areas/Complexes**

- 1) **Four Corners: Namibia/Botswana/South Western Zambia/Angola** (should consider) – includes Okavango Basin and north of the fence. *\*Note the addition of a new 1000km fence between Angola and Zambia. This fence, funded by the Netherlands, will be constructed soon to protect Zambian cattle from CBPP in Angola.*
  - Major TFCA
  - Heavy wildlife/human/livestock issue
  - High biodiversity
  - Changing environment
  - Elephant issues
  - Divergent government planning agendas
  - Fragmented migration routes due to fences
- 2) **Limpopo: (Great) Limpopo Basin – across Zimbabwe, Tuli, Gonarezhou**
  - Major potential as a TFA because livestock disease problems are transboundary, high biodiversity, unique environment, tourism, archeological importance
  - Veterinary issues- fence, FMD control, BTB, tsetse fly
  - In Zimbabwe, changing land-use pattern

- Heavily used by livestock, wildlife, and people
- Political momentum
- Zimbabwe issues: land resettlement, disease issues (FMD)

### 3) Etosha: Etosha watershed, Namibia

- Boom/bust environment (far west arid, Etosha semi-arid environment)
- Veterinary structures (fence) prevent flexibility to respond to game changes during different periods
- Major constraint on movement of animals due to veterinary restrictions (preventive measures)
- Area to be assessed for land redistribution

### 4) Zambesi: Middle-Lower Zambesi

- Veterinary issues: tsetse fly, illegal movement of cattle into area
- Overexploitation of water resources
- Illegal activity: poachers, bush meat movement and elephant poaching
- Settlement: people have moved into areas where they weren't before (unauthorized)

## Challenges and Threats

Need to emphasize not only health of wildlife, but also links with people and domestic livestock.

### Four Corners:

- One of the prime potential areas for development of TFCA. But very problematic because at the point of Zambesi, Chobe Rivers also where Namibia, Zimbabwe, Angola, and Botswana meet.
- Caprivi area where Rowan has worked is also an area with encroaching human settlements. Wildlife needs to travel into Botswana and back into Zimbabwe, but veterinary fences in 1995 and international fences block unimpeded movement of wildlife. In times of stress, animals don't have the ability to migrate but must now be permanent.
- Caprivi strip
- Zimbabwe/Botswana interface: moves to establish a corridor between Four Corners and Kafue National Park in Zambia. No FMD from Zimbabwe side. \*Note new fence mentioned above.
- Northern Botswana: four major protected areas. Elephant populations 123,000 in Botswana with 122,000 in this area.
- Elephants concentrated along Namibian border.
- Interface largely on the outside of this system.
- Major veterinary fences from the east and west with parts currently being completed. The remaining fences are outside the area, but have an effect on animal movement. One of the major fences (in the west) is to be removed due to protests about the inability of animal movement, but removal has been deferred. The west fence was first constructed to contain CBPP, but failed to do so.

### *The fence:*

All obstructions to wildlife in this western area should be removed. This corner of Botswana is being controlled for the sake of a few cattle, and this is not effective.

International boundary fence is the issue – should drop the idea of having an export zone in this area. Can keep cattle and wildlife together by vaccinating the cattle.

### What are the issues that have a health component (at interface), i.e., root causes of policy?

- Policy issues
  - Perverse policy problem in this area, which challenge both animal (domestic and wildlife) and human health.
- Understanding the resource base/interactions
  - Too many people, too few resources in the area
  - Inefficient use of resources
- Sustainable livelihood options
  - Sustainable livelihood issue – 68% of people in this area live below poverty level. Equate poverty with ill health and then an unhealthy ecosystem.
  - For whatever reasons, they are unable to explore the breadth of the sustainable livelihood options.
- Administrative and political complexity, capacities vary greatly between the countries
  - Include governance, financial resources, capacity of governments to deal with livestock diseases
  - Botswana has much more capacity (stable and financially sound) than Zimbabwe for example.

- Elephant issues will impact on endangered species (rhino), nutritional components.
- Animal movement, especially on Namibia side, bottleneck in west Caprivi
- Illegal activity, i.e., poaching on eastern side.
- Specific health issues, disease and control (direct and indirect)
  - CBPP
  - FMD
  - Tsetse/trypanosomiasis
  - Malaria
  - HIV/AIDS (42% of human population in this area; higher rate of human TB).
  - Human TB
  - Tapeworm (*Cysticercus bovis*)
  - *Theileria*: uncertain if it is a problem, maybe in Zambia side.
  - Anthrax: Significant issues will increase due to extensive elephant environmental destruction. Not yet recognized as a significant problem. Zoonotic potential makes this relevant to departments and governments.

### **Disease Control Priorities:**

- FMD
- CBPP
- Tsetse and Trypanosomiasis

**Zimbabwe:** need for institutional capacity to address

**Limpopo Basin TFCA:** extends through eastern Botswana, southern Zimbabwe, western Mozambique, Kruger in northern South Africa

#### **Issues**

- TFCA agenda (top-down approach and being “steam-rolled” by politicians)
- Private sector and security fencing as well as veterinary issues; security fence along northern South Africa
- FMD topotypes, differing status of buffalo in the region
- Botswana on west is FMD negative for buffalo. Cattle may be positive – Zimbabwe buffalo from Hwange are probably FMD carriers and kudu are also suspect. Cattle have been infected, but may be a carrier cattle situation from Zimbabwe communal land cattle.
- Tsetse/trypanosomiasis reincursion
- *Theileria*
- BTB: *M. bovis* moving into southern Zimbabwe from South Africa; action or inaction (is there anything to do to stop it?)
- Land resettlement/tenure issues
- Land restitution claims/court action
  - Property rights issues/settlements are big issue
  - Indigenous peoples want to resettle lands or restitution.
- Illegal activities (poaching)

### **Overarching prioritized issues:**

- Animal disease/human diseases
- Human resource issues (poverty)
- Policy issues
  - Lack of internal incentives to participate (a top-down directive)
  - Mozambique and Zimbabwe
  - Namibia (4 corners) and Zimbabwe policy change will be a long, slow process
- Lack of common vision
- Discrepancy in government agency ability to deliver capacity
- Resource access rights

### **Etosha**

Challenges and threats to health at the interface:

- Anthrax has existed for hundreds of years; may not be a threat, just endemic; tourists don't really come into contact.
- Porous fencing allows wildlife to mix with livestock on the northern and western border.
- FMD control: cannot use Etosha game for restocking due to this.

- Transmission of disease from domestic animals to wildlife (rabies, distemper)
- FIV? in lions not fully understood, don't know if it will impact the population.
- Lack of vision on part of Veterinary Services-not enough adaptive management on disease issues (buffalo).
- Predation of livestock by wildlife (problem animals) provokes public reaction. Commercial farmers kill wildlife.
- Birds and fish: no outstanding threats
- Perverse incentives

### Most pressing ETOSHA issues

- FMD control protocols:
  - LOME Convention influences export markets
  - Heavy subsidies from EU of meat prices.
- Failure to adapt veterinary policies to changing needs
- Rabies

## Proposed Projects

### Priority Area: Four Corners TFCA

#### Project Title: "Examination of Policy Issues Related to Disease Control and Potential Formation of a TFCA"

**Project 1a:** Examine current veterinary policies vs. land use in Namibia and Botswana. Establish dialogue by working with IUCN Regional Office (IUCN - ROSA) and the IUCN Veterinary Specialist Group, IUCN Antelope Specialist Group.

Issues include:

- Veterinary Departments respond to government policy to maintain export market, may need higher-level government engagement.
- Creating TCFA may take 3-5 years to be successful. Cannot be perceived as NGO driven.
- Should involve:
  - Ministry of Finance (are interested in export market income)
  - Ministry of Agriculture - Veterinary Department
  - Ministry of Environment - Wildlife Department
  - Stakeholders (landowners)
- Need to incorporate into larger Four-Corners partnerships, including Angola, Zambia (even more so with the construction of the new fence), and Zimbabwe.

**Project 1b:** Research/information gathering on the viability of the resource-return from wildlife to run concurrently with Project 1a to provide the data to feed into Project 1a to substantiate direction.

- Being done in Namibia
- RAMSAR site in Botswana - IUCN-Okavango management plan
- Need to do a disease assessment in all partner countries

**Project 1c:** Study of scenario with/without export zone in Ngamiland fences

- To include alternatives to export zone
  - Corridors
  - Wildlife movement
- If exclude export zone, must demonstrate benefits to people

**Project 1d:** Study of FMD ring vaccination efficacy. Word is that there is no good vaccine. Cross-cutting project.

### Project Outline

*Preamble:* The present veterinary control policies and strategies are inimical to the optimal development and sustainability of a major TFCA of the Four Corners and buffer areas.

- A. Why does this challenge/threat need to be addressed?
  1. Sustainable livelihoods/poverty reduction-wildlife development to full market value (by reducing veterinary restrictions)
  2. Development of major TFCA-must address disease control relationship.
- B. What needs to be done? ***Change policies to create an effective TFCA***
  1. Gather existing information

2. Gap analysis: create focused studies to argue the case and develop options
    - a. Export zone issue in Botswana and the overall value of the cattle industry – indications that there is a major review of the Botswana cattle industry.
    - b. Economic multiplier studies
  3. Create forum using IUCN ROSA- facilitator (other groups?)
  4. Bring key parties to the table- to discuss the disease and health issues related to the development of TFCA using IUCN
  5. Examine general veterinary policy as these affect wildlife
  6. Forum would meet with the two Ministries and two Departments of the five countries. Might consider first meeting between Namibia and Botswana (where veterinary concerns are greatest) and then expand to the five countries. Invite secondary stakeholders as appropriate.
- C. Who will lead the work? To be decided
- D. Major players:
1. Finance Ministry
  2. Agriculture Ministry
  3. Wildlife Department
  4. Veterinary Department
  5. Secondary stakeholders
    - a. NGOs – IUCN-ROSA AND SSC-VSG, WCS, AWF and others
    - b. Landowners and farmers
    - c. Community constituents
    - d. Local government officials
    - e. Peace Parks
    - f. IUCN
    - g. World Bank?
    - h. USAID
- E. How will the work be done (i.e., basic methodology)?
1. Gap analysis
  2. Gather data
  3. Collect data
  4. Analyse data
  5. Policy process: forum may commission some of the data gathering and collection, which may run concurrently.
- F. Timeframe: 24 months (?) – important to be gathering data immediately, urgency is to have information as soon as possible (within one year) to influence policy.
- G. Michael Kock coordinating with other key members (may want Jon Barnes to do initial study to look at feasibility, strategic plan, etc.)
- H. Measurements
1. Changing veterinary policies
  2. Fence removal or realignment (corridors)
  3. Establishment of the TFCA
  4. Wildlife census: measuring increases in wildlife populations may be an indicator of success of fence removal and TFCA formation (need to examine indicators more thoroughly).

5. Human health benefits: communities and livelihoods

**Goal: To realize the full potential of the Okavango/Upper Zambezi ecosystems for the enhancement of biological diversity and sustainable human livelihoods.**

**Objective:** To promote an enabling policy environment

**Activities:**

- Provide information, advice, and technical support on the health of people, livestock, and wildlife.
- Inform policymakers of different land-use options and their relative advantages; by which multiple countries will agree on the establishment of the TFCA.
- Perform veterinary assessment: disease issues analysis/cost-benefit analysis of various land-use options
- Create an enabling environment to realize the potential of the natural resources for the area's stakeholders (balance in land use).

## WORKING GROUP C

**Region: Kenya**

### Prioritized Protected Areas/Complexes

#### 1) Ewaso Nyiro Basin (Laikipia to Habaswein)

- Holds endangered species
- Pastoral systems
- Ecosystem is unhealthy
- Important disease corridor, high poverty and conflict levels

#### 2) Tsavo ecosystem

- An important component of a transboundary system
- Pastoral conflicts
- Livestock movements
- Disease corridor
- Good biodiversity value, can hold mega herbivores
- Large protected area

#### 3) Tana Basin

- High biodiversity
- Disease corridor
- Conflicts/poverty
- Pastoral systems
- Added value of marine/forest (mangrove, riverine, and coastal ecosystems)
- Lack of protected areas, so vulnerable

#### Notes

- Ecological zone I and II
- Ecological zone III (humid): Ruma
- Ecological zone IV (subhumid): Nairobi NP, Thika, Kongoni, Maasai Mara, Laikipia, Marsabit, Nakuru, Shimba Hills Mwea (high livestock production, high wildlife numbers)
- Ecological zone V (semi-arid): Samburu, Isiolo, Ewaso Basin, Mathews range, Tsavo, Amboseli, Kora, Meru, Taita, Baringo
- Ecological zone VI (arid): Sibiloi, Losai

#### Significance

**Nairobi National Park:** The survival of wildlife is threatened. The surrounding ecosystem is being destroyed and the corridor is eliminated by settlement.

**Maasai Mara:** It holds a large number of wildlife and there is potential for the spread of transboundary diseases.

**Laikipia:** Increasing wildlife activities, important species such as hunting dogs, hartebeest present in this ecosystem, and they could be eliminated by a disease threat.

**East Tana/Lamu:** Have endangered species and rich biodiversity such as rare Tana red colobus, mangabey, sea turtles, and hirola antelope.

**Nakuru:** A closed system, big populations of species that need to be managed, an important Ramsar site.

**Tsavo/Amboseli:** Animal populations depressed through disease and poaching. It is linked to other cross border systems, like Somalia and Tanzania.

**Samburu:** Has endangered and special species such as Grevy's zebra, oryx, etc. The system is pastoral.

**Meru/Kora:** Second largest protected area system in the country. Populations are very depressed due to poaching, disease, and resource competition with livestock.

**Baringo and Bogoria:** Very small populations of wildlife.

## Challenges and Threats

The criteria for ranking the areas of importance were: Health and impact of investment on biodiversity, livestock and human livelihoods/health.

### Rank 1: Ewaso Basin (Laikipia to Habaswein)

- Has relatively better infrastructure, closer to markets
- High wildlife/livestock potential
- Disease control and livestock/wildlife/human health important to improve food security and livelihoods, reduce poverty.

#### Challenges

- Policy/legislation on the use and marketing of livestock/wildlife to improve benefits from both sectors
- Lack of data, capacity, and infrastructure to guide policy
- Poverty – need for livelihood diversification.
- Increase in wildlife on plateau due to changes in land use and security
- Animal health delivery services need improvement, but wildlife services and private/community wildlife services improving
- Decline in certain species, e.g., Laikipia hartebeest and Grevy's zebra; endangered species (possibly related to disease, parasites, RVF zone)
- Public health issues with bushmeat
- Lack of organized livestock marketing systems

#### Threats

- Declining water resource due to land-use change and poor water capturing.
- Limited access to forage due to conflicts/insecurity. Decrease of wildlife in the lowlands caused by increased competition for resource.
- Increased contact at interface between people, livestock, and wildlife especially in Laikipia due to increasing human population and settlement, increased agricultural activity and livestock (goats, camels, sheep) numbers; therefore, overall land degradation around settlements leading to unhealthy animals and new emerging diseases
- Specific disease threats associated with dynamic transboundary movements especially of livestock. Corridor for livestock from Ethiopia and Somalia to Nairobi, threat of spread of diseases such as rinderpest, CBPP/CCPP, PPR.
- Possibility of introduction of disease into protected areas (e.g., Meru ecosystem) through translocation.

### Rank 2: Tana River Basin

- Rich in biodiversity but security and infrastructure is poor.
- Community richer (relatively) and habitat degradation slightly less advanced.
- Less time imperative

#### Challenges

- Policy/legislation on the use and marketing of livestock/wildlife to improve benefits and equity of distribution from both sectors.
- Lack of data, capacity, infrastructure, and awareness of the community.
- Addressing biodiversity threats to species such as antelope (Hirola and Topi), carnivores (e.g., wild dogs), and primates.

- Restoration of Meru NP involving translocation of animals into the area with potential for introduction of disease.
- Interference with water catchments area around protected areas such as Meru ecosystem and pollution of water sources.
- Improved livestock marketing to address poverty.

#### **Threats**

- Limited access to water resources and pollution at the headwaters. Excessive extraction of water. Marine ecosystems exploited (fishing and oil) and presence of settlements and agriculture along rivers a threat to biodiversity.
- Disease threats: rinderpest, PPR, tsetse, tick-borne diseases, CBPP/CCPP, FMD, ECF, *Brucella*, BTB. Still a lack of data on many of these diseases.
- Increased human populations, and decreased livestock (except camels) and wildlife populations. Subsequent land degradation where there is concentration of people associated with bush encroachment due to declining elephant numbers and climate change; therefore, loss of grazing land.
- Refugees and government settlements disrupting local people, threatening land tenure and creating insecurity.
- Livestock movements and translocation of wildlife causing possible threat of disease introduction.

#### **Karamajong Cluster**

- Advanced species extinction
- Disease issues: CBPP, CCPP, FMD, rabies, tick-borne diseases, etc.
- Insecurity
- Lack of markets, infrastructure, data and capacity to provide policy direction

#### **Rank 3: Tsavo/Amboseli ecosystem (moved to Group E\*)**

- Livestock trade, illegal grazing in protected areas, and use of area as a livestock corridor
- Disease threats to wildlife: rinderpest, PPR, anthrax, canine distemper, rabies, others
- Livestock disease threats: FMD, CCPP, intestinal parasites, etc.
- Habitat change
- Bushmeat: public health threat
- Pollution of Galana-Athi River from Nairobi

#### **Cross-Cutting Issues**

- Veterinary and livestock production services are poor. Need to improve herd health and nutritional management services to pastoral communities. Need to develop participatory methods.
- There is lack of data on ecosystem health such as epidemiology of diseases, dynamics of the ecosystem in relation to change, vegetation, etc.
- Need to develop livestock marketing/export systems.
- Benefits from livestock through better marketing systems and wildlife through policy change (ownership), equity in benefits sharing
- Livelihood diversification
- Competition for water and forage resources

## **Proposed Projects**

### **Priority Area: Ewaso Basin (Laikipia – Habaswein)**

#### **Project Title: “Ewaso Basin Development Project Through Improved Ecosystem Health”**

*Note: An important assumption is that water projects stalled within the government will be reactivated.*

See next page.

Challenge/threat to be addressed and why	Goal/objective	Basic methodology	Lead organizations	Time frame	Estimated budget (US \$)	Project champion
<b>Policy and legislation</b>	Reduce burden of current animal health legislation on pastoral systems and refocus  Equitable distribution of benefits accrued from wildlife resource with responsibility over the resource	Establish a lobby group  Establish a database to achieve policy change	AU-IBAR	3–4 years	\$1 million	George Gitau
<b>Livelihood diversification</b>	Improved livelihoods and incomes in pastoralist communities	Encourage community-based wildlife enterprise/use (consumptive and nonconsumptive)  Promote sustainable use of natural resources (e.g., honey, gums and resins, medicinal plants)	Private sector/NGOs	Phase I: 3 years	\$500,000	Fumi Mizutani
<b>Improve current livelihood strategy</b>	Improved livelihoods and incomes in pastoralist communities	Exploration of new markets/systems (export zones)  Adding value to products (processing milk, meat, etc.)  Improve wildlife/livestock/human health (veterinary services, drug availability, community education, etc.)  Identify strategic partners to improve banking and micro-finance for communities	AU-IBAR  KARI  MOLD/KWS  NGOs	5 years  3 years  3 years  1 year	\$250,000  \$250,000  \$600,000  \$50,000	Richard Kock

#### Indicators:

1. Support data for required changes presented by lobby group to policymakers in annual updates/briefs
2.
  - a) Awareness about possible wildlife-based enterprise raised in 10 communities over the first year. Monitoring systems introduced at minimally five representative communities on wildlife impact on livestock systems simultaneously and data assessed over a minimum 2-year period.
  - b) Viability studies on income diversification from other natural resources carried out within the first two years and best choices/practices introduced to about five selected communities by the end of year three.
3.
  - a) Economic and ecological viability of various marketing outlets such as export zone/slaughter houses/cooling facilities, etc., in the Ewaso Basin assessed within first year (partly on-going).
  - b) Strategy to expand existing expertise on processing of livestock products to Ewaso Basin developed within first 6 months. Resources solicited and strategic partners contracted to implement at least three pilot projects at community level before end of year 2. Progress and impacts at household and community level monitored over a minimum of two years.

- c) Improve wildlife/livestock/human health (veterinary services, drug availability, and community education, etc.). Awareness campaigns about prevention, diagnosis, and control of common livestock diseases and related public health issues carried out in a minimum of 25 communities within the first year. Veterinary Department staff (Ministry of Livestock Development) and KWS Veterinary Unit augmented through establishment of specialist units to ensure sustainable delivery of veterinary services, drug availability, and community education within 2 years. Collaboration between the veterinary specialist unit and agricultural extension staff fostered to enhance livestock productivity and impact at household level, monitored annually.
- d) Establishment of micro-finance schemes through NGOs or CBOs, monitored after 18 months, in a minimum of five communities. Reasons for success or failure assessed and remedial action taken before end of year 3.

*Note:* A similar project should be implemented for the Tana basin, with a stronger focus on disease transmission and recovery of biodiversity.

## WORKING GROUP D

**Region: Tanzania, Uganda, Albertine Rift**

### Prioritized Protected Areas/Complexes

#### 1) Gombe/Bwindi

- Typifies “island” ecosystems in a sea of cultivation and high human density with a hard edge
- Great ape and human health issues foremost

#### 2) Greater Maasailand/Serengeti

- Typifies intact migratory ecosystems in a sea of pastoralists with a generally softer edge for wildlife
- Pastoralist and livestock health linkages with wildlife and wildlife utilization foremost

#### 3) Selous/Mikumi

- Intact ecosystem, large populations of endangered species (rhino, elephants, wild dogs)
- Migration routes
- Health issues: migration and livestock movements
- Giraffe ear disease

#### Potential areas for project development

- Bwindi/Gombe
- Mahale
- Parc National de Virunga
- Parc de Volcanes

Justification for all: Great ape area, Albertine Rift, high biodiversity, areas with severe threats and encroachment

**Greater Maasai Land:** (including Serengeti ecosystem, Loliondo, NCAA, Mkomazi, Tarangire, southern Kenya)

Pastoralist areas

Justification: Abundance, intact migratory system, World Heritage, interaction with pastoralists. Large interface between wildlife and livestock and people (zoonotic diseases). Prime example: buffer for rinderpest spread south from remaining foci in Horn of Africa, i.e., sentinel region. History of CBNRM and synergy between these approaches

Karamoja: pastoralist area, unrest

**Lake Mburo:** FMD focus. Also BTB, brucellosis.

**Queen Elizabeth:** BTB/FMD situation very different from Kruger, trypanosomiasis, fishing, cobalt mining Akagera basin, savannah and wetland and transfrontier wildlife migrations

**Budongo forest:** Not protected, poaching, close to Murchison, rinderpest, game ranching starting

**Selous/Mikumi:** Miombo migratory routes into southern Africa/ Mozambique. Intact ecosystem. Important populations of rhino, elephants, and wild dogs. Development threats: transport routes. Ear disease in giraffe.

**Nyungwe-Rwanda:** diversity of primates, Eastern Arc Mountains: biodiversity hotspots, endemic species, high human population pressure, little protection

**Issues:** General approach to problems

- *Hard Edges*: Valuable isolated patches of high-value land/cultivation and human density “sea,” unfenced (compared with areas of southern Africa)
- Gombe and Bwindi typifies problems of this issue faced by Virungas, Budongo
  - Great apes
  - Agriculture/alternative land uses
- *Soft Edge* (Hard Edges too): Functioning (migratory) ecosystems; hosts are vectors and sentinels. Sea of pastoralists.
  - Greater Maasailand/Serengeti, Selous
- Human health issues? Cross-cutting

How to set priorities? Ecotourism value, exceptional natural resource, but debate relative merits

Picking representative areas of general problems

Islands

**“Votes”**

Gombe . . . . .	7
Bwindi . . . . .	7
Virungas . . . . .	5
Eastern Arc . . . . .	2
N Crater . . . . .	1

**Migratory/intact ecosystems**

Maasailand/Serengeti Ecosystem . . . . .	13
Selous/Mikumi . . . . .	7
Akagera/Lake Mburo . . . . .	6
Bwindi . . . . .	1

## Challenges and Threats

### Rank 1: Bwindi/Gombe

1. *Lack of knowledge and capacity*

- Intervention
- Prevention, particularly in wildlife sector health issues
- Poor diagnostic services
- Lack of employment for trained wildlife disease personnel

2. *Public health issues*

- Poor services
- Impact of HIV on society
- Zoonoses and anthroozoonoses
- Lack of health knowledge for communities
- Lack of sanitation
- Refugee issues; societal disruption, poverty, lack of ownership of resources
- Different cultural attitudes
- Tourist health

3. *Land use and hard edges*

- Human/wildlife conflicts, crop raiding, human attacks
- Fragmentation

4. *Small population problems*

- Inbreeding
- Fragmentation
- Primate health and impact of disease

5. *Wildlife utilization*

- Primate consumption (particularly refugees) ???

Bycatch from snaring  
Rehab of confiscated animals from illegal trade (chimps, gorillas)  
Trading route for international trade

6. *Political awareness of issues*

**Rank 2: Maasailand/Serengeti**

1. *Wildlife/domestic animals- contact in and outside protected areas*

Crop damage  
Livestock predation  
Blockage of migration routes and wildlife movements

2. *Link between human poverty and public health and impact on wildlife* (through low livestock numbers and demand for bushmeat)

Human disease zoonoses particularly for pastoralist communities, e.g., BTB, brucellosis; reservoirs

3. *Land use conflicts*

Habitat degradation by livestock overgrazing and tree felling leading to poor habitat for wildlife  
Agricultural encroachment

4. *Lack of capacity/knowledge*

Lack of epidemiological knowledge  
Lack of public awareness of health/conservation  
Lack of coordination between responsible agencies (protected area management, other governmental organizations, agriculture, health agencies, NGOs; e.g., rangeland, conservation agencies)  
Lack of transboundary communication  
Lack of capacity to implement management actions (skill sets, equipment, staffing levels)

5. *Other issues*

Small populations problems, e.g., rhino (inbreeding)  
Human disturbance  
Intensification/restriction of movements of livestock and wildlife leading to increased parasite loads  
Cattle trading movements poorly understood  
Coordination of carnivore health programs within ecosystem, including transboundary  
Public health  
Incorporation of health issues into wildlife management area  
Evaluate potential areas where hard edge needs to be defined  
Infrastructure and equipment needs (local and regional level)

6. *Political awareness*

Regional, national, local government  
Protected area managers

**Rank 3: Selous/Mikumi**

*Lack of knowledge of issues*

Giraffe ear  
Lack of capacity  
Encroachment across border with Niassa  
Cattle trading route to southern Tanzania  
Sleeping sickness in people in southern area: periodic outbreaks, wildlife reservoir? (issue of link with Akagera and Bwindi)  
Human predation by carnivores (lions, crocodiles)

## Proposed Projects

**Project Title:** “Linking Human and Great Ape Health to Improve Conservation Effectiveness and Human Health and Livelihoods”

### Objectives:

**1. To improve public health of communities that are in contact with great ape protected areas “human health for wildlife health”**

Primary health education including HIV prevention  
Identify and prioritize gaps and limiting factors for implementation (e.g., infrastructure, transport)  
Improve capacity to carry out recommendations  
Improve intersectoral collaboration at all levels

#### Champions:

**Uganda:** Conservation Through Public Health (CTPH) (Gladys), (Mountain Gorilla Veterinary Project) (MGVP) (Innocent)

**Tanzania:** TANAPA (Titus), Jane Goodall Institute (JGI) (Anne Pusey)

#### Key Players/Partners:

**Uganda:** Uganda Wildlife Authority (UWA), Ministry of Health, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), district local governments, IGCP, health NGOs, National TB and Leprosy Program, universities, Healthnet Uganda, Uganda LIRI (Tororo), Uganda Virus Institute, CARE, PACE, Mgahinga and Bwindi Forest Conservation Trust (MBIFCT), Mountain Gorilla Conservation Fund

**Tanzania:** TANAPA, Tanzania Wildlife Research Institute (TAWIRI), Ministry of Health, JGI, Japanese, Frankfurt Zoological Society (FZS) (EU project), University of Dar es Salaam, Lake Tanganyika Catchment Reforestation and Education program (TACARE) (reproductive and gender issues), United Nations High Commissioner for Refugees (UNHCR), PACE

#### Methodology:

CTPH and Uganda partners to link with JGI  
Workshop to scope project  
Identification of messaging systems for public health education  
Effective tools for messaging  
(Messaging methods from Winne Msoni at Dept of Women & Gender Studies, Makerere University). Baseline surveys of households and mapping (GPS) and attitudes and knowledge, household social and demographic characteristics, divide into different media (e.g., schools, radio, pamphlets, house-to-house), PRA and questionnaire methodology

**2. To improve occupational health of protected area and research staff**

**Champion:** Innocent/MGVP

#### Key Players/Partners:

**Uganda:** CTPH, UWA, MGVP, International Gorilla Conservation Program (IGCP)

**Tanzania:** JGI, TANAPA

#### Methodology:

Use MGVP model from Rwanda and apply to Tanzania, Uganda, and Congo  
Formalize agreement with UWA and Ministry of Health  
Budget: \$100,000 set up, then annual costs  
Potential donors: Morris Animal Foundation (MAF), USAID (local mission level), IGCP, JGI, DFG Fund, FFPS, Drug companies (Glaxo)  
Lynne Gaffikin EARTH  
Timeframe: 6–12 months to begin

**3. To improve political awareness of policy/decisionmakers of public health issues in great ape conservation, including health services as a possible method to encourage settlement at an appropriate distance from park areas**

**Champions:** Billy Karesh, Titus Mlengeya

**Methodology:** Collect information, field visits

**Budget:** US \$15,000 per country

1. Initially: DG of TANAPA/ED of UWA and FD and TAWIRI Chairman of Board of Trustees, Anne Pusey (JGI rep)
2. Minister Natural Resource and Health and appropriate PS, US and Japanese ambassadors, EU delegation, Regional Commissioner, MPs, journalist, Japanese researchers (Nishida, Mike Hoffman)

Flying tour

Timeframe:

First trip: March 2004 for initial DG trip

Second trip: June–Oct 2004

#### **4a. To improve communication between field managers**

**Methodology:**

Set up Great Ape Health Alliance. Meet regularly (annually). Potential funding sources: zoos, Lincoln Park, MAF, JGI, Leipzig (Max Planck Institute), Great Apes Survival Project (GRASP)

Set up email network of great ape health specialists

Improve infrastructure to enable this in field, phone and email links, computer, power

To lay out lines of communication with responsible agencies for field managers

**Key Players/Partners:**

Titus, Gladys, Innocent, IGCP, Japanese, JGI, Mahale, CPWs UWA/TANAPA

**Budget:** Annual meeting: US \$20,000

**Infrastructure:**

Total \$18,000 first year, \$6000 per area then \$2500 annually (Mahale OK)

#### **4b. To create database of great ape health and make it available to field managers**

Timeline; contact next week, finish 6 months

Budget: US \$2000 for photocopying and mailing

Champions: Innocent, Gladys, Titus

Implementers: Ask Elizabeth Lonsdorf if someone has done it; Anne Pusey

Investigate whether Wildlife Information Network would do this for great apes; budget

#### **5. Improve surveillance and diagnosis of disease problems**

Improving capacity of organisations \$20,000 per site

Improving diagnostic facilities and routes (\$3,000 per site)

Equipment and infrastructure (fridge, test kits [\$20,000 per site])

Funding of new position and training costs of primate veterinarian for Tanzania

**Champions:** CTPH, MGVP, JGI

**Partners:** UWA, TANAPA, IGCP

**Budget:** US \$175,000

#### **6. Include health program in current and future Protected Area Management Plans**

Mahale Karen/Titus

Gombe Titus, JGI, Billy=IUCN/VSG or WCS

Virungas Karen (Congo)

Budongo Gladys, UWA

**Goal:** Linking human and great ape health to improve conservation effectiveness and human health and livelihoods.

See next page.

Challenge/threat to be addressed and why	Goal/objective	Basic methodology	Lead organizations	Initial time frame	Estimated budget (US\$)	Project champion(s)
Inadequate health of park staff and researchers with closest contact to great apes	To set up an occupational health service for park staff and researchers in Bwindi, Gombe and other great ape protected areas	Carry out regular testing and treating of zoonotic diseases, and vaccinations	MGVP, CTPH, UWA, MOH, TANAPA, JGI, IGCP	1 year	\$100,000	Innocent, Gladys, Titus, Anne Pusey
Limited understanding of the negative effects of zoonotic disease transmission at the interface of great ape protected areas on wildlife conservation, public health, and ecotourism	To improve public awareness of interrelated conservation and public health issues in communities in and around Bwindi, Gombe, and other great ape protected areas	Test the most effective method for public health awareness over 1 year and implement this over 5 years	CTPH, UWA, MOH, MAAIF, MGCF, IGCP, JGI, TANAPA	Phase 1: 1 year Phase 2: 5 years	Phase 1: \$80,000 Phase 2: \$1,000,000	Gladys, Titus
Poor public health of communities in contact with great ape conservation areas	To develop a regional action plan for integrating human public health and wildlife conservation	Conduct a regional workshop in Tanzania, building on previous efforts in Uganda (strengthening linkages between public health and conservation around BMCA - CTPH strategic planning and stakeholders consultation workshop)	TANAPA, CTPH, JGI, MGVP, IGCP, UWA	6 months	\$25,000	Gladys, Titus
Lack of effective communication between field managers at great ape locations	To improve communication between field managers	Set up a Great Ape Health Alliance with regular meetings, email network, and a database	MGVP, CTPH, JGI, TANAPA, UWA, MGCF, IGCP	6 months	Annual meeting: \$20,000 Infrastructure: \$18,000 Year 1: \$6000 per area, then \$2500 annually (Mahale ok) Database: \$2000	Innocent, Gladys, Titus
Lack of capacity and resources to carry out effective health monitoring of great apes	To improve surveillance and diagnosis of disease problems	Train field staff (vets, rangers, trackers) and set up system for efficient diagnosis including facilities	CTPH, MGVP, JGI, TANAPA, UWA, IGCP, MAAIF	1–2 years	\$175,000	Gladys, Titus, Innocent
Inadequate political awareness of the need for improved health services of people in and around great ape conservation areas	To improve political awareness of policy/decision makers of public health issues in great ape conservation, including health services	Collect information and conduct field visits with top politicians in the country	WCS, TANAPA, JGI, UWA, MOH, MAAIF, CTPH, MGVP, IGCP, MGCF, Minister Natural Resource and Health and appropriate PS, US and Japanese ambassadors, EU delegation, Regional Commissioner, MPs, journalists, Japanese researchers (Nishida, Mike Hoffman)	9 months	\$30,000 for both countries	Billy, Titus

# WORKING GROUP E<sup>1</sup>

Region: Tanzania

## Prioritized Protected Areas/Complexes

- 1) Greater Maasailand inclusive of Serengeti
- 2) Tsavo, Amboseli
- 3) Selous-Niassa-W. Tanzania

## Challenges and Threats

### Rank 1: Greater Maasailand

- Lack of capacity/skills for wildlife/livestock/human health:
  - a. delivery of health services
  - b. diagnostic capacity
  - c. logistic constraints
- Lack of epidemiological knowledge in terms of:
  - a. wildlife
  - b. livestock
  - c. people and their interactions at the interface
- Political awareness:
  - a. need for increased awareness of pastoral issues at the policy level
  - b. need for intersectoral collaboration integrating medical, veterinary, and wildlife sectors

## Proposed Projects

**Project Title: “Evaluating Disease Status and Health Needs of Wildlife, Livestock and Pastoral People in Greater Maasailand”**

### Why?

Pastoral areas in Greater Maasailand are of highest conservation importance and economic potential in Tanzania and Kenya. They are World Heritage sites and the largest surviving intact migratory systems. These areas comprise pastoral communities that depend on the integrity of the systems for survival. Land subdivisions are identified as a major threat in Kenya to the integrity of these systems.

- Improvement of pastoral livelihoods required for co-existence
- Increasing levels of poverty and malnutrition among pastoralists
- Increasing demands for other forms of land use
- Increased bushmeat consumption
- Disease issues identified as major constraint to pastoral livelihoods

### How?

- Improvement in veterinary health care
- Improved knowledge of epidemiology of key diseases at the interface
- Enhanced technical and community capacity for addressing interface disease problems
- Development of mechanisms for intersectoral collaboration

### Phase 1: Status Evaluation

- Consultation and stakeholder analysis
- Identification of priorities

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<sup>1</sup>Working Group E was formed from Working Group C.

- Collating existing information, including research studies; identify biological data banks available for analysis
- Identify existing community-based animal health projects in region

**Time frame:** 2 years

**Budget for Status Evaluation phase:** US \$50,000–\$100,000

**Indicators:**

- Priority list of disease threats in the region (from perspective of pastoralist communities, wildlife managers, Ministries of Livestock Development and Health)
- Epidemiological data on infections/diseases of livestock, wildlife and people, seroprevalence data as a result of analysis of existing serum banks
- Database of existing community-based animal health projects

**Beyond Phase 1:**

**Component I: Enhancing intersectoral integration**

- To promote awareness of pastoral/wildlife disease issues at policy level
- To facilitate mechanisms for bilateral institutional collaborations (including medical, veterinary, and wildlife sector), e.g., within framework of East African Cooperation
- To develop consultation forum between communities and policymakers (e.g., integration with wildlife forum – Kenya)

**Time frame:** 2 years

**Budget:** US \$80,000

**Indicators:**

- For example, agreed-on policies on pastoral health issues, cross-border harmonization of animal health policies

**Component II: Integrating epidemiological research with improved animal health services**

**A. Identify and implement strategies for improved delivery of veterinary care for diseases with known impact e.g. tick-borne diseases (exact strategy will depend on legal framework existing within countries, East African Community [EAC])**

**Time frame:** 2–3 years

**Budget:** US \$150,000

**B. Evaluation of these delivery systems**

**Time frame:** 2–3 years

**Budget:** US \$50,000

**C. Epidemiological investigation of selected key diseases that are less well understood**

- Quantify the impact on different populations
- Identify the role of wildlife in disease epidemiology of zoonotic infections (e.g., brucellosis, BTB, anthrax)
- Identify appropriate control strategies to limit impacts on livestock, wildlife, and human health

**Indicators:**

Implementation of disease control strategies

Improvements in livestock production and human health (e.g., incidence of specific diseases)

**Time frame:** 3–5 years

**Budget:** US \$500,000–1 million? Depends on how many diseases are investigated. Would probably need to include cross-sectional and longitudinal studies, and involve human, wildlife, and livestock populations

**Lead:** Pete Morkel (Tanzania)?

Kenya?

**Partners:** Ngorongoro Conservation Area Authority (NCAA), TAWIRI, TANAPA, Tanzania’s Naval Institute of Medical Research (NIMR), Ministry of Water and Livestock Development, Ministry of Health, AU-IBAR, PACE, KWS, Kenya Agricultural Research Institute (KARI), Kenya Medical Research Institute (KEMRI), University of Nairobi, Mara Conservancy, Trans-Mara Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) project, AWF, Sokoine University of Agriculture, NGOs (e.g., VetAid), Maasai Preservation Trust

**Project Title:** “Maintaining Savanna Ecosystem Integrity for Sustainable Livelihoods”

**Threat:** Unsustainable levels of wildlife utilization through illegal bushmeat hunting in the Serengeti-Mara and Tsavo-Mkomazi ecosystems

**Conservation and development importance:**

**Justification as above**

### **Serengeti: Illegal off-take of approximately 100,000–200,000 large ungulates per year**

- Major threat to resident herbivores
- Migrants more resilient BUT very dependent on rainfall (levels not sustainable if rainfall low)
- Bushmeat hunting is carried out by the poorest members of the community with lowest livestock ownership
- Infectious diseases are a major constraint to livestock production
- Bushmeat hunting is a high-risk activity

#### **Hypothesis to be tested:**

Improving access to dietary protein and cash income through provision of animal health care will reduce the demand for illegal game hunting.

#### **Project Proposal:**

Evaluate impact of improving animal health services by comparing:

- income and diet of rural poor
- levels of bushmeat hunting
- incidence of food-borne zoonoses
- land-use practices in areas with and without improved veterinary services

#### **Methodology:**

Identify appropriate strategy for trial/evaluation (e.g., Newcastle disease vaccination, anthelmintic treatment of small ruminants, anti-predator strategies for poultry)

Select treatment and control villages

Compare pre- and post-intervention diet, income, land-use practices, incidence of food-borne zoonoses in treatment and control villages

Compare village origins of hunters before and after intervention

**Leads:** Titus Mlengeya, Robert Fyumagwa, Elizabeth Muthiani

**Timeframe:** 3 years

**Budget:** US \$300,000

**Partners:** TANAPA, TAWIRI, Tanzania Wildlife Division, KWS, KARI, Regional and Local Governments, Maasai Preservation Trust, TRAFFIC, NCAA, NIMR, Ministry of Water and Livestock Development, KEMRI

## **WORKING GROUP F**

**Region: Zambia, Mozambique, and Malawi**

### **Prioritized Protected Areas/Complexes**

- 1) Kafue Flats and Upland
- 2) Great Limpopo Transfrontier Conservation Area
- 3) Zambia/Malawi/Mozambique “Triangle”
- 4) Liuwa (Zambia/Angola)

## **Challenges and Threats**

### **Priority Areas (General)**

- Need a relationship between the producers and government agencies (forum)
- Need inter-ministerial relationship, sharing of knowledge, best practices and lessons learned
- Anticipate problems to have adequate disaster prevention and management
- Need to identify experts and individuals with interest and passion for both wildlife and livestock
- Need ecosystem and problem-based research

### **Rank 1: Kafue Flats and Uplands**

(Lessons from 10 years)

- Lack of stakeholder organisation and hence lack of communication
- Early warning
- Stakeholder coordination could have raised the funds required to undertake disease prevention. Expertise was there to handle the problem.

- Veterinary Services under the Ministry of Agriculture, Zambia Wildlife Authority (ZAWA) under Tourism, and Police Services under Ministry of Home Affairs, but no forum to coordinate government agencies.
- Lack of markets contributing to disease problem
- Proposal in Ministry of Agriculture to establish an abattoir in Monze. Meat sold in Lusaka and Copper Belt comes from Southern Province, but no value added to local economy, as animals are sold live in these areas. An abattoir is needed to prevent movement of live animals to these areas to reduce disease transmission to these areas. An abattoir would give local people the opportunity to sell their produce directly to the abattoir, cutting out the middlemen and hence increasing income.
- Abattoir can be revived if the three stakeholders as per above (i.e., Police Services, Veterinary Services, and ZAWA) come together.
- Applied research in livestock sector is there, but lacking at the wildlife/livestock interface, hence there are unsubstantiated accusations of wildlife as the reservoir of diseases. The only research in wildlife is fragmented and serves agricultural/veterinary interests. Work needs to be in the context of the ecosystem to meet the conservation objectives such as community needs, through wildlife-based income enterprises, the revenue of which could be ploughed into veterinary services in the area.
- Need to evaluate community perception to develop relevant responses.
- Direct benefits from wildlife use are once a year and marginal at individual level; therefore, there is a need to have additional alternative sources from other activities such as cattle rearing.
- Local knowledge is important in disease control. For example, cattle that go the flats acquire ticks either on the way to or from the flats and not at the flats.
- Cattle from upland move to watering points used by wildlife. Communities snare around these water points.
- Need alternative watering points to reduce disease transmission and conflicts
- Tick control strategies – burning. Need to understand tick biology and dynamics.
- Dipping versus burning
- Need tick control and not eradication to maintain the tick-host balance and avoid completely naïve animals that would immediately succumb to the new tick infestation.
- Need integrated approach that would combine dipping with immunization
- In livestock/wildlife interface will continue to be there.
- Coordination should not be led by government but by the producers. Need an agreement for bureaucrats to delegate some of their responsibilities.

### **Rank 2: Great Limpopo Transfrontier Conservation Area (also see Working Group A's notes)**

- Dominance by South Africa
- Kruger: a source of diseases such as BTB, FMD, etc.
- Mozambique: Lost livestock and wildlife during war, hence need to repopulate
- Main rural economic activity is livestock
- Marrromeu Gorongosa Complex
- Many tourism concessions
- Lack of in-depth risk analysis before setting up the TFCA. For example, BTB in Kruger could be exported to a new area where there is no capacity to deal with it
- Veterinary issues have never been given priority during formulation of TFCA
- Veterinary department in Mozambique weak and concentrated on building livestock populations, hence paid little attention to wildlife issues including the TFCA
- No practical solution as of yet to BTB issue on both sides (South Africa and Mozambique).
- Problem of ecologists' dominance over veterinary advice. For example, BTB problem was first detected in 1990, but ecologists dismissed the issue until it became a serious conservation problem. Only then were veterinarians called on to provide a solution.
- Disease (BTB) may threaten the TFCA concept
- In areas around the TFCA on the Mozambique side, BTB and anthrax were reported during the war. No outbreak of FMD in the last 10 years. Still have evidence of BTB in cattle.
- BTB-infected lions may prefer to kill livestock as they do not have enough energy to hunt.

### **Rank 3: Zambia-Malawi-Mozambique Triangle**

- High poverty levels leading to conflicts with wildlife
- Appropriately targeted control of diseases that impact development in local communities (ongoing interventions)
  1. Tsetse and trypanosomiasis
  2. African swine fever

3. Relationship between livestock and wildlife authorities:
  - a) Potential model
  - b) Proactive vs. reactive
  - c) Sleeping sickness: creating a balance for livestock/wildlife leads to fear that eradication of tsetse will lead to increased wildlife poaching
  - d) Community needs to directly benefit from wildlife resource (holistic approach vs. sectoral)
  - e) Need to justify why we still need to keep out agricultural expansion from wildlife areas and show that the productivity of these areas will benefit the local communities
  - f) Links between livelihoods and conservation (balance, institutional boundaries and biases down, incentives, advocacy, monitoring and evidence, enforcement capacity, policy)
  - g) Designate conservation livelihood areas in the triangle

Wildlife	Livestock
<ul style="list-style-type: none"> <li>■ Not seen as viable alternative</li> <li>■ Applied production skills for producers (harvesting technology and processing, better local protection from outsiders, better land use, marketing, monitoring numbers, counting)</li> <li>■ Lack of incentives to the wildlife producer</li> <li>■ Private sector dominance</li> <li>■ Entrepreneurship skills</li> <li>■ Access investment opportunity and tourism capacity</li> <li>■ South Africa dominance</li> <li>■ Ownership</li> <li>■ Institutional inertia</li> </ul>	<ul style="list-style-type: none"> <li>■ Institutional bias</li> <li>■ Professional arrogance</li> <li>■ Change vet perception of wildlife</li> <li>■ Applied production skills for producers (husbandry, disease control, etc.)</li> <li>■ Markets               <ul style="list-style-type: none"> <li>– Diseases (FMD, ASF, etc)</li> </ul> </li> </ul>

- Existing programs are there to reduce poverty (in Zambia) but are uncoordinated
  1. What lessons can be learned by other two members if possible?
    - a) Not donor driven
    - b) Sense of ownership-producer driven
    - c) Creation of ltd. company
    - d) Shareholders-local communities
    - e) Community proactive in minimizing threats on resource base
  2. Result has been increased community enthusiasm
- Ensuring of markets for the farmers
- Little work in Malawi related to parks conservation by communities leaving near the park, but there are programs targeted at poverty reduction aimed at reducing deforestation and addressing the ravages of HIV/AIDS on rural communities.
- Conservation farming and product labeling to increase household food security and incomes.
  1. Improved productivity in both livestock and wildlife sector
  2. Improve synergies between sectors, respective values in wildlife and livestock
    - a) Include harmonious relationship
  3. Legal and economic incentives exist to develop households as producers of wildlife and non wildlife products
  4. Increased commitment to conserve natural resources at household level
    - a) Sensitization/education
    - b) Capacity/skills/training

**How do we get to points above?**

**Productivity**

1. Markets and skills drive productivity
2. Zambian model demonstrates result for productivity and conservation
3. Extension services at community level
  - a) Animal health
  - b) Animal husbandry
  - c) Ongoing
  - d) Training of trainers
4. Capacity building

## Proposed Projects

**Priority Area: Zambia-Malawi-Mozambique Triangle**

**Project Title: “Improved Wildlife and Livestock Productivity through Market Synergies”**

Challenge/threat to be addressed and why	Goal/objective	Basic methodology	Lead organizations	Time frame	Estimated budget (US\$)	Project champion
High poverty levels impacting on natural resources	<b>Improve productivity in both livestock and wildlife</b>	Review the effectiveness of the Zambian trading hub with a view to making it a regional trading model as a way to sustain productivity in both livestock and wildlife and better land management	WCS, others not yet determined	3 years	\$2 million	Dale Lewis
Human/wildlife conflicts						
Lack of effective disease control	Develop legal and economic incentives for households as producers of wildlife and non wildlife products	As appropriate, implement recommendations from activity 1 above				
Tsetse and trypanosomiasis						
ASF	Increase commitment to conserve natural resources at the household level	Establish/improve extension services in an integrated fashion: <ul style="list-style-type: none"> <li>a. Veterinary</li> <li>b. Crop</li> <li>c. Wildlife</li> <li>d. Animal husbandry</li> <li>e. Human health</li> </ul>				
FMD						
TBD						
Rabies and distemper						
Coordination of lessons learned and existing programs						
Improve markets		Mobilize and support community producer				
		Undertake market feasibility studies for alternative products and potential technologies as required				

### Indicators:

- Functional regional market networks in place
- Functional extension services in place
- Viable and sustainable producer groups in place
- Report on alternative markets and production technologies available
- Reduced incidence of diseases especially in livestock and people

## Priority Area: Kafue Ecosystem

### Project Title: “Kafue Integrated Livestock-Wildlife Management System”

Challenge/threat to be addressed and why	Goal/objective	Basic methodology	Lead organizations	Time frame	Estimated budget (US\$)	Project champion
<p>Lack of stakeholder collaboration to sustain livestock services</p> <p>Lack of adequate research at wildlife/livestock interface in context of the ecosystem and conservation goals</p> <p>Adverse attitudes towards wildlife and livestock problems by communities and other stakeholders</p> <p>Inaccessibility of markets due to livestock diseases</p> <p>Poor market development for producer groups</p>	<p><b>Integrated approach to animal (livestock and wildlife) production and disease control</b></p>	<p>Create a stakeholder forum for effective collaboration</p> <p>Undertake basic and applied research to enhance stakeholder animal husbandry practices in the context of the ecosystem</p> <p>Establish early veterinary warning systems</p> <p>Undertake effective epidemiosurveillance in wildlife and livestock</p> <p>Develop a sustainable animal health delivery system</p>	<p>ZAWA Veterinary Dept</p>	<p>2 years</p>	<p>\$1 million</p>	<p>Victor Siamudaala</p>

#### Indicators:

- Stakeholder forum created
- Data on wildlife and livestock diseases available
- Strategies for animal husbandry practices developed
- Effective and functional intersectoral epidemiosurveillance network in place
- Effective and functional community-based animal health delivery system in place

#### Postscript: *AHEAD* cross-cutting issues that could be further addressed

- Standards for disease-testing/quarantine for various taxa before and after translocations in southern and East Africa
- Vaccines to address the multiple FMD topotypes issue flagged by several speakers and working groups