

Baboons as Potential Reservoirs of Pathogens around Bwindi Impenetrable National Park, Uganda

**AGABA Hillary Kumanya
(Msc. Student)
Makerere University**



**Information and Lessons Sharing Workshop
13th – 14th April
Ruhija**

Outline

- Background
- Statement of the problem
- Goals and objectives
- Methods and preliminary results
- Impact of the study
- Acknowledgement

Background

- Interactions between people and wildlife around BINP results in crossing-over of pathogens (Kalema, 1995; Graczyk et al., 2002; Nizeyi et al., 1999; 2001; 2002; Rwego et. al. 2008)
- Some having progressed to the disease state (Kalema-Zikusoka et al. 2002).
- Crossing of pathogens among wildlife and humans is mainly driven by ranging of wildlife into community land (Gillespie et al., 2008; Nizeyi et al. 2001).

Background

- **The baboon** (*Papio anubis*) has been reported as the most frequently raiding wildlife specie of community gardens and places (Olupot et al., 2009) – but **is least studied !!!!!!!**
- Incidentally, the pathogens spread within the natural host and to other novel and accidental hosts;
- Evidence by Hope et al., (2004) suggests that baboons can effectively drive disease as they move in and outside the protected area.

Problem Statement

- The baboons many diseases such as tuberculosis, *Shigella*, *Salmonella*, viruses now recently HIV-2 of many anthropoid primates including humans and great apes; evidence that certainly they can carry quite a diverse array of pathogens among sympatric primate species.
- Baboon frequent raiding is of concern to conservation and public health

Goal and Objectives

General aim

Evaluate the role of baboons as potential carriers of microorganisms, including pathogens across the BINP park boundary.

The objectives

- 1) Understand baboon ecology and its epidemiological impact
- 2) Examine levels of microbial exchange between baboons and community.
- 3) Detect in baboons zoonotic pathogens that have been found in other species around Bwindi Impenetrable National Park

Methods and Preliminary results

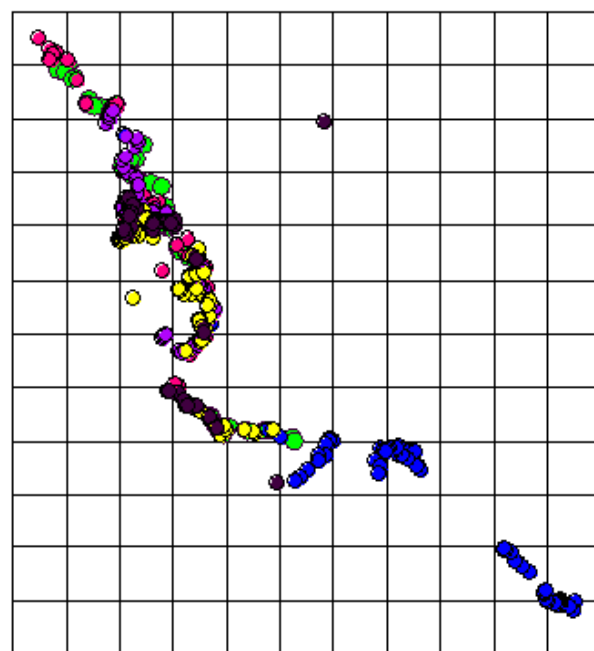
Objective 1: Understand baboon ecology and its epidemiological impact

Approach

- Based on a longitudinal study design.
- Baboon troops identified from 2 sectors of BINP - Buhoma and Ruhiiija
- Field work on the spatial-temporal distribution of troops.
- Questionnaire survey

Preliminary observation

Observed movement pattern of Ruhija troop



- Ruhija_week 1.
- Ruhija_week 2.
- Ruhija_week 3.
- Ruhija_week 4.
- Ruhija_week 5.
- Ruhija_week 6.
- Quadrat Grid

Methods and preliminary results

Objective 1: Examine levels of microbial exchange between baboons and community.

Approach

- Collection of baboon fecal samples for isolation of *E. coli*
- Conduct antibiotic susceptibility testing to commonly used antibiotics.
- Perform *E. coli* typing using PCR in comparison with Rwego *et al.*

Data Analysis

- A dendrogram will be constructed using the Unweighted Pair Group Method with arithmetic averages (UPMGA) algorithm using the SPSS software for DNA fingerprinting.

Methods and preliminary results

Sample from Ruhija Troop in March 2011

Day	Number of samples
1	4
2	12
3	10
Total	36

5 isolates X 35 samples = 175 isolates preserved

Data Analysis/DNA fingerprinting

- A dendrogram will be constructed using the Unweighted Pair Group Method with arithmetic averages (UPMGA) algorithm

Methods and preliminary results

Objective 3: Detection of zoonotic pathogens in baboons

Approach

- Fecal samples pre-enriched and cultured for isolation of *Salmonella* and *Shigella*
- *Salmonella* and *Shigella* identified by biochemical methods
- *Cryptosporidium* and *Giardia* tested using Direct sFlourescence Assay.

Results

- 9/35 suspect *Salmonella* – *Shigella* colonies
 - 3/25 *Cryptosporidium* positive with DFA
- } Ruhija

Significance and impact of study

1. Control and Prevention of transmission of zoonotics at human-wildlife interface.
2. In general terms, vermin/Problem animal control.

Acknowledgement

- Funding Sources ITFC /Wild West Program
- Supervisors
 - Dr. Samuel Majalija (PhD); Dept. of Parasitology and Microbiology, MUK
 - Dr. Innocent Rwego (PhD); Dept. of Zoology, MUK
- ITFC, UWA, Makerere University, CTPH, WCS, USAID/Predict, Kibaale Ecohealth Project and all of you that continue to be a source of consultation.

THANK YOU