



**SOUTHERN AFRICAN CENTRE  
FOR  
INFECTIOUS DISEASE SURVEILLANCE**

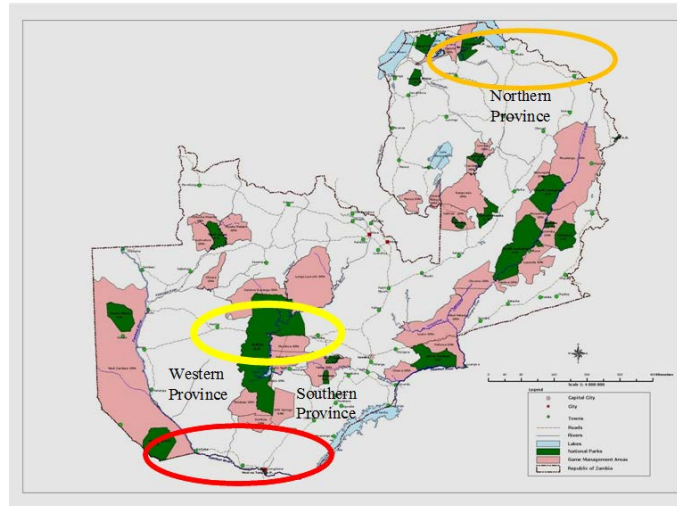
## Typing and serological surveillance of foot and mouth disease virus in the African buffalos, Zambia

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### FMD in Zambia

- Foot-and-mouth disease(FMD) is endemic in some parts of Zambia
- First FMD documented report,1933
- First FMD virus serotyping was done in 1948
- Animals affected: Cattle, Pigs, small ruminants, wild animals
- Outbreaks occur in different geographic regions
- Factors associated with outbreaks are not clearly known
- Serotypes isolated and identified in Zambia since 1958 include Type O, Type A, SAT 1, SAT 2 and SAT 3

## Map of Zambia bearing National parks and Game reserves



## Statement of the problem and study justification

### Problem Statement

- FMD is endemic in Zambia and outbreaks are frequently reported
- The disease affects livestock productivity and limits Zambia's trade opportunities

### Study justification

- Factors associated with outbreaks are not well understood, therefore knowing the serotypes and source of infection are of significance importance
- FMD virus serotype and prototypes circulating in the buffalo populations are not known
- Little published literature on FMDV in Zambia

## Research questions

- What is the seroprevalence of FMDV in buffalos in southern Zambia?
- What are the FMDV serotypes currently circulating in southern Zambian buffalos?
- What is the geographical distribution of the serotypes in southern Zambia?



## General objective

To describe FMDV infections in buffalo populations in southern Zambia



## Specific objectives

- To determine the seroprevalence of FMDV in buffalos in southern Zambia
- To describe FMDV serotypes currently circulating in Zambian buffalos
- To describe the geographical distribution of the serotypes in southern Zambia



## Materials and Methods

- **Study area** -Southern Zambia where traditional cattle farmers practice transhumance with interface wildlife(Kafue National Park and Luangwa National Park)
- **Study design** -Cross sectional study
- **Sample collection** –Probang and Serum samples were collected from buffaloes by immobilising and later reviving the buffalo



## Probang sampling



## Blood collection



## After day's work



## Sample processing

- Typing of FMDV was done by demonstration of FMD viral antigen from cell culture of probang samples.
- Detection of FMDV antibodies in sera were by screening using AniGen FMD NSP Ab ELISA, then run sera using Liquid phase blocking ELISA to determine the serotype.

## RESULTS

	Total No. Samples	NSP ELISA	SP ELISA	Probang	CPE	Antigen ELISA
Lochniva, Monze	25					
Itezhi-tezhi	25					
Lower Zambezi	25	92%	Not done			
Upper Zambezi	25	92%	Not done			
Sichifulo	20	Not done	Not done			
Mosiotunya	24	Not done	Not done			



## Discussion and conclusion

- Results show that FMDV is circulating in the buffalos in Zambia thus need to finish with the current research so that we get a clear picture.
- Work need to be done on serotyping
- Understanding the spatio-temporal distribution, epidemiology, genetic and antigenic characteristics of circulating FMDV is a prerequisite for control of FMD in Zambia.
- The spread of FMD may be due to free movements of livestock and wild animals



## Recommendations

- FMD outbreak investigation:
  - More sample collection and appropriate diagnosis is needed
- Research to describe the complex epidemiology and endemicity of FMD in Zambia and sub-Saharan Africa is needed
- Molecular characterisation and analysis of many FMD samples is needed to elucidate the phylodynamics and evolutionary nature of FMD
- Cross-protection and vaccine-matching of the field isolates to available vaccines is required



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