A survey of Tuberculosis and Brucellosis in wildlife and cattle in the South-East Lowveld of Zimbabwe

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A thesis submitted in partial fulfilment of the requirements for the degree of Master of Philosophy (Veterinary Science)

2008 to 2010

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Declaration

1. BY CANDINDATE

This thesis is my own original work and has not been presented for a degree in any other University.

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2. BY SUPERVISORS

This thesis has been submitted for examination with our approval as University supervisors.

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Acknowledgements

I would like to express my deepest gratitude to the following people:

Dr. D.M. Pfukenyi and Dr M. de Garine-Wichatitsky my supervisors, for their guidance and assistance during the project. The farmers who agreed to participate in this project and the communities in the villages where the project was conducted. The Dip tank committee members who were involved in restraining the animals and encouraged the community members to cooperate. The Central Veterinary Laboratory who were involved in performing the serological and bacteriological tests.

My sincere thanks go to Dr. A. Caron and other staff of French Agricultural Research Centre for International Development (CIRAD) in Zimbabwe for supporting the project and for academic administration. This work was conducted within the framework of the "Research Platform Production and Conservation in Partnership" (RP-PCP). We thank the Ministere Francais de Affaires Etrangeres for supporting this project through the French Embassy in Zimbabwe (RP-PCP grant/project AHE#1 2007 to 2009).

Table of Contents

List of tables

List of Figures

List of Acronyms and Abbreviations

Acronym	Expanded form
AFB	Acid Fast Bacilli
AHEAD	Animal Health for the Environment and Development
ARC-OV1	Agriculture Research Council-Onderstepoort Veterinary Institute
bTB	Bovine Tuberculosis
CA	Contagious Abortion
c-ELISA	Competitive Enzyme Linked Immunoabsobert Assay
CIRAD	French Agricultural Research Centre for International Development
DTH	Delayed Type Hypersensitivity
GLTFCA	Greater Limpopo Trans-frontier Conservation Areas
GNP	Gonarezhou National Park
HNP	Hwange National Park
KNP	Kruger National Park
IFN-γ	Interferon Gamma
OIE	Office International Des Epizooties

PPD	Purified Protein Derivative
SCITT	Single Comparative intradermal Tuberculin skin Test
SA	South Africa
TFCAs	Trans-frontier Conservation Areas
TST	Tuberculin Skin Test

Abstract

A cross-sectional study was conducted to determine the seroprevalence of bovine brucellosis and the prevalence of bovine tuberculosis (bTB) in cattle and wildlife at a wildlife-livestock interface in the south-east lowveld of Zimbabwe. Study areas were selected to include those with close proximity to wildlife from GNP and KNP and those without a wildlife-livestock interface area. For both cattle and wildlife, sera were screened for anti-Brucella antibodies using the Rose Bengal test as a presumptive test and the competitive-ELISA as a confirmatory test. The Single Comparative Intradermal Tuberculin Skin Test was used to identify reactor cattle for bTB and positive animals were confirmed using the gamma interferon test, culture and histopathology. For wildlife, bTB was tested in African buffaloes by using the gamma interferon test, culture and histopathology. Age, sex, location, abortion and grazing history were considered as risk factors for Brucella seropositivity while age, sex, location and grazing history were considered as risk factors for bTB in cattle. A total of 1158 cattle were tested and the overall seroprevalence of brucellosis was 9.9%. A total of 97 wild animals (47 buffaloes, 33 impala, 16 kudu, and 1 giraffe) were tested and only one animal (giraffe) (1%) was seropositive for brucellosis. In the interface area, cattle with a history of grazing in the park recorded a significantly ($P<0.05$) higher Brucella seroprevalence (13.5%) compared to those with no history of grazing in the park (4.9%). A total of 477 cattle were tested for bTB and only five (1%) reactors were recorded. The five cattle reactors were all found to be negative on the confirmatory test, culture and histopathology. Of the 38 buffaloes tested for bTB and 4 (10.5%) were positive and bacterial culture of two gamma interferon-positive buffaloes yielded *Mycobacterium bovis*. The results of the present study established the presence of brucellosis in communal cattle in the studied areas and of bTB in GNP African buffaloes for the first time.