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Seed Grant: Final Report

SKILLS DEVELOPMENT FOR DISEASE MONITORING IN THE GREATER LIMPOPO TRANSFRONTIER CONSERVATION AREA: Capacity Building for Wildlife Disease Diagnostics

Project Goal: to build skills and resource capacity to facilitate good-quality wildlife disease diagnostics in the Great Limpopo Transfrontier Conservation Area (GLTFCA)

Current Project Status:

- Objective: to allow 6 vets each from Mozambique and South Africa to attend a course in wildlife disease investigation**
 - The 1st Practical Wildlife Disease Investigation Course was held at the Faculty of Veterinary Science (FVS), Onderstepoort from the 30th March-3rd April 2009.
 - The course was attended by 18 candidates; funds were used to allow 3 vets from Mozambique and Zimbabwe and 7 from South Africa to attend the course.
 - The course was viewed as a success by the participants and the role players involved in developing the course.
 - A second course is planned by the FVS for 22-26th March 2010 in a continuing effort to improve wildlife disease investigative capacity in the region.
- Objective: to equip 13 veterinarians collecting samples from the GLTFCA, the Agricultural Research Institute (ARI), Maputo and pathology laboratory of the NZG with necropsy sampling kits**
 - 14 necropsy kits were purchased and distributed to 3 Mozambican, 6 South African, 3 Zimbabwean veterinarians, the Agricultural Research Institute (ARI), Maputo and the Eduardo Mondlane University, Faculty of Veterinary Science, Maputo (EMFVS).
- Objective: to develop an experiential wildlife disease pathology course**
 - This two-week course has been developed by Dr John Lawrence at the Faculty of Veterinary Science (FVS) and Dr Mary Lou Penrith of the National Zoological Gardens (NZG). The "ATLAS OF PATHOLOGY OF IMPORTANT INFECTIOUS DISEASES OF SOUTHERN AFRICA AT THE INTERFACE OF WILDLIFE WITH MAN AND DOMESTIC ANIMALS" was developed by Dr Lawrence for the course.
- Objective: to allow 4 veterinary pathologists from Mozambique to attend the course and equip the ARI with suitable reference materials**
 - Dr Simone Magalo (ARI, attended from 25th May, 2009) comments – "The course was beneficial. The participants acquired practical skills on wildlife pathology, and had the opportunity to exchange experiences with other pathologists. The training also allowed the participants to create awareness on the Transboundary animal diseases that can be disseminated through the water resources or through the environment in general. It was

very helpful to see the level of organization and integration of all laboratory and clinic services both at the public, private and academic institutions. For next projects I suggest consider in the budget the purchase of books related to wildlife pathology including fish and reptiles. At the end of the course the participants need to agree on follow up activities which have to be monitored by the trainers”.

- Dr Gaby Monteiro (Eduardo Mondlane Faculty of Veterinary Science (EMFVS), attended from 29th June, 2009) comments – “First of all, I would like to congratulate the organizers of the training for the materials prepared and say thank you for all the collaborators in the Pretoria Zoo and the Department of Pathology at the University of Pretoria. I am good impressed. The training was very helpful. These kind of initiatives are good for refreshment. I personally work in pathology since 2004 and I did not have had any kind of experience in wildlife pathology. During the training, I had opportunity to participate in some necropsies and histopathology of wild animals, and also discuss some cases with experienced pathologists. Now I am more confident to perform an anatomo- pathological diagnosis including wild animals. For the next trainings I suggest two or three pathologists per group. It would be better even for exchange of experiences and discussion of cases”.
- Dr Afonso Sussuro (ARI, attended from 31st August, 2009) did not comment perhaps due to his lack of confidence in his English writing skills.
- Dr Cláudio Laisse (EMFVS, attended from 28th September, 2009) comments – “The training was very fruitful. It was a good opportunity to: 1) see necropsies and discuss about diseases in free ranging and zoo animals. 2) see interesting cases in different domestic and wildlife animals; 3) have very interesting literature material; 4) opportunity to meet and discuss with experienced pathologists and see how different professionals do the work in Pathology. [I] spent 5 days in each place, the first three days and last two days of the training at NZG and from 1st to 7th October at Faculty. This time table was good because some of the cases that I had the opportunity to see the necropsy I also saw the slides. This is very important because of the opportunity to associate the gross and microscopic lesions of the cases and also to know the conclusive diagnosis. Regarding the CD, “This material will be useful for research, diagnosis and teaching activities of the pathologists and other professionals at the faculty, including students”. “Special thanks for Drs. Rosa Costa and Emily Lane for coordinating respectively the Mozambican and South African parts of the collaboration. I also extend my thanks for all the pathologists of the Veterinary Faculty, especially to Dr Lawrence, Dr Neser, Dr Williams and Prof Duncan for their help during the 5 days I spent at faculty. I am also grateful to the financial supporter of the project for doing this training possible.
- Reference materials were handed over to the ARI:
 - Pathology of Domestic Animals Ed. MG Maxie
 - Infectious Diseases of Livestock Eds. JAW Coetzer and RC Tustin
 - An Atlas of Protozoan Parasites in Animal Tissues CH Gardiner et. al
 - An Atlas of Metazoan Parasites in Animal Tissues CH Gardiner and SL Poynton)
 - 3 copies of “Fundamental of Toxicologic Pathology” by W Haschek et al (2nd edition published late last year)

Such visits foster the development of a network of wildlife pathologists in the region, who in close communication and cooperation can better monitor wildlife disease in the GLTFCA. This collaboration is expected to continue in the following and subsequent years.

5. **Objective: to contribute to the costs of one year's diagnostic case processing in Mozambique and South Africa**

- Sampling materials have been purchased by the ARI and NZG for the purposes of processing diagnostic cases.
- 17 cases processed by the ARI:

Species	Date	Species History
African Buffalo	4/2/2009	Too rotten for analysis
Domestic pigs	4/2/2009	Renal disease
Domestic cow	2/3/2009	Bovine tuberculosis
Domestic cow	13/5/2009	Acute encephalomyocarditis
Domestic cow	15/7/2009	Chronic glomerulonephritis
Domestic goat	15/7/2009	Gastrointestinal parasitism
Domestic cow (x2) serum	various	Negative for Foot and Mouth Disease
Domestic cow (x9) serum	Various	Variable positivity for Brucella

- 21 cases processed by the NZG:

Species	Date	Species History
Sable	16-Jan-09	Acute heart failure (possible Haemonchosis)
Lion	19-Jan-09	Interstitial pneumonia and elbow cellulitis (probable Mycobacterium)
Lion	19-Jan-09	Superficial necrolytic dermatitis
Lion	28-Jan-09	None possible (autolysis)
Leopard	05-Feb-09	Well-differentiated adenocarcinoma, liver
Cheetah	27-Feb-09	Post-anaesthetic heart failure
Common Duiker	18-Feb-09	Cerebral cestodiasis
African Buffalo	03-Mar-09	Suspected tuberculosis
Lion	03-Mar-09	Concurrent histiocytic pneumonia, poliomyelitis and parasitic myositis (probable Mycobacterium)
Black Wildebeest	08-Apr-09	Healed corneal ulcer
Leopard	08-Apr-09	Complications of chronic glomerulonephritis
White Rhino	17-Apr-09	Suspected tuberculosis
White Rhino	23-Apr-09	Salmonella enteritis
White Rhino	18-May-09	Severe generalised lymphadenitis
Small spotted Genet	08-Jun-09	Bronchointerstitial pneumonia
Lion	29-Jun-09	Tuberculous pericarditis, epicarditis and pneumonia
African buffalo	07-Jul-09	Reactive lymph nodes (no TB found)
African buffalo	21-Jul-09	Reactive lymph nodes and myocardial cestodiasis
Nile crocodiles	24-Jul-09	Pansteatitis
Greater Kudu	07-Aug-09	Verminous cellulitis
Black Wildebeest	02-Sep-09	Granulomatous pneumonia, hepatitis, lymph adenitis

6. **Project results and products generated:**

- Attendance of 18 Mozambican, South African and Zimbabwean wildlife vets on the 1st Practical Wildlife Disease Investigation course held in March-April 2009
- Provision of these 12 vets, the ARI (Maputo), NZG and EMFVS pathology laboratories with a field necropsy kit
- Completion of a wildlife pathology experiential training course
- Attendance of the 4 Mozambican pathologists on this course
- Provision of veterinary pathology reference materials to the ARI and EMFVS
- Purchase of processing materials and completion of 21 cases from the wildlife-domestic animal interface; Further cases are expected

- Submission of one collaborative journal article on the identification of Bovine Tuberculosis in African Buffalo in Zimbabwe to Emerging Infectious Diseases (pending approval)

7. Impact on conservation:

This initiative involves disease monitoring in wildlife that will, should funding allow, continue for many years. This initial phase including development of the two courses and the provision of necropsy kits is the first step in the process, and is expected to begin to build capacity in wildlife disease investigations, and to increase the quality and quantity of samples from the GLTFCA and other wildlife areas in the 3 countries. This in turn is expected to improve wildlife disease information stored in electronic databases from the GLTFCA, larger stores of wildlife samples and data for prospective and retrospective research projects, develop better collaboration between wildlife vets and veterinary pathologists in the subregion, and improve the understanding of key disease issues in the GLTFCA. We anticipate the publication of further case reports and/or a review of pathological findings in time.

8. Collaborations

Collaboration has been the cornerstone of this project from the beginning, involving the ARI and EMFVS (Maputo), Wildlife Unit of the Central Veterinary Laboratory (Zimbabwe), SANParks, the veterinary subcommittee of the Great Limpopo Transfrontier Park, the FVS and the South African National Department of Agriculture.

9. Equipment purchased

Equipment purchased for this project included the 14 necropsy kits which have been distributed and will be used to generate diagnostic materials; the consumables necessary to process diagnostic pathological specimens at the ARI and NZG, and reference text books.