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Seed Grant:

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 GLTFCA

Current Project Status:

The 1st Wildlife Disease Investigation Course was held at the Faculty of Veterinary Science (FVS), Onderstepoort from the 30th March-3rd April 2009 (see attached course program). The course was attended by 18 candidates: Drs Bila, Branco, Manguze, and Nhate (all State veterinarians from Mozambique); Drs Fivaz (Malilangwe Trust), Foggin (Central Veterinary Laboratory), Dutlow and Marabini (Private veterinarians) from Zimbabwe; and Drs Cooper (KwaZulu Natal Wildlife), de Klerk-Lorist and Zimmerman (National Department of Agriculture), du Plessis, Reininghaus, and Rikhotso (Mpumalanga State Veterinary Department), Govender (SANParks), Kors, Masterton and Muller (Private veterinarians) from South Africa.

This represented an excellent cross-section of vets working with wildlife-human-domestic animal interface issues: all 3 countries of the GLTFCA were represented as well as candidates employed by the state, SANParks, KZN Wildlife and private sector. This facilitated valuable discussions regarding the challenges, requirements and opportunities of all three sectors and provided the opportunity for networking between different role players including specialist diagnosticians.

14 necropsy kits were purchased and distributed to 3 Mozambican, 6 South African, 3 Zimbabwean veterinarians and the Agricultural Research Institute (ARI), Maputo. Feedback from course participants and recipients of the necropsy kits:

Dr Rikhotso: "the course was ok. more time on PMs, the course should (may be) put more emphasis on field experiences by various presenters after a short theoretical presentation. I think state vets working in the interface should be invited in future, it was worth every penny spent on it, the kit works well thank you"

Dr Fivaz: "just to thank you ... for an outstanding course. Very professional in every sense and I came away richer for the experience. Emily, the pm kit blew our minds. Well done and thank you. I did express disappointment re the pm on a buffalo but dissecting a bovine head would suffice and a bovine thorax can easily be accessed for the bronchial glands. I battle sometimes to find those glands in buffalo. Markus H. makes the procedure look very easy. I do a lot of necropsies either in the field or on cases brought in and I realise now how poorly equipped I was. The GPS equipment is especially useful as we just do not have funds for this type of technology at the moment and we rely heavily on GPS coordinates for info on sightings and reported deaths. The equipment means I do not have to share with others who do not look after equipment! Thank you once again."

Dr Cooper: “a big thank you for your time and effort that went into organizing one of the most worthwhile courses I have attended. The range of topics and variety of lecturers made it extremely stimulating in spite of the fact that I am familiar with most of the disease issues. In a personal level I would like to have had more focus on pathology, environmental health, and forensics. With regards to the latter it may be worthwhile to have a slot for crime scene procedures, collection of evidence, chain of evidence principals etc. A big thanks to all the sponsors who made it possible for me to attend the course and for the generous donation of all the necropsy equipment at a time when budget cuts are hurting badly! It has been a pleasure to operate with decent equipment and not have to rely on the trusty leatherman, blunt skinning knife and rusty cane knife tucked behind the seat.”

Dr Zimmerman: “I would just like to say thanks again and well done to you and the team organizing the course – it was a great and has given me personally a lot of food for thought. So far the necropsy kit looks good – have not used it yet but definitely will.”

Dr Marabini: ” just wanted to thank WCS [*and USFWS*] for funding our (Keith's [*Dutlow*] and my) participation in the course. The PM kit will come in extremely handy and was a nice perk for those of us from Zimbabwe. As for the course I think you know our sentiments - that it could have had a lot more practical - not just from the pathology side of things, but in terms of clinical diagnostic techniques so that we know we are performing 'standardised' procedures the same as our South African colleagues, e.g. probangs, BTB skin tests etc. I also think that the course could have had more input from the guys with the most PRACTICAL experience, as these are the people who can tell you the little things that make all the difference. The concept of the course is an excellent one, and I think with some tweaking, it could be extremely valuable for TFCA vets.

Dr Costa (ARI): “just spoke with Samuel [Bila] on the phone last Saturday. He left in my house the necropsy kit. I am very excited with it. I hope we will have the opportunity to use it very soon. Thank you very much. Samuel said that the course went well and was very interesting.”

The 1st course was viewed as a trial course. Feedback from course participants and a formal course assessment have been received, and further discussions with the Faculty of Veterinary Science regarding the possibility of holding further similar courses in future for wildlife veterinarians throughout the subregion are scheduled for the 12 June 2009.

The Wildlife Pathology Experiential training 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 course takes place in 2 sections: one week at the FVS where the candidate takes part in routine diagnostic duties, attends daily pathology case rounds, reviews post-graduate pathology training materials, and is presented with an Atlas entitled “ATLAS OF PATHOLOGY OF IMPORTANT INFECTIOUS DISEASES OF SOUTHERN AFRICA AT THE INTERFACE OF WILDLIFE WITH MAN AND DOMESTIC ANIMALS” that was developed by Dr Lawrence for the course (copy to be posted separately as soon as advice from the USFWS regarding copyright wording is received).

The candidate spends the second week at the NZG, taking part in routine diagnostic duties, reviewing case studies that highlight diseases that are common in non-domestic species either in zoo or free-ranging conditions and comparative anatomy, reviewing the photo bank for cases of particular interest, and utilizing reference material available at the NZG. The current course materials are attached separately.

The 1st candidate Dr Simone Magalo from the ARI (Maputo) has completed the course. We have received informal feedback that he found it very valuable, mentioning in particular his new understanding of the importance of Transboundary disease concerns, the value of training material covering important diseases of the region (African Swine Fever, Lumpy Skin Disease, Canine Distemper Virus and African Horsesickness, obtaining a list of diseases for which the Immunohistochemistry lab at the FVS has tests, and technical support from the Histotechnology lab at the FVS. At the NZG he was interested by the exposure to exotic species such as fish, reptiles, birds, an

antelope and insects. He enjoyed working through the case reports as well as the photographic library. He was particularly interested in the crocodile steatitis cases since he has worked for many years in Massingir and in light of the current outbreak of this disease – highlighting the need to improve communications in Mozambique between the Ministry of Agriculture (which is responsible for domestic animals), the Ministry of Tourism (under which wildlife falls) and the Ministry of Fisheries. He suggested that more hands on supervision may be necessary for more junior pathologists who will attend future courses (in June, August and September). He also mentioned the need for more reference books on wildlife including identification, anatomy, ecology and behaviour and will investigate their availability at the Museum in Maputo.

Reference materials were handed over to him for the Institute:

- 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).

Dr Gaby Monteiro from the Eduardo Mondlane Faculty of Veterinary Science (Maputo) is booked to start the course on the 29th June. Such visits foster a working network of wildlife pathologists in the region.

So far, sampling materials have been purchased by the ARI and NZG for the purposes of processing diagnostic cases. Only 2 samples have been processed by the ARI (An African Buffalo that was too rotten for analysis, and one cow from the Massingir region with tuberculosis). Dr Rosa Costa will shortly be visiting the GLTFCA with Dr Avelino Nhate and they expect to necropsy more animals. Further cases are expected to be presented to both laboratories in the future.

Thirteen cases have been processed by the NZG:

| Species | Date | Species History |
|------------------|-----------|-------------------------------------------------------------------------------------------------|
| African Buffalo | 03-Mar-09 | Suspected tuberculosis |
| Black Wildebeest | 08-Apr-09 | Healed corneal ulcer |
| Cheetah | 27-Feb-09 | Post-anaesthetic heart failure |
| Common Duiker | 18-Feb-09 | Cerebral cestodiasis |
| Leopard | 05-Feb-09 | Well-differentiated adenocarcinoma, liver |
| Leopard | 08-Apr-09 | Complications of chronic glomerulonephritis |
| Lion | 28-Jan-09 | None possible (autolysis) |
| Lion | 19-Jan-09 | Interstitial pneumonia and elbow cellulitis (probable Mycobacterium) |
| Lion | 03-Mar-09 | Concurrent histiocytic pneumonia, poliomyelitis and parasitic myositis (probable Mycobacterium) |
| Sable | 16-Jan-09 | Acute heart failure (possible Haemonchosis) |
| White Rhino | 17-Apr-09 | Suspected tuberculosis |
| White Rhino | 23-Apr-09 | Salmonella enteritis |
| White Rhino | 18-May-09 | Severe generalised lymphadenitis |

One collaborative journal article on the identification of Bovine Tuberculosis in African Buffalo in Zimbabwe has been submitted to Emerging Infectious Diseases. Further case reports and/or journal articles are expected.

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.