Partner Country Updates
Victoria Falls Wildlife Trust & ZimParks Zimbabwe

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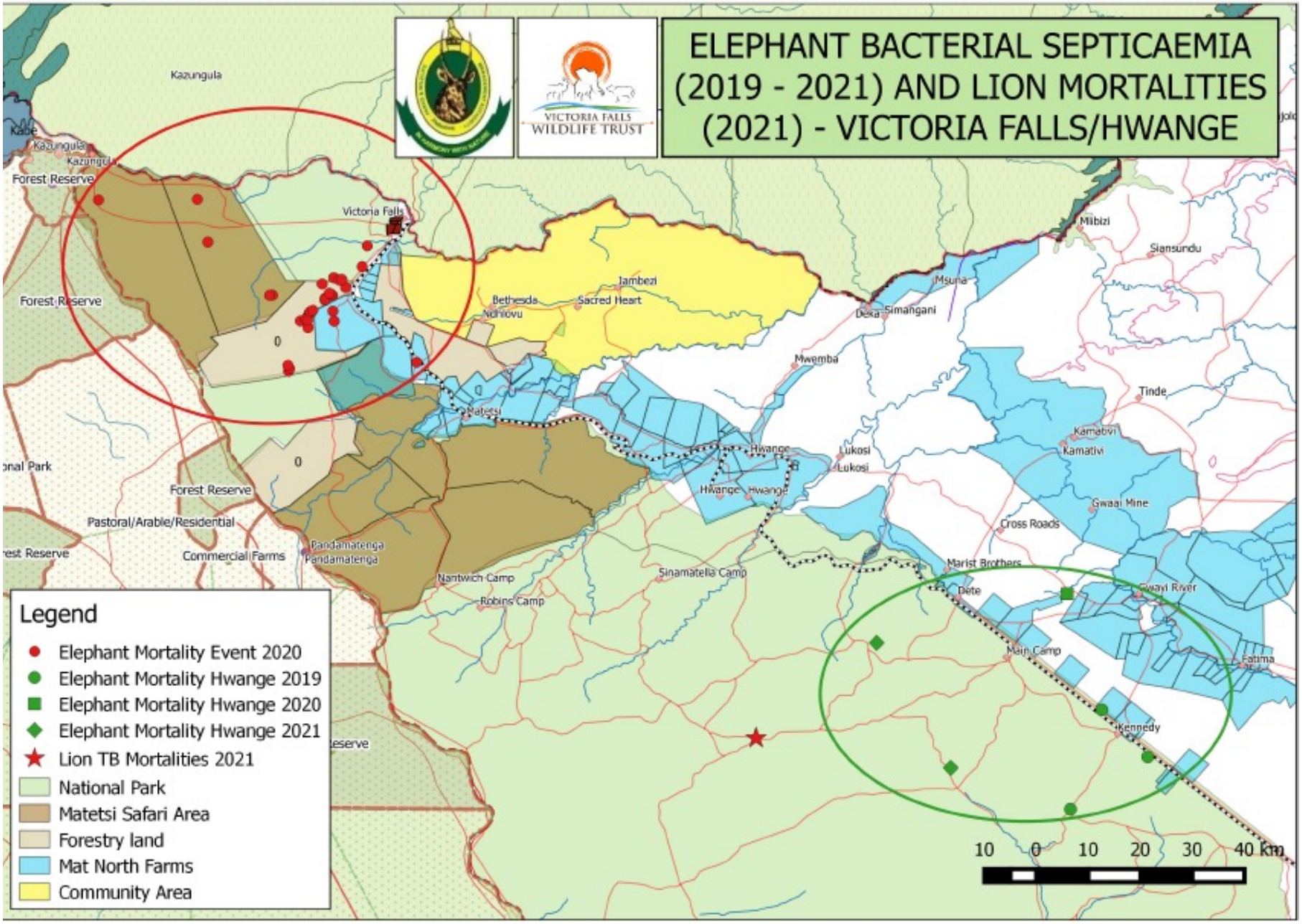
Animal Health Sub Working Group meeting
17-18 November 2021
Virtual

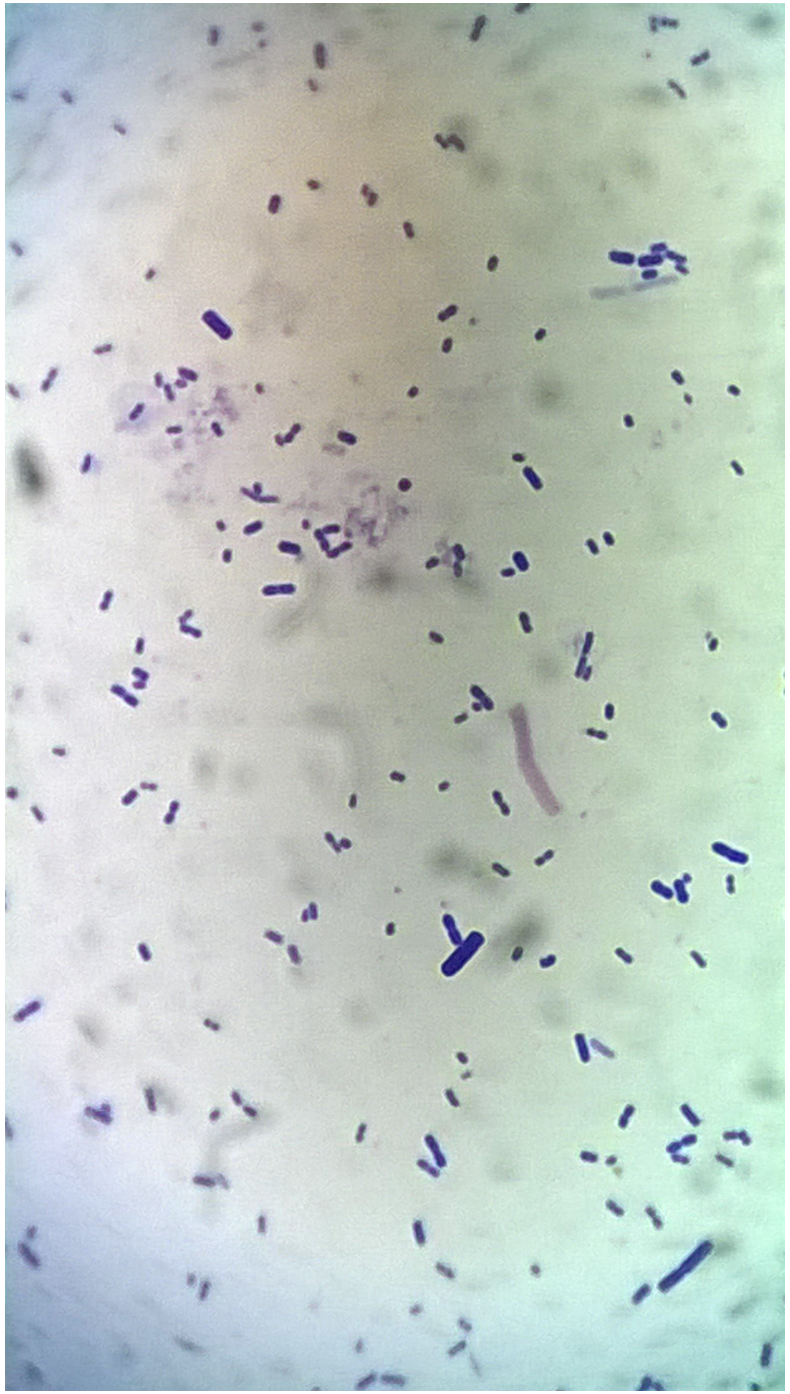
A. Emerging Health Issues
Elephant mortality – Bacterial Septicaemia

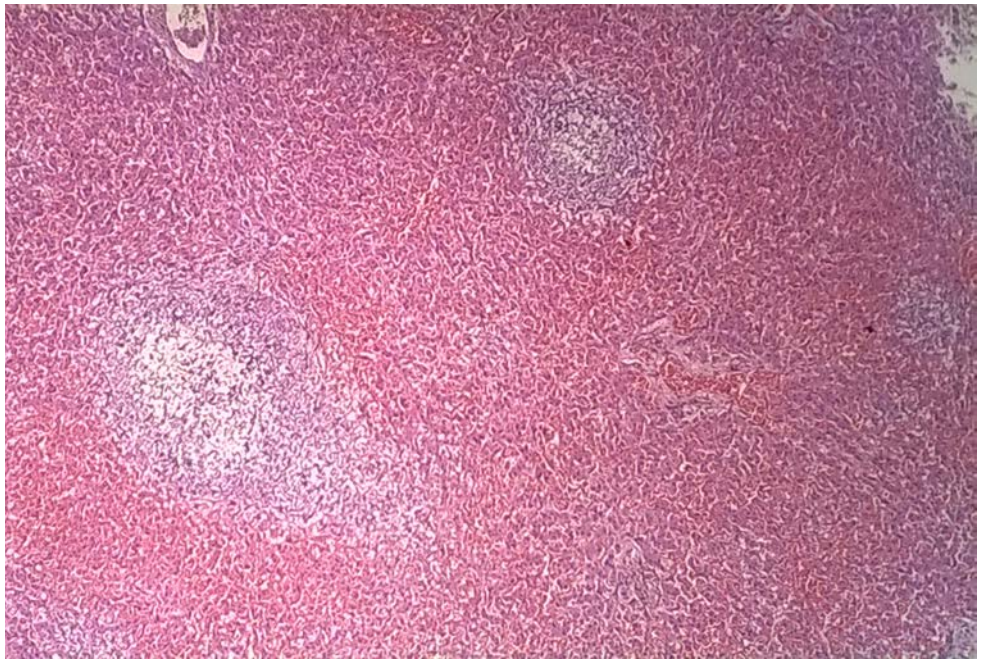
Review of elephant mortality in Zimbabwe-KAZA before Aug 2020

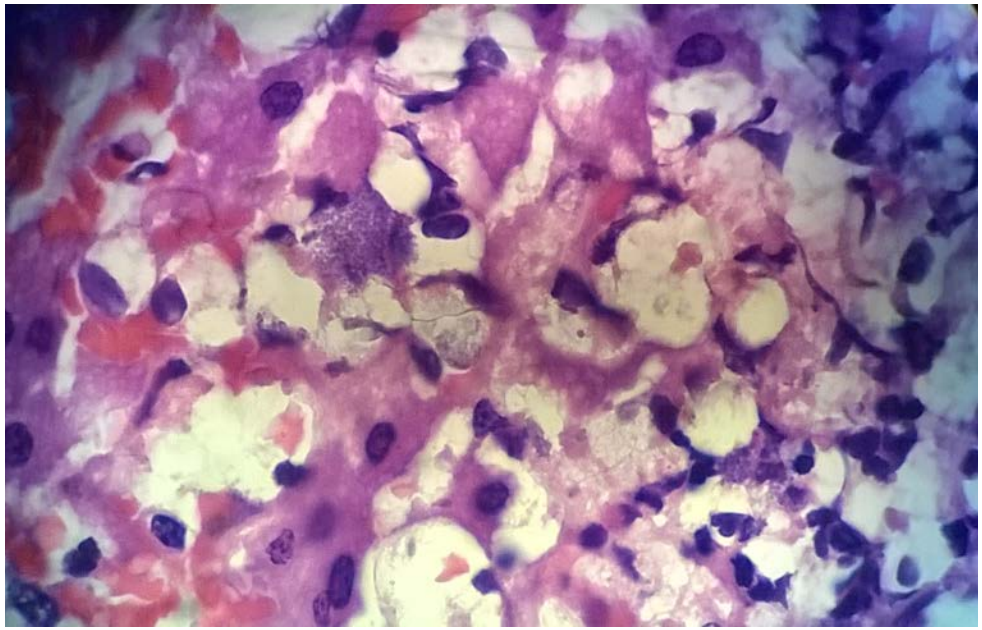
- 2019
  - 19 elephant sampled between 15th Aug – 11th Dec
  - 4 with liver / spleen for histopath examination
    3 with typical micro-abscesses of Bact septic.
  - 19 blood smears
    (at least) 4 others with cocco-bacilli (causative ?)

- 2020 -
  - dead 3 month old elephant calf
    5 weeks before Vic Falls mortality first seen
    150 km south-east (Sikumi forest)
    typical micro-abscesses


ELEPHANT BACTERIAL SEPTICAEMIA (2019 - 2021) AND LION MORTALITIES (2021) - VICTORIA FALLS/HWANGE
VICTORIA FALLS WILDLIFE TRUST
Kazungula
Kazungula
Kazungula
Forest Reserve
Victoria Falls
Forest Reserve
Jambezi
Bethesda
Ndhlovu
Sacred Heart
Mbizi
Siansundu
Msuna
Deka
Simangani
Mwemba
Tinde
Matetsi
Kamativi
Kamativi
Hwange
Hwange
Hwange
Lukosi
Lukosi
Gwaai Mine
Cross Roads
Marist Brothers
Dete
Gwayi River
Main Camp
Fatima
Kennedy
Forest Reserve
Pastoral/Arable/Residential
Commercial Farms
Pandamatenga
Pandamatenga
Nantwich Camp
Robins Camp
Sinamatella Camp
Legend
Elephant Mortality Event 2020
Elephant Mortality Hwange 2019
Elephant Mortality Hwange 2020
Elephant Mortality Hwange 2021
Lion TB Mortalities 2021
National Park
Matetsi Safari Area
Forestry land
Mat North Farms
Community Area
10 0 10 20 30 40 km







Elephant mortality – Bacterial Septicaemia

Mortality in 2021

- Samples from 11 dead elephant; mid-April to early Nov
- 4 from Hwange NP, 4 from Matetsi Safari Area, 3 from Zambezi NP / town
- 2 with typical micro-abscesses in liver / kidney (Hwange NP)
- 2 others with cocci-bacilli in smears (likely to be Elephant BS)
- Other mortality reported in Matetsi Safari Area; no samples

- Elephant under less stress (outside urban area) than in 2019 / 2020, because of good rains in the last season

Progress in Microbiology / Molecular Biology of Elephant Bacterial Septicaemia

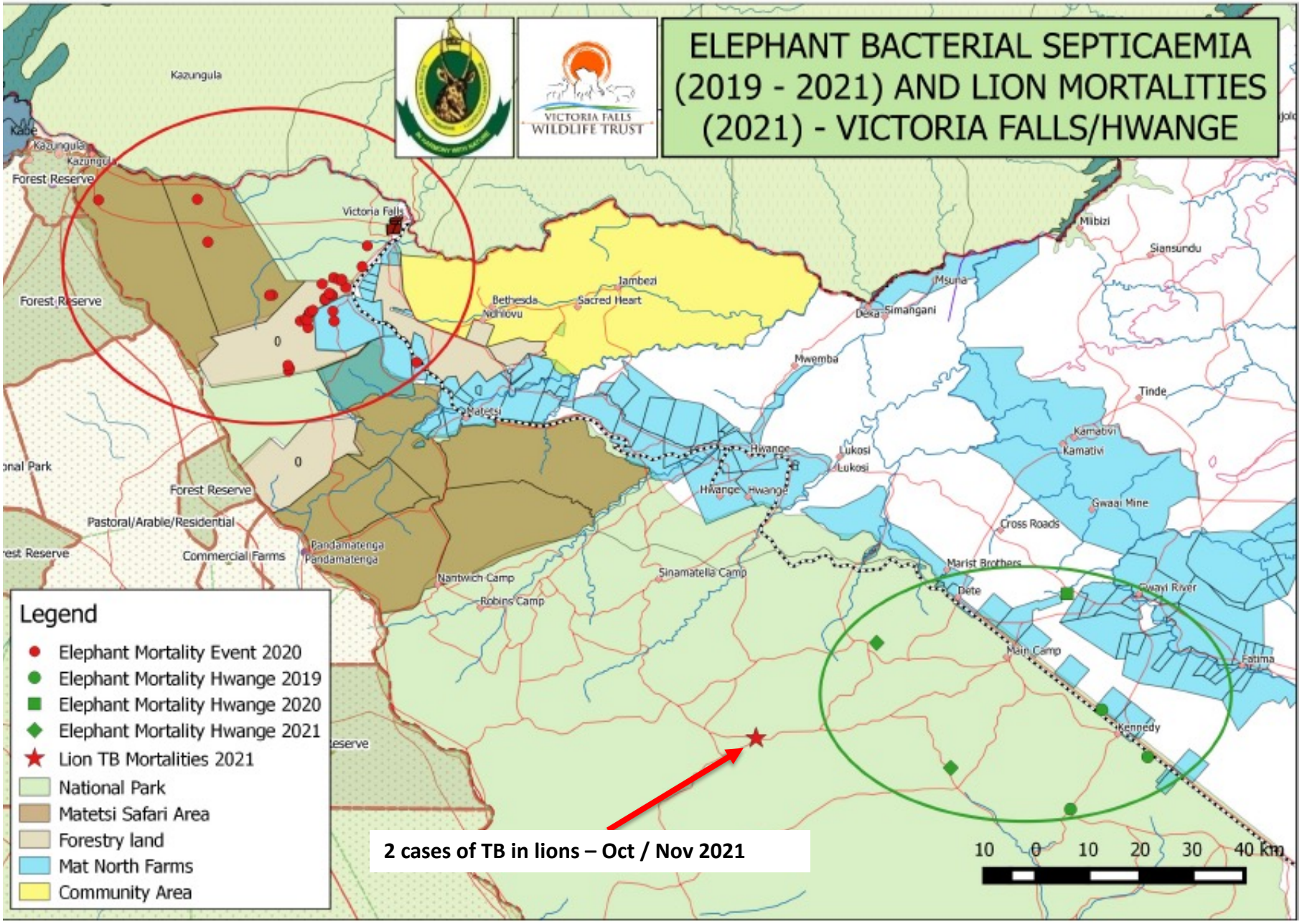
- Bisgaard taxon 45 (Pasteurellaceae) identified as likely cause
- Previously found in humans with lion / tiger bite wounds
- Bt45 DNA identified in 6 of the 2020 elephant samples
- PCR 'primers' for P.m. types A, B, D & E received
- PCR for *Pasteurella multocida* come up negative for Bt45
  - positive for control culture of P.m. helps differentiate
- PCR 'primers' for Bt45 now identified, following DNA sequencing (but not yet received for Lab use)
- Specific media for Pasteurellaceae now commercially available (since July 2021); ordered, for VFWT to do cultures
- Swabbing and culture / PCR of immobilized animals
  - oral cavity of lions
  - pharynx of elephant
  - hepatic lymph nodes of dead elephant

TB in lions in Hwange National Park

2 cases in the same pride in central Hwange NP

1. 13 year old lioness
   - first seen ill on 26th August, 2021
   - thereafter left pride and staying around a tourist lodge
   - euthanased in extremis on 8th October, 2021
   - post mortem by Dr Mupondi in the field, samples to VFWT
   - severe fibro-granulomatous pneumonitis
   - ZN positive (acid-fast) bacilli in lesions
   - PCR positive for Mycobacterium tuberculosis complex

2. 7 year old lioness
   - also left pride, after case 1., and habituating at the same lodge
   - euthanased on 2nd November; carcass brought to VFWT for PM
   - similar lesions in lung to case 1.
   - fibro-granulomatous lesions in lymph nodes (prescap., mediastinal, hepatic)
   - ZN positive (acid-fast) bacilli in lesions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2 cases of TB in lions – Oct / Nov 2021
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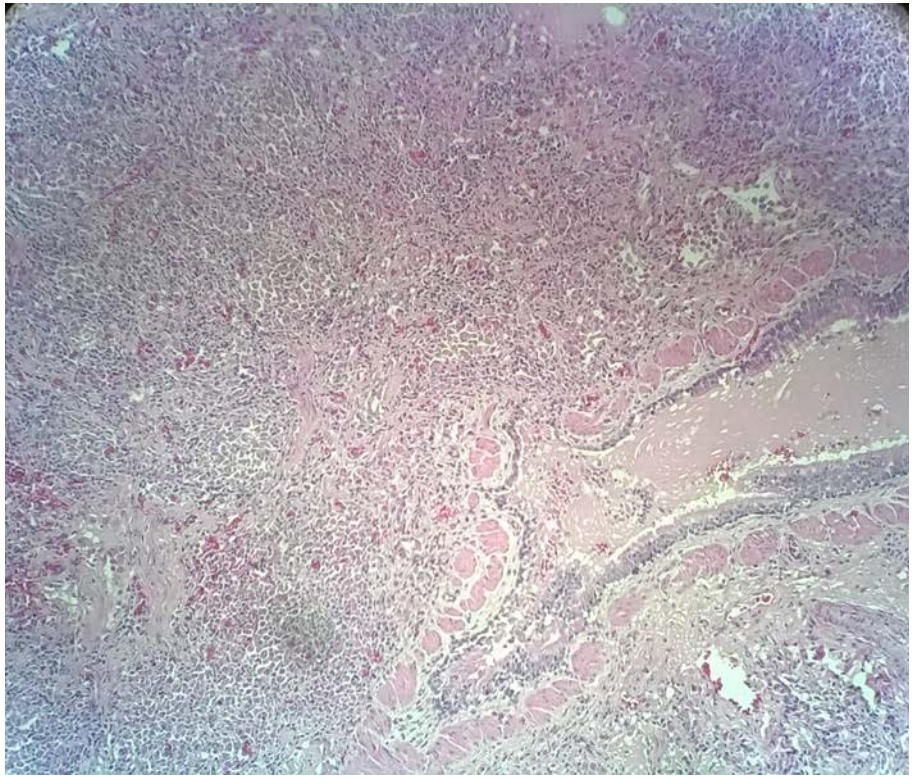

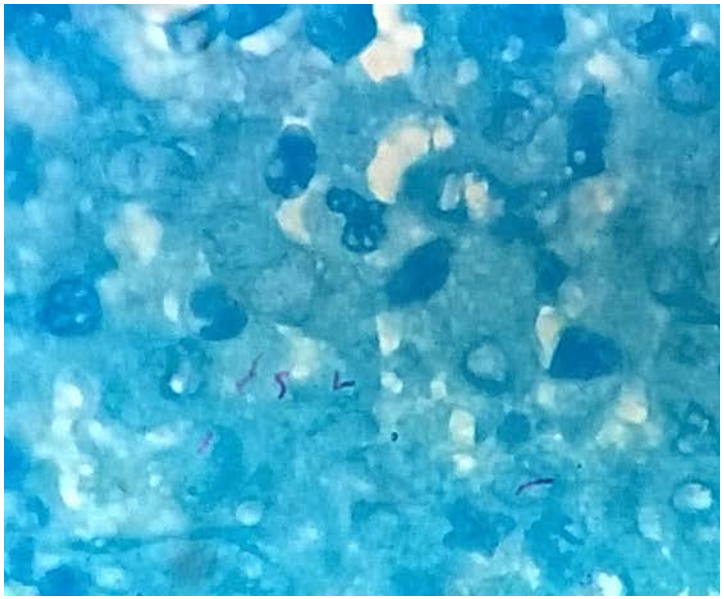

PARKS AND WILDLIFE MANAGEMENT AUTHORITY - ZIMBABWE - IN HARMONY WITH NATURE

Implications for conservation and way forward

- What is the TB type (M bovis, M tuberculosis, M mungi, others ?)
- What is the source of infection – buffalo (M bovis)?
- No known TB in the area (M mungi in Victoria Falls)
- TB in lions is contagious – via aerosol; also oral and bite wound infection
- TB in lions is usually fatal
- in Kruger NP, lion population survives despite this, because of high reproductive rate

  - but severe environmental conditions and concomitant infection (eg FIV) can increase mortality

B. ACTIVITIES IN THE KAZA LANDSCAPE

1. Extension of Diagnostic capacity of VFWT

- Quantitative (real-time) PCR thermocycler received
- Expanded range of PCR disease testing to include:
  - TB, including differentiation of M tb and M bovis
    (hope to get primers for M mungi)
  - Rabies
  - Canine distemper
  - West Nile virus
  - Brucella abortus
- Continuing with:
  - Anthrax
  - Spp ID of suspect meat, for prosecution of poaching cases

- Cyanobacterial work
  - PCR primers for toxigenic Cyanobacterial genes

    Microcystin, Cylindrospermopsin, Nodularin (hepatotoxins)

    Saxitoxin (Neurotoxin – sudden death)

    Anatoxin-a, received separately (this is the neurotoxin possibly responsible for any Botswana cyanotoxicosis; also sudden death)

Cyanobacteria in Vic Falls water bodies

Microcystis – can produce Microcystin (hepato-toxin, and sometimes Anatoxin-a (neuro-toxin)

Anabaena – can produce Anatoxin-a (neuro-toxin)

B. ACTIVITIES IN THE KAZA LANDSCAPE

2. Community Companion animals & Livestock

- Through partnership with Veterinarians for Animal Welfare Zimbabwe (VAWZ); VFWT sources vaccines
- Vaccination of dogs against rabies and canine distemper in communities around Victoria Falls (Nov 2020 to Oct 2021)
  - 2000 rabies vaccinations
  - 1600 CDV vaccinations
- Sterilization of dogs – 130
- Urban feral cat Trap/Neuter/Release programme – 55
- Rabies sero-survey of 500 dogs presented for rabies vaccinations
  - 32% protected + 15% 'some antibody response'
  - 53% susceptible to rabies infection
- Ongoing vaccinations of cattle in Predator-proof cattle bomas
  - Lumpy skin, Anthrax, Blackleg, Botulism
  - Heifers vaccinated against Brucellosis
- Serosurvey of goats for Brucellosis (melitensis) – 0 ex 50 (all neg)

C. CHALLENGES IN THE KAZA LANDSCAPE

- Poor communication; hopefully, mostly a result of COVID
- Slow progress on implementing existing Workplan
  - This highlights need for Epidemiologist to undertake / promote activities
- Movement of samples across borders
- Pesticide analysis – spate of vulture deaths
- Lack of finalization of VFWT MoU with Secretariat, because of COVID restrictions
- Moving samples across borders and permit issues
- Victoria Falls 'City Status'; increases:
  - human wildlife conflict / stressed animals
  - urban sprawl and habitat loss, with deforestation for firewood
  - closure of wildlife corridors, especially to Zambezi river
- Trucking, along Vic Falls / Kazangula road – numerous fatalities, including extirpation of one, complete wild dog pack

D. FENCING ISSUES RELEVANT TO KAZA

- Highlight fencing issues in this section **if not already covered** in previous sections

E. RECOMMENDATIONS TO AHSWG

- Approve epidemiologist position, if funding available
- Improve awareness of wildlife TB
- Share pathological samples, especially of elephant mortality
- Improve communications within the AHSWG