

Tuberculosis - What makes it an ideal disease for the interface?

Anita Michel

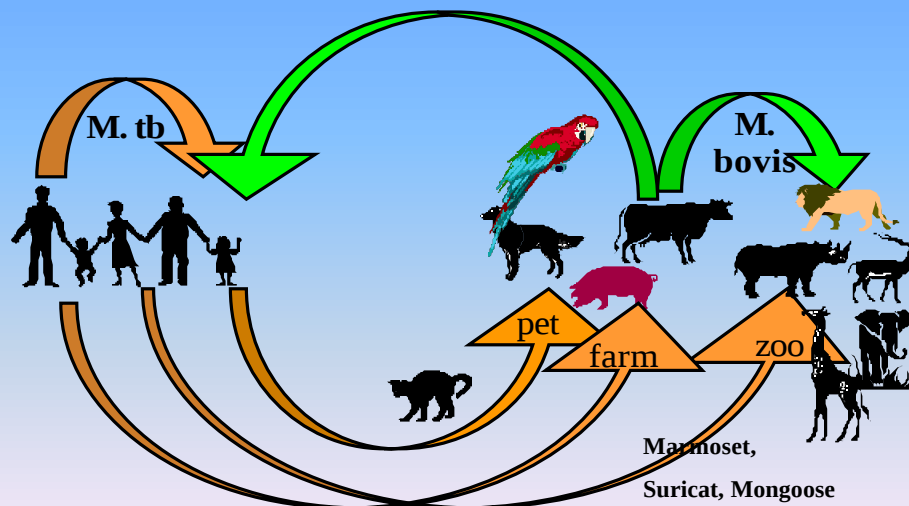
ARC-Onderstepoort Veterinary Institute

South Africa

M. tuberculosis complex

- M. tuberculosis ———▶ humans
- M. bovis ———▶ cattle & wildlife
- M. africanum
- M. microti
- M. canettii
- M. caprae sp. nov.
- M. pinnipedii sp.. nov. (seal bacillus)

Tuberculosis: Zoonosis and Anthropozoonosis



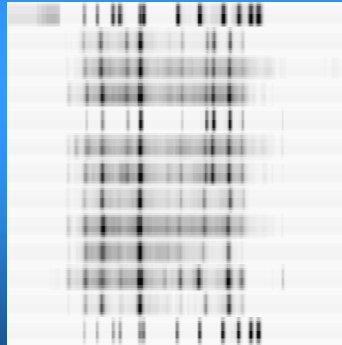
History of tuberculosis caused by M.bovis in South Africa

- Imported by European settlers
- Low prevalence on national level
- 1928: First wildlife tb in greater kudu and common duiker in the Eastern Cape
- 1986: Buffalo in the Hluhluwe-Umfolozi Park (KZN)
- 1991: Buffalo in the KNP
- 1994: Buffalo in parks bordering KNP
- 1998: Greater kudu in Spioenkop (KZN)
- 2000: M. tuberculosis in free-ranging suricates



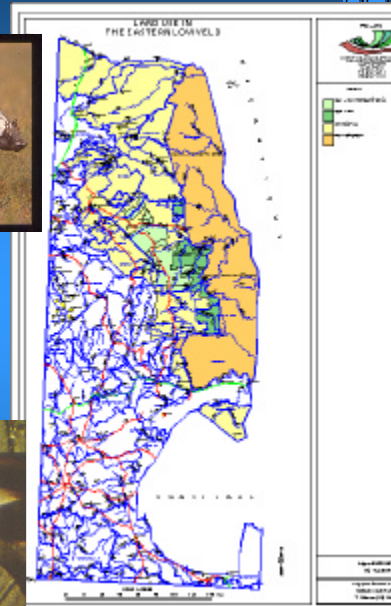
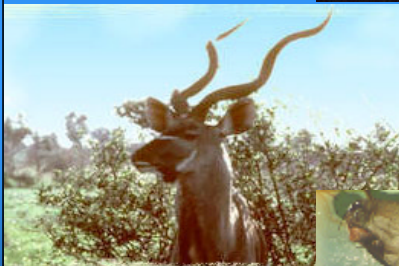
Cattle-to-wildlife transmission of M. bovis Molecular Evidence

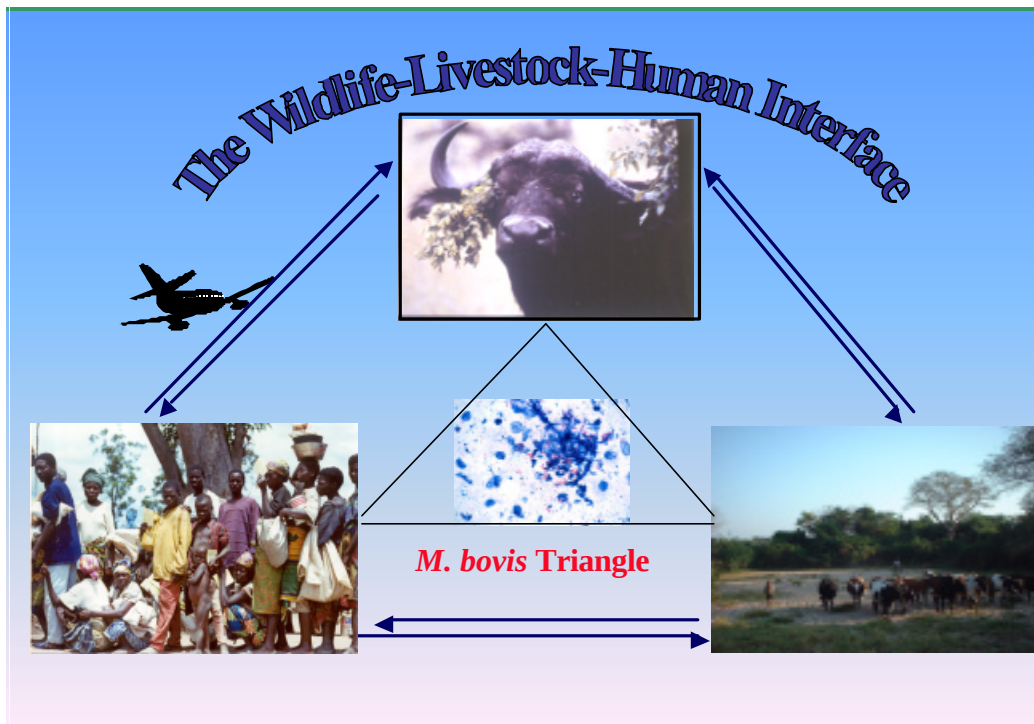
- *M. bovis* isolates from KNP buffalo and in-contact cattle herd are identical
- TB epidemics in KNP and HUP are unrelated



marker VI
TB 871
TB 571
TB 643
TB 600
TB 659
TB 668
TB 463
TB 336
TB 239
TB 631
TB 290
marker VI

What about wildlife-to- cattle transmission?



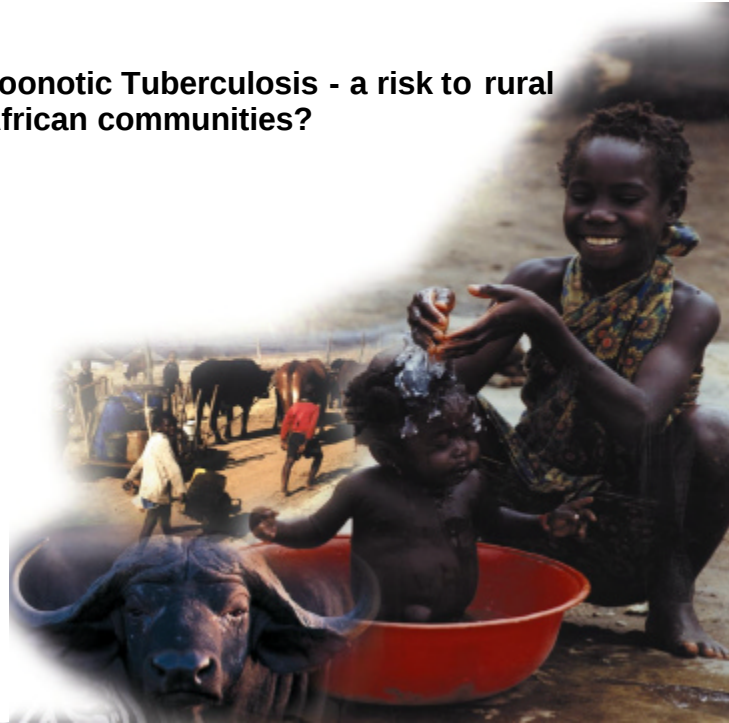


Implications of Wildlife TB

- **Internal**
 - Environmental contamination
 - Unrestricted spillover (spatial, temporal, inter species)
 - Population dynamics
 - New (multiple) maintenance hosts
- **External**
 - restrictions in the trade of game (nationally & internationally)
conservation island
 - public health implication (zoonosis)

Zoonotic Tuberculosis - a risk to rural African communities?

- Consumption of unpasteurised milk
- Close contact with cattle
- Unknown BTB status
- High HIV prevalence
- Limited awareness



Conclusions

- *In developing countries both *M. tuberculosis* and *M. bovis* cross the species barrier easier and more often than generally anticipated*
- *Tuberculosis caused by *M. bovis* is an alien disease with varying effects on African wildlife populations*
- **M. bovis* poses a risk on human health in developing countries with a high HIV/AIDS prevalence*
- *Data regarding zoonotic TB and BTB prevalence in cattle in the wildlife-livestock-human interface are urgently needed*

