

An introduction to Zoo and Wild animal

Dr. Pallav Shekhar

Assistant Professor

Department of Veterinary Medicine

Unit-4





Role

- Geographical Knowledge of National Park, Sanctuary, Protected area, total forest area, Safari and Zoo.
- Different wildlife species in situ and ex situ.
- Recognition of wild animals
- Restraining of wild animals
- Tracking of wild animals
- Human and wildlife interface.
- Human wildlife conflict
- Endangered species
- Forensics
- Diseases

Indian Scenario

- Forest: 21.54% of country geographical area (2.54% of World)
- National Park : 104 (1.23% of World)
- Wild life Century: 551 (3.64% of India)
- Protected Area: 870 (5.02% of India)



Bihar

Recorded forest area compared to total geographical area is 6.87%

National Park is 1

Sanctuaries is 11

Protected forest area is 3,208.47 Km²

Name of Park/Sanctuary

District

Type

1. Barela SAZS Sanctuary	Vaishali	Sanctuary
2. Bhimbandh Sanctuary	Monghyr	Sanctuary
3. Gogabil Pakshi Vihar	Katihar	Closed Area
4. Gautambuddha Sanctuary	Gaya	Sanctuary
5. Kaimur Sanctuary	Rohtas	Sanctuary
6. Kanwar Jheel Bird Sanctuary	Begusarai	Sanctuary
7. Kusheshwarsthan	Darbhanga	Closed Area
8. Nagi Dam Bird Sanctuary	Jamui	Sanctuary
9. Nakti Dam Bird Sanctuary	Jamui	Sanctuary
10. Rajgir Sanctuary	Nalanda	Sanctuary
11. Sanjay Gandhi Botanical Garden	Patna	Botanical Garden
12. Udaypur Sanctuary	West Champaran	Sanctuary
13. Valmiki National Park	West Champaran	National Park
14. Valmiki Sanctuary	West Champaran	Sanctuary
15. Vikramshila Gangetic Dolphin	Bhagalpur	Sanctuary



In situ wildlife in Bihar

- Tiger
- Leopard
- Bear
- Hyena
- Bison
- Chital
- Barking Deer etc.
- Crocodile
- Magars .

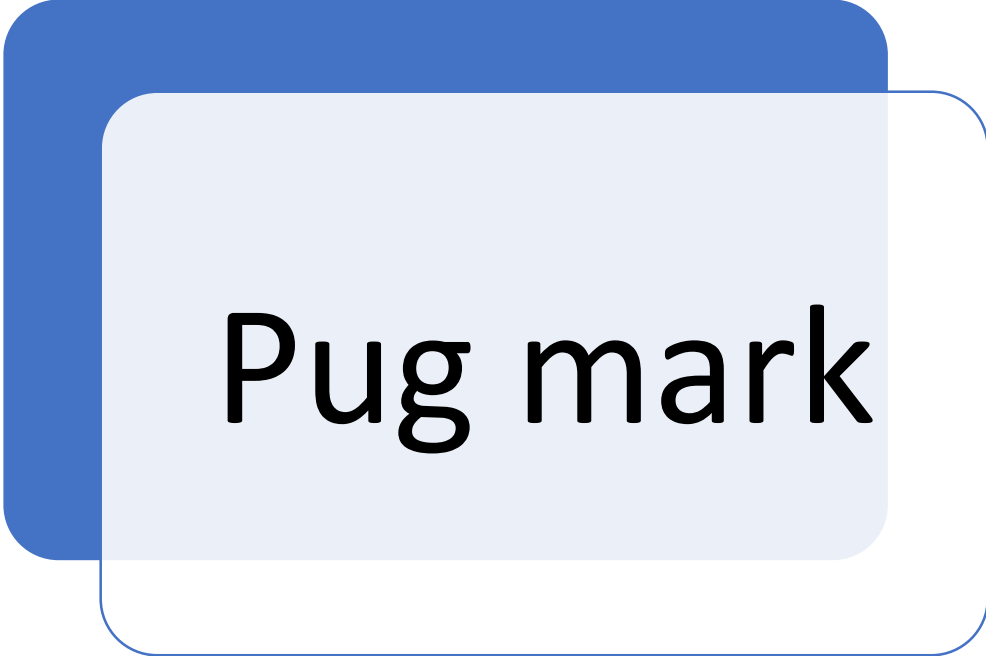


Ex Situ

- Central **Zoo** Authority (CZA) has declared **Patna zoo** as the top **breeding** centre of **rhinos**.
- **Total Rhino**



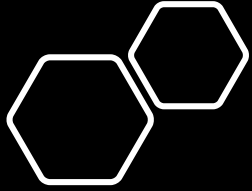
Recognition



Pug mark



Scats



Pug Marks

- Pugmark is the term used to refer to the footprint of most animals (especially megafauna).
- "**Pug**" means foot in Hindi

Tiger Pug Marks

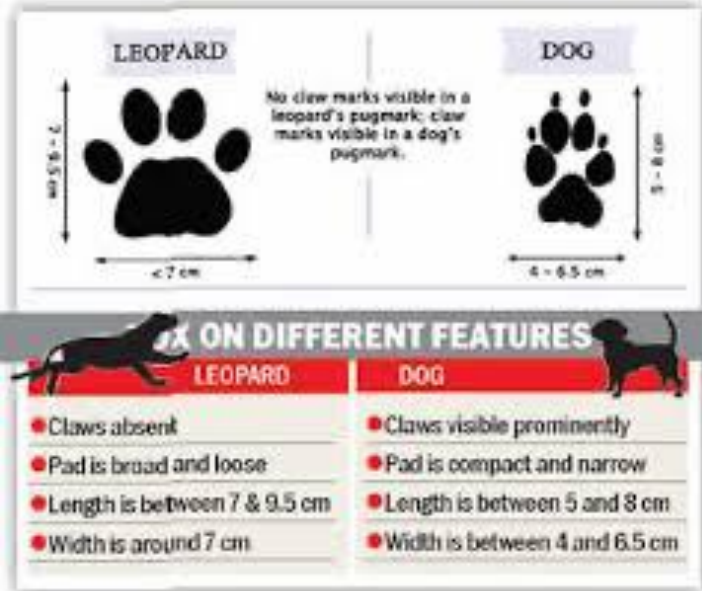
Tiger Pugmarks - Male versus Female



Male Pugmarks are bigger and more space between the toes than the female counterpart

Female Pugmarks are smaller and less space between the toes than the male counterpart





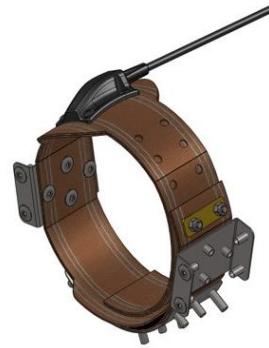
Leopard pug mark



Pug Marks



Scats



Animal's Tracking System

Emergency Kits





Chemical Method of Restraining and medication

Poll Syringe



Jab Stick



Dart syringes of varying capacity (1 ml to 5 ml) to be darted via blow-pipe (photo credit: Dist-Inject)



Blow Pipe



Darting of a captive Tiger using a blow pipe that covers a range of approximately 5 meters.



Pistol for immobilization of wild animals (Photo: Dist-Inject)



Rifle for immobilization of wild animals (Photo: Dis-Inject)





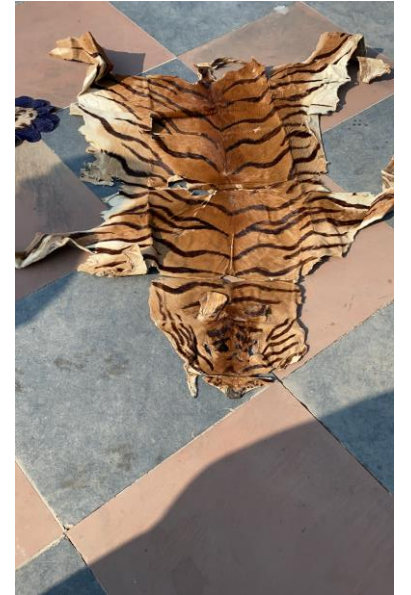
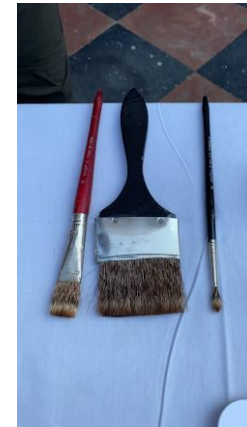
Sites for darting



Physical Method of Restraining



Illegal trade



Definition



Wildlife means feral animals



Captive wild animals



and wild animals.



Feral animal is an animal of a domesticated species that now lives without direct human supervision or control.



Captive wild animal is an animal that has a phenotype not significantly affected by human selection but that is captive or otherwise lives under direct human supervision or control, including zoo animals and pets.



Wild animal is an animal that has a phenotype unaffected by human selection and lives independent of direct human supervision or control.

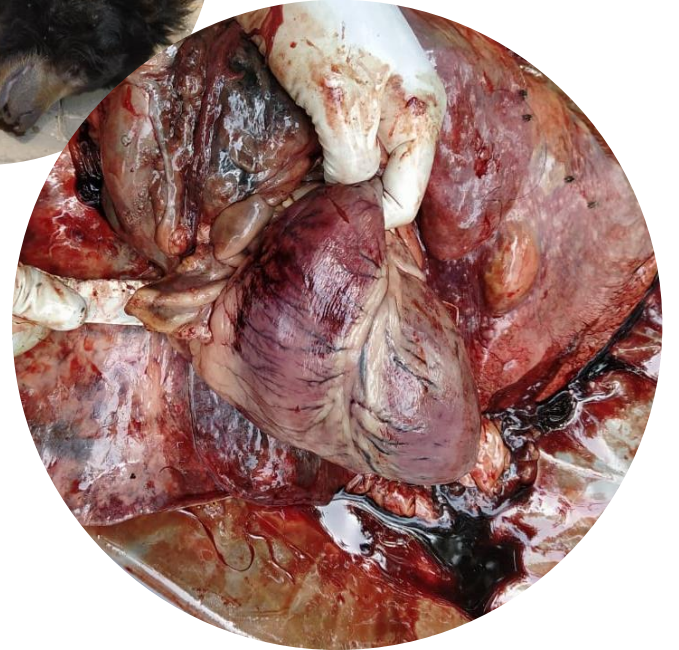
- On January 19, 2020, a four-year-old elephant suspected to have died due to anthrax was found in Sambalpur in Odisha.
- In India, sporadic deaths of wild elephants due to anthrax were being reported.
- Rabies virus isolated from buffaloes, Nilgai, and Mongoose in Gujarat (Reddy et al., 2015).

Rabies virus confirmed in Live
Elephant in Bihar by Corneal
Smear Technique and then by
Negri body test.

(Tiwary and Shekhar, 2019)



- Tuberculosis was confirmed in in postmortem examination in Patna Zoo (Deepak and Singh, 2020)



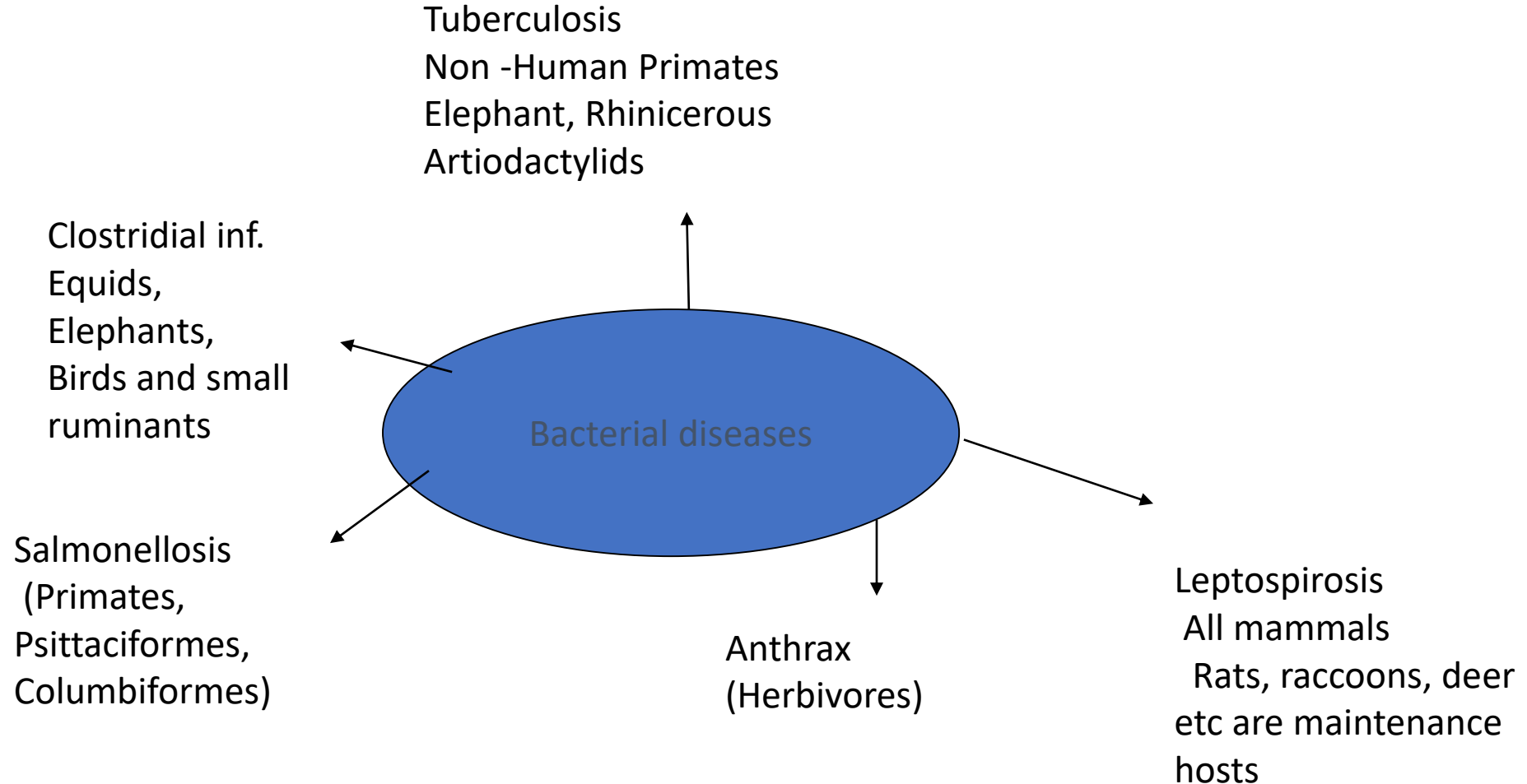
- Theileria annulata was confirmed in Deer captured from Bihta, Bihar (Shekhar and Ajeet, 2020)

- *Trypanosoma* mainly affects member of camelidae and equidae but have widest range cattle, buffaloes, sheep, goat, dogs, pig, elephant, Chital, Jungle Cat, Mithun, Deer, foxes, tiger and jackals (Pathak and Singh 2005).
- An outbreak of 'Surra' in tigers at Ranthambore National Park with a fatal case report in a male tiger (Ramachandraiah 1995)

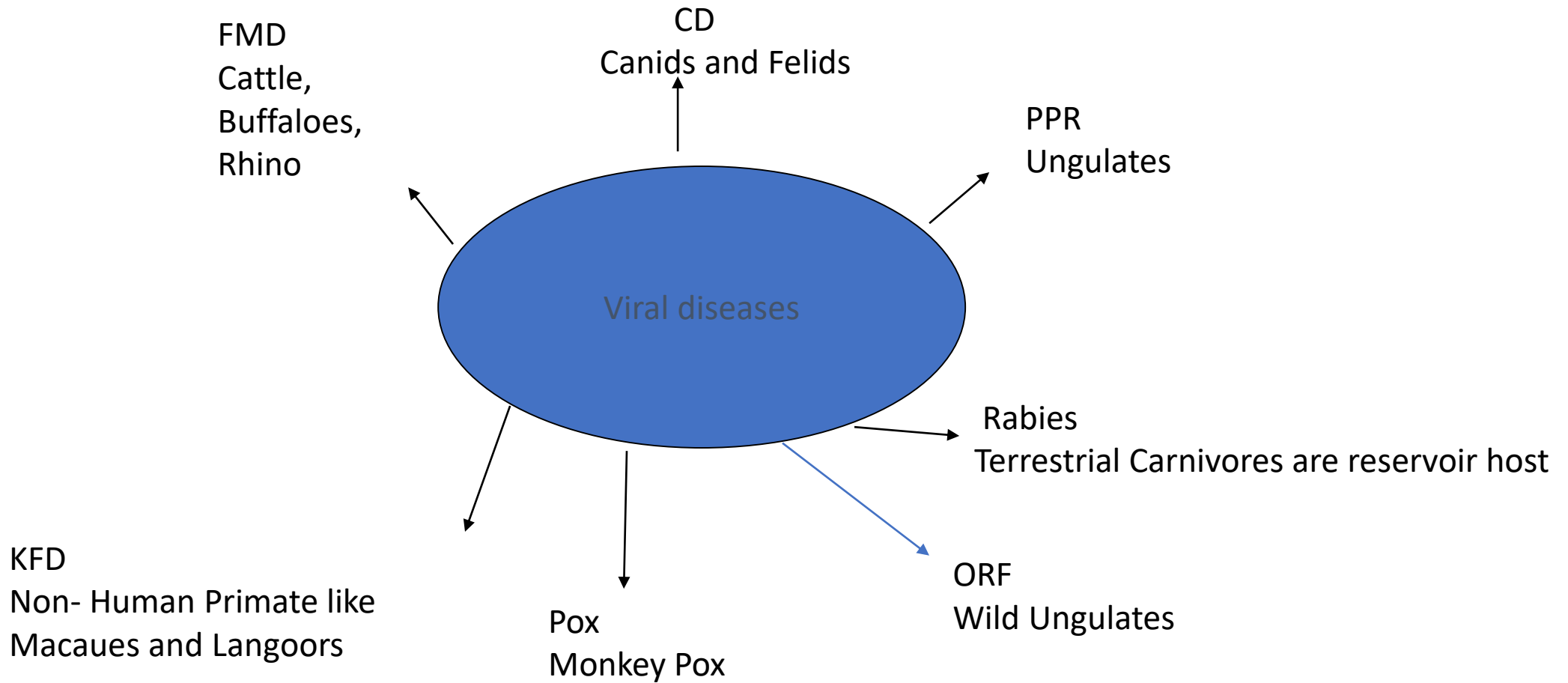
Epidemiology

- **Over 60% of pathogens responsible of human diseases are of animal origin.**
- A majority of these pathogens are coming from wildlife.

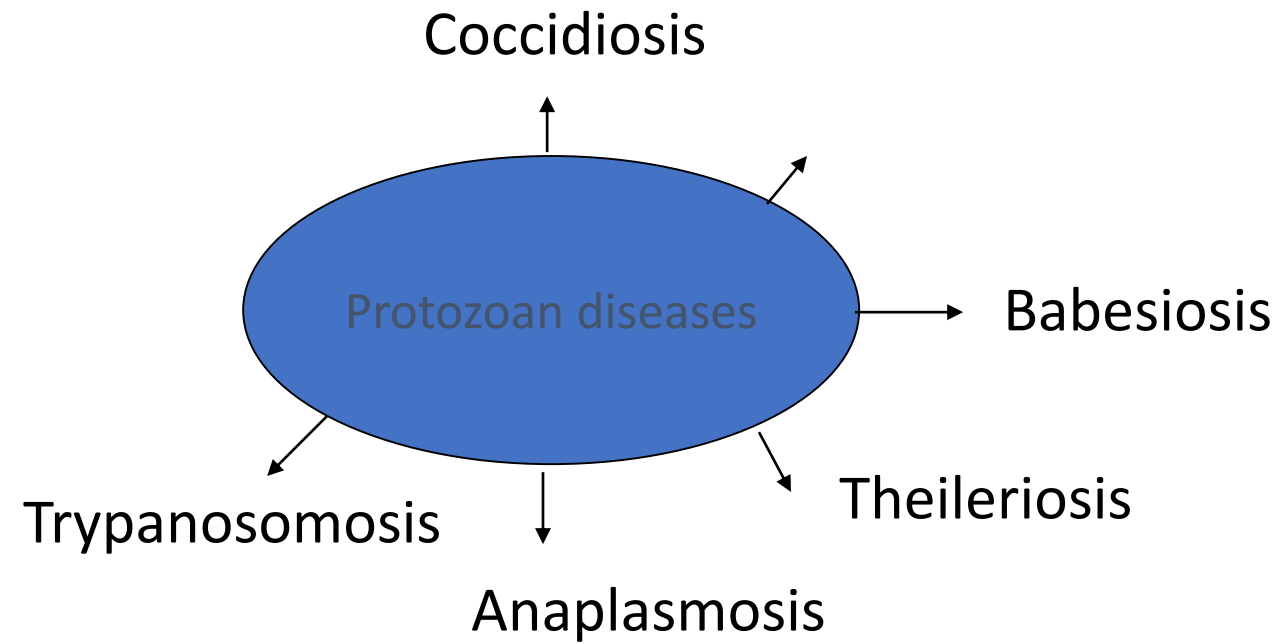
BACTERIAL WILDLIFE DISEASES



VIRAL WILDLIFE DISEASES



PROTOZOAN WILDLIFE DISEASE



Human-Domestic animal and Wildlife Interface

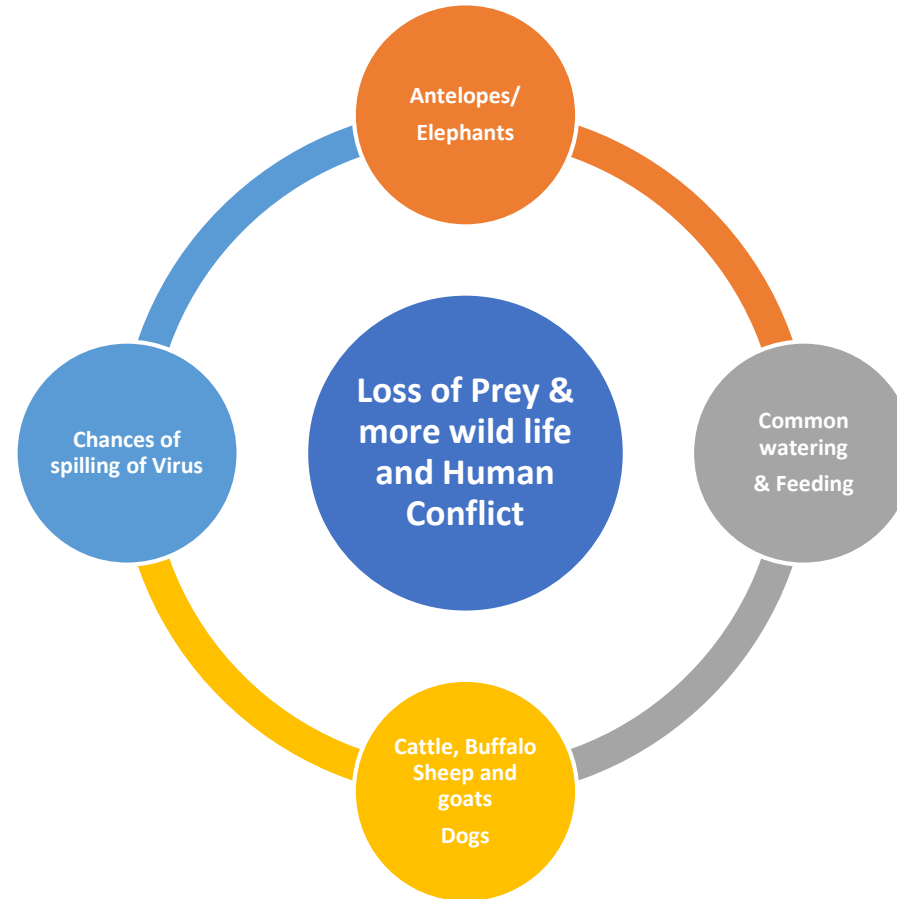
- **India > ½ of tribal in remote forest fringe village depends on forest for livelihood**



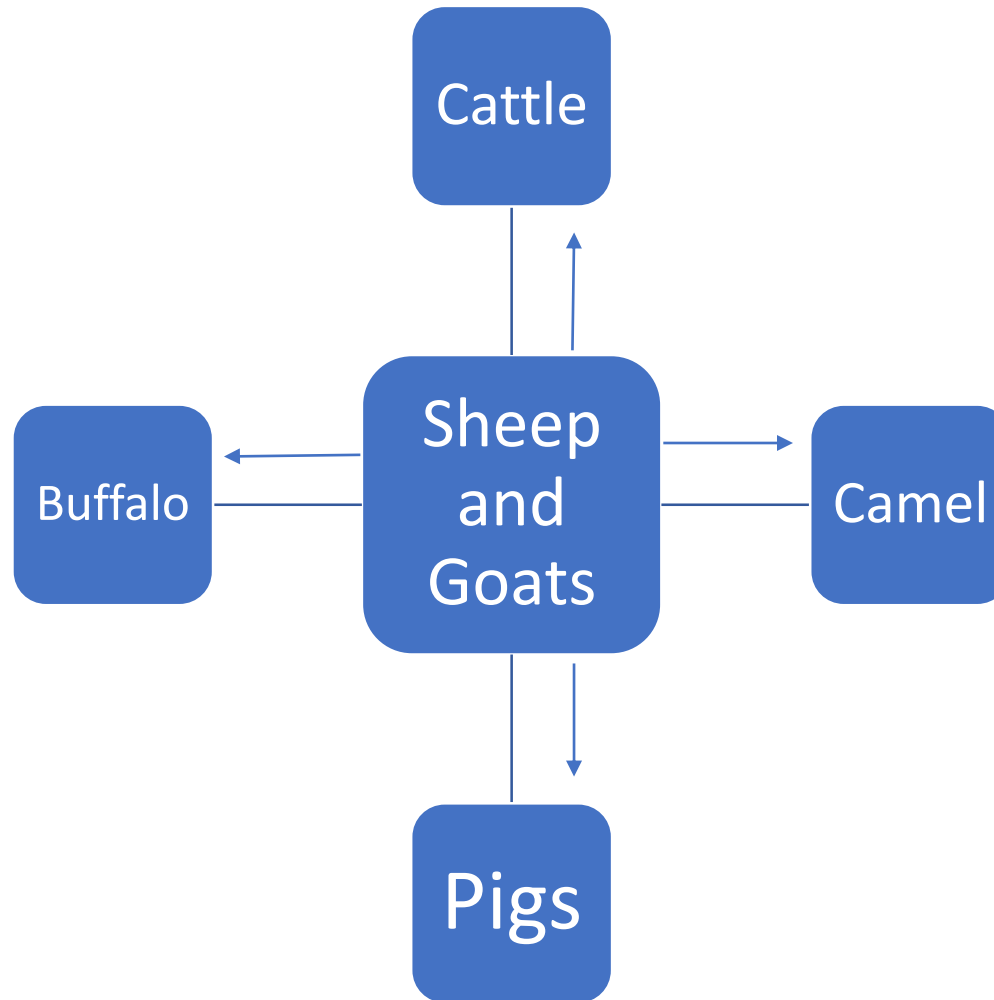


Human-Livestock- Wild Life Interface Impact

- Villages in and around PA
- Cattle, Buffaloes, Sheep and Goats kept as extensive system.
- Share Common habitat for feeding and watering.
- More intervention of Human in forest.
- Wild animals enters in human habitat because of encroachment.
- Emergence of New Diseases
- Human Wildlife conflict
- Killing of wild animals



Solitary report of PPR in Indian buffalo in Tamil Nadu (Govindrajan et al., 1997)



In Ethiopia more than 90% morbidity and variable mortality (5-70%).

Saiga antelope



Critically endangered antelope
Found in Mongolia & Russia

Ibex



Wild Goat
Found in Eurasia, North Africa and East Africa

Gazella

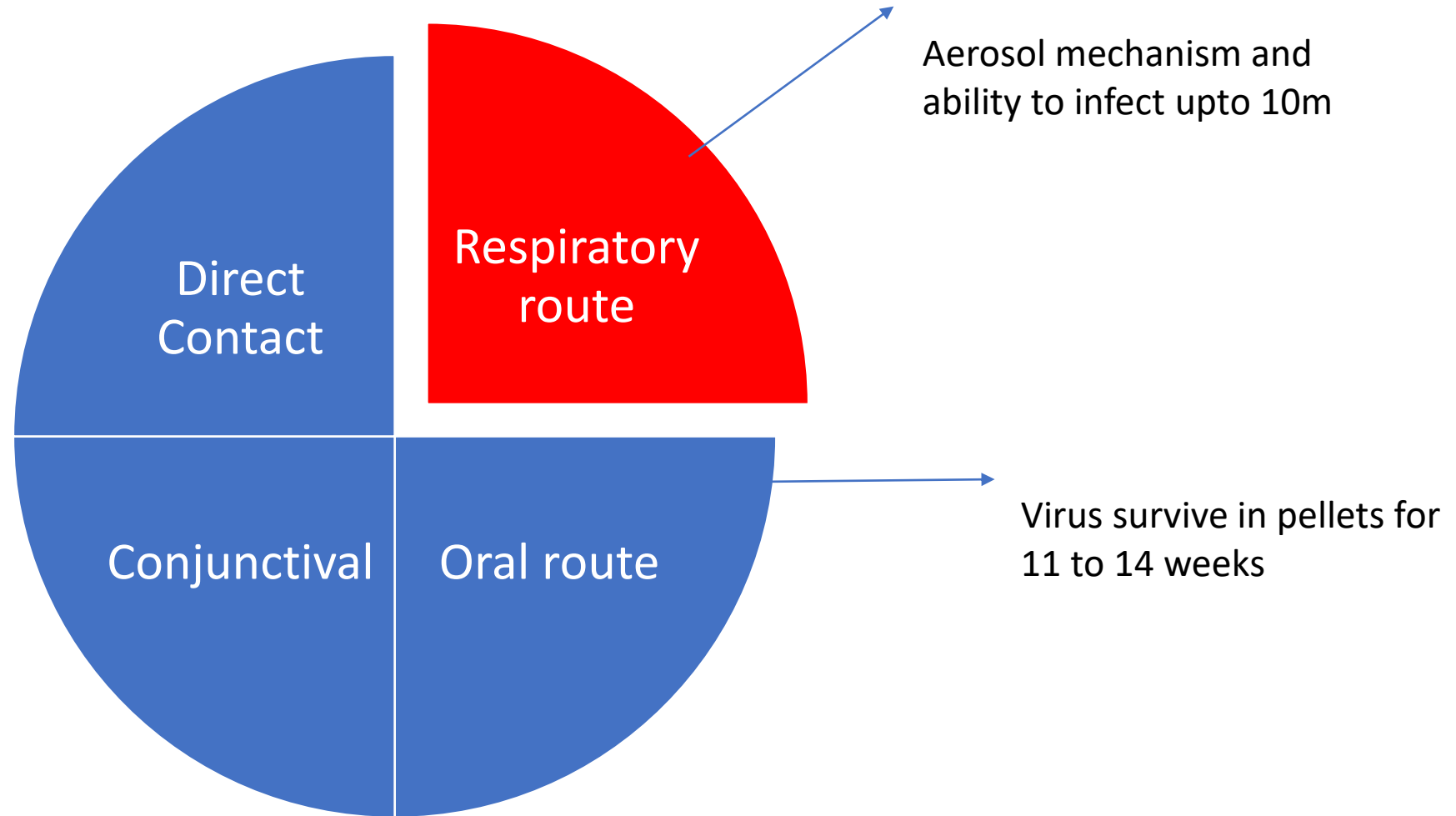


Small antelope
Found in Africa, Central Asia and Indian Subcontinent

High Case fatality in PPRV affected exotic ungulates

In Gazella the morbidity rate was 51% and Case fatality rate was 100%

Mode of Transmission



Aerosol mechanism and ability to infect upto 10m

Respiratory route

Direct Contact

Virus survive in pellets for 11 to 14 weeks

Oral route

Conjunctival

Cattle can be infected with PPRV but is unable to transmit the disease to another host.

Khan et al., 2008

Transmission to Wild Goats and Antelopes

➤ **In 2016 Mongolian Saiga Antelope- Heavy mortality**

➤ Siberian Ibex- Confirmed with PPR

➤ Goiterred gazelle- Confirmed with PPR

➤ White tail deer- Confirmed with PPR

➤ **1.5 million sheep & goats seasonally grazed in the Saiga Range.**

(National Statistical Office of Mongolia, 2016)

PPR in 3 other species of antelope in semicaptive in UAE reported.

(Kinne et al., 2010)

Impact...

➤ **Economic loss from PPR estimated to be 1,800 million INR annually in India.**

➤ **Reported seroprevalence of PPRV in India**

Sheep and Goat: 43.56%

Cattle and Buffalo: 4.58%

(Balamurgan et al., 2012)

➤ **Can affect wild ungulates in India.**

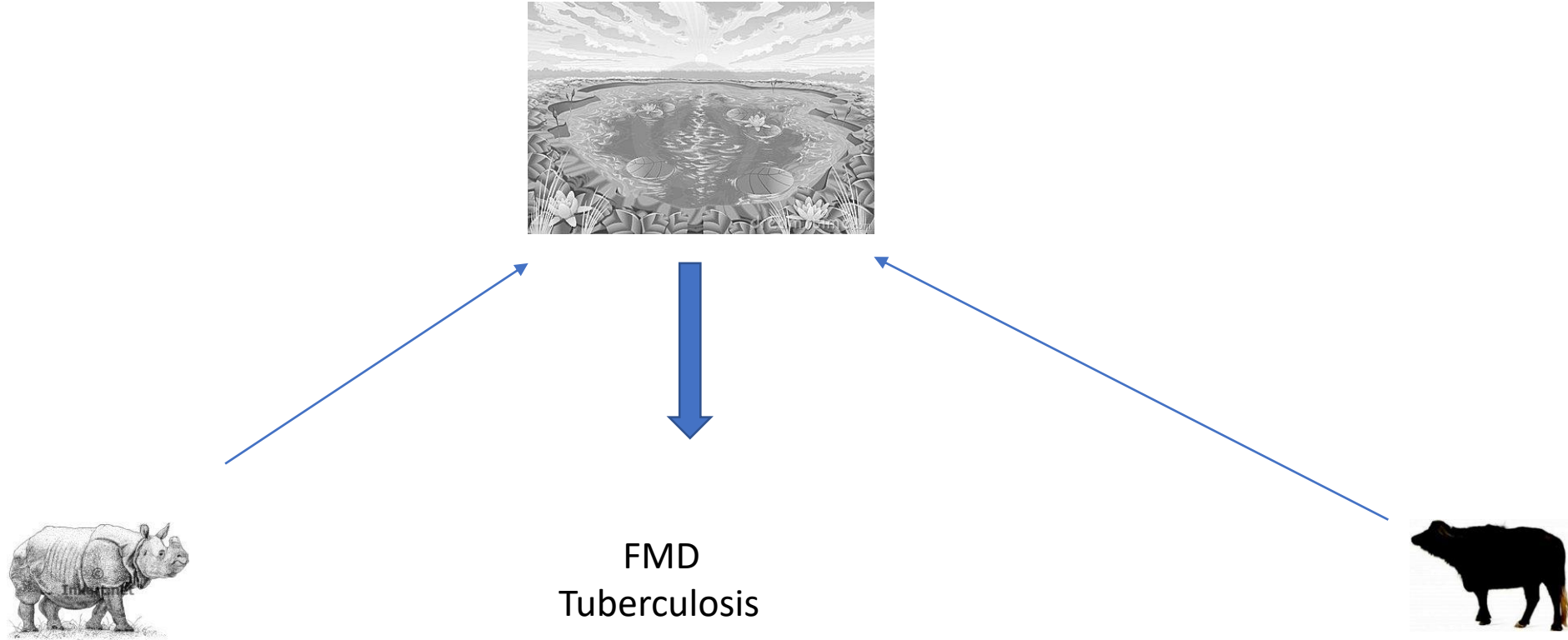
➤ 500-600 million people live in or near forest resources.

➤ 65% of protected area (PA) is inhabited.

➤ 90 million livestock graze inside PAs.

➤ **Chance of Heavy mortality in Sambhar and Deer as in Saiga Antelope of Mongolia.**

Wildlife-Domestic Animal Interface in Wallowing



C.D spill over.....

Domestic Dogs

Wild Canids & Racoons

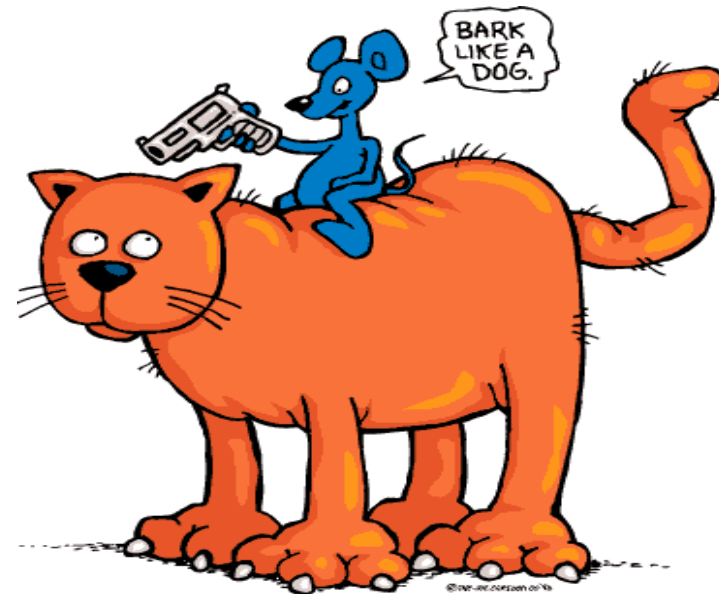
In 2006, 4500 monkey died of C. D

In 2007, 56 Asiatic lion in Western India had antibodies against CDV

Diagnosis



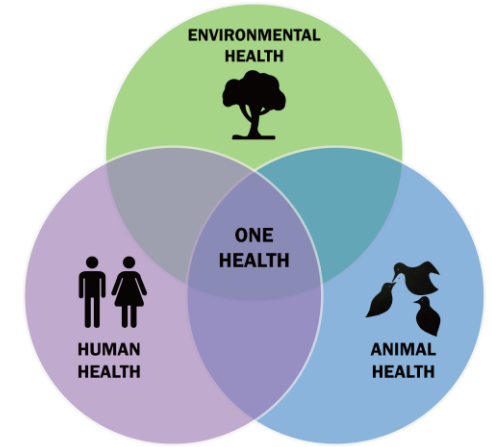
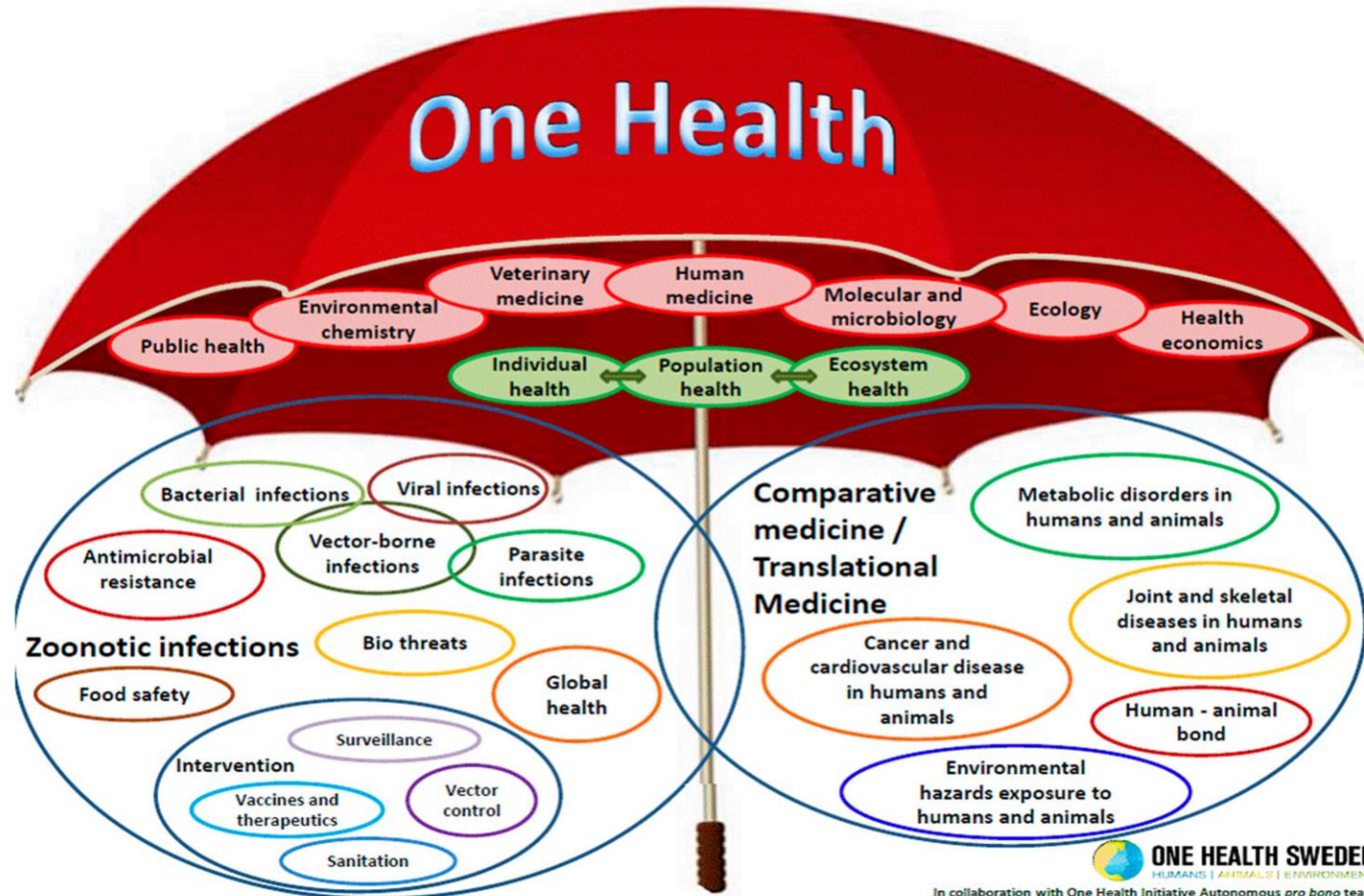
Treatment of wild fauna in forests? !!



Vaccination

- Anthrax
- Foot and Mouth Disease (FMD)
- Peste des Petits Ruminants (PPR)
- Brucellosis,
- Hemorrhagic Septicemia (HS)
- Black Quarter (BQ),
- Classical Swine Fever,
- Ranikhet disease
- Rabies
- Canine Distemper

ONE WORLD ONE HEALTH



Thank You

