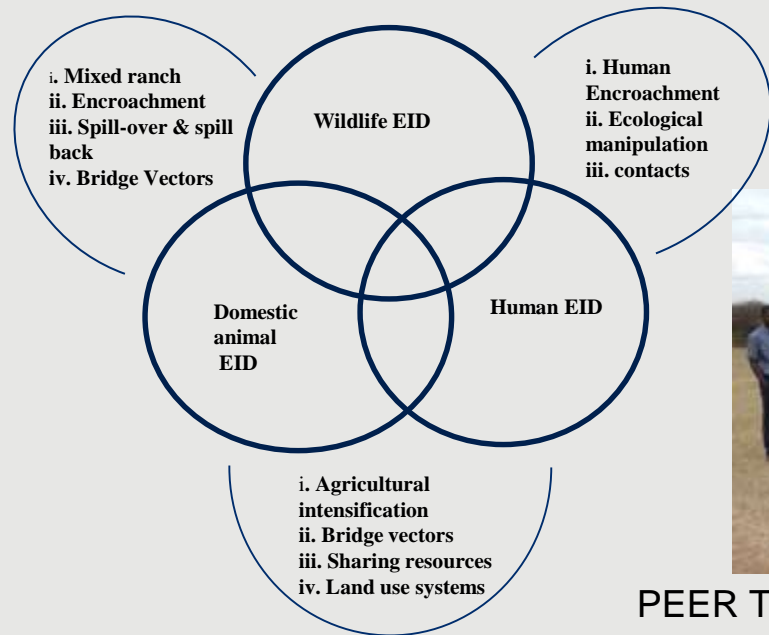


Remote sensing and GIS mapping for land use changes in Laikipia ecosystem, Kenya: A tool to explore patterns of biodiversity and emergence of vector borne zoonoses and enhance environmental management and community health

**Maamun Jeneby,
Institute of Primate Research,
National Museums of Kenya**

Complex ecological questions require spatial data across large spatial areas



PEER Team with County stakeholders

Remote sensing and GIS mapping for land use changes in Laikipia ecosystem, Kenya



The project aims to utilize remote sensing and GIS mapping tools to understand the influence of climate and land use/land cover change on mammal diversity and vector borne disease.

- a) increased pressure on livelihoods,
- (b) emerging Infectious diseases (EID) and
- (c) challenges to conserve species

into the future.

- **Data:**

- ❖ Land-cover mapping using Google Earth
- ❖ Generation of Normalized Difference Vegetation Index (NDVI) time series to evaluate vegetation changes
- ❖ Rain gauge data, daily precipitation and temperature (Climate projections)
- ❖ Mapping small mammal species distribution and site occupancy
- ❖ Identifying satellite remote sensing data available to relate to large mammal aerial censuses

Jeneby et al., IPR/NMK

Key results of your research/project so far:

❖ Mapping small mammal species distribution and site occupancy

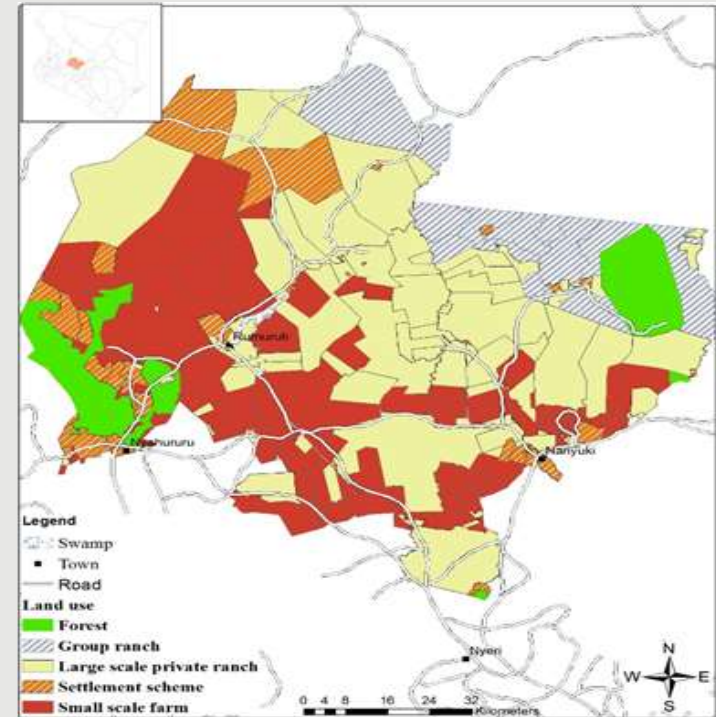
❖ Seven different land use system

❖ pastoralism, wildlife ranching, wildlife & livestock, ecotourism, arable agriculture, forestry

❖ 14 sampling sites

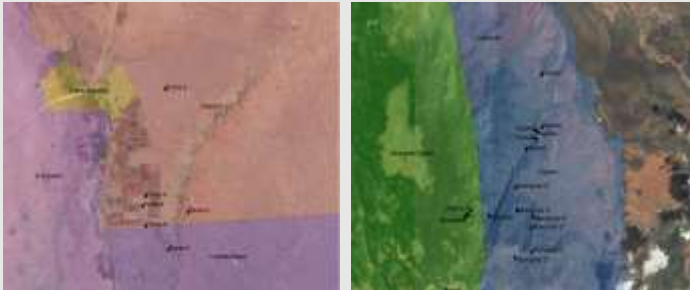
❖ Molecular identification of small mammal & Tick species

❖ Zoonotic tick-borne diseases



Graph or diagram showing major results of your research/project

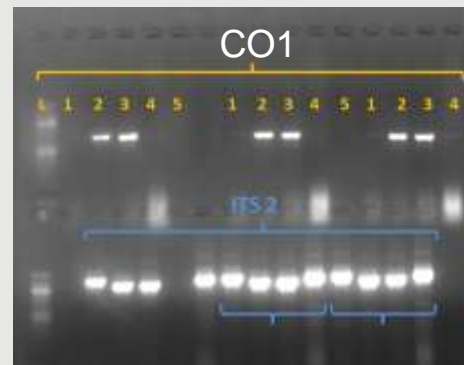
- ❖ Spatial point data for small mammal survey and pathogens sampling points:



- ❖ Small mammals



- ❖ Ticks



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Ticks molecular identification with
CO1 and ITS-2 primers

Rodent blood samples: Amplification of
tick borne *Rickettsia* species

Top next steps for your project: Building spatial models by integrating environmental factors, vegetational index, climate change and wildlife dynamics and vector-borne pathogens.

Impact on stakeholder decisions:

- Remote sensing and GIS mapping will inform county and national government on the influence of climate and land use/land cover change in Laikipia and its impact on mammal diversity and vector borne disease.
 - Mitigating on water & pasture
 - Surveillance of EID
 - Inform on precipitous wildlife population declines

Challenges :

- ❖ Land use & recurrent skirmish in Laikipia county
- ❖ Large mammal data