



## Introduction

Northwestern Nigeria is an important hub within a vast regional transboundary livestock trade network through which thousands of animals raised in the semi-arid Sahel must pass each year to fulfill the demand for meat in the densely populated coastal regions to the south and in the process, facilitating the rapid spread of pathogens across large distances through their vector vehicle – ticks.

Ticks and tick-borne pathogens present a well-established threat to livestock health in the region but almost no work has been done to assess the impact of transboundary livestock trading on their diversity, distribution and epidemiology.



## Aim

This study aims at documenting the fauna of ticks at different time of the year in Northwestern Nigeria and molecularly assessing the occurrence of Apicomplexan tick-borne pathogens from cattle tick species in Northwestern Nigeria.



## Study Design

Three surveys from livestock markets for ticks infesting cattle and camel in Zamfara and Sokoto state of Northwestern Nigeria were carried out in 2017, 2019 and 2021.

## Result

600 adult tick species were collected from a total of 169 livestock across the 3 sampling years. Between the years, 5 livestock markets were surveyed for tick on both cattle and camels.

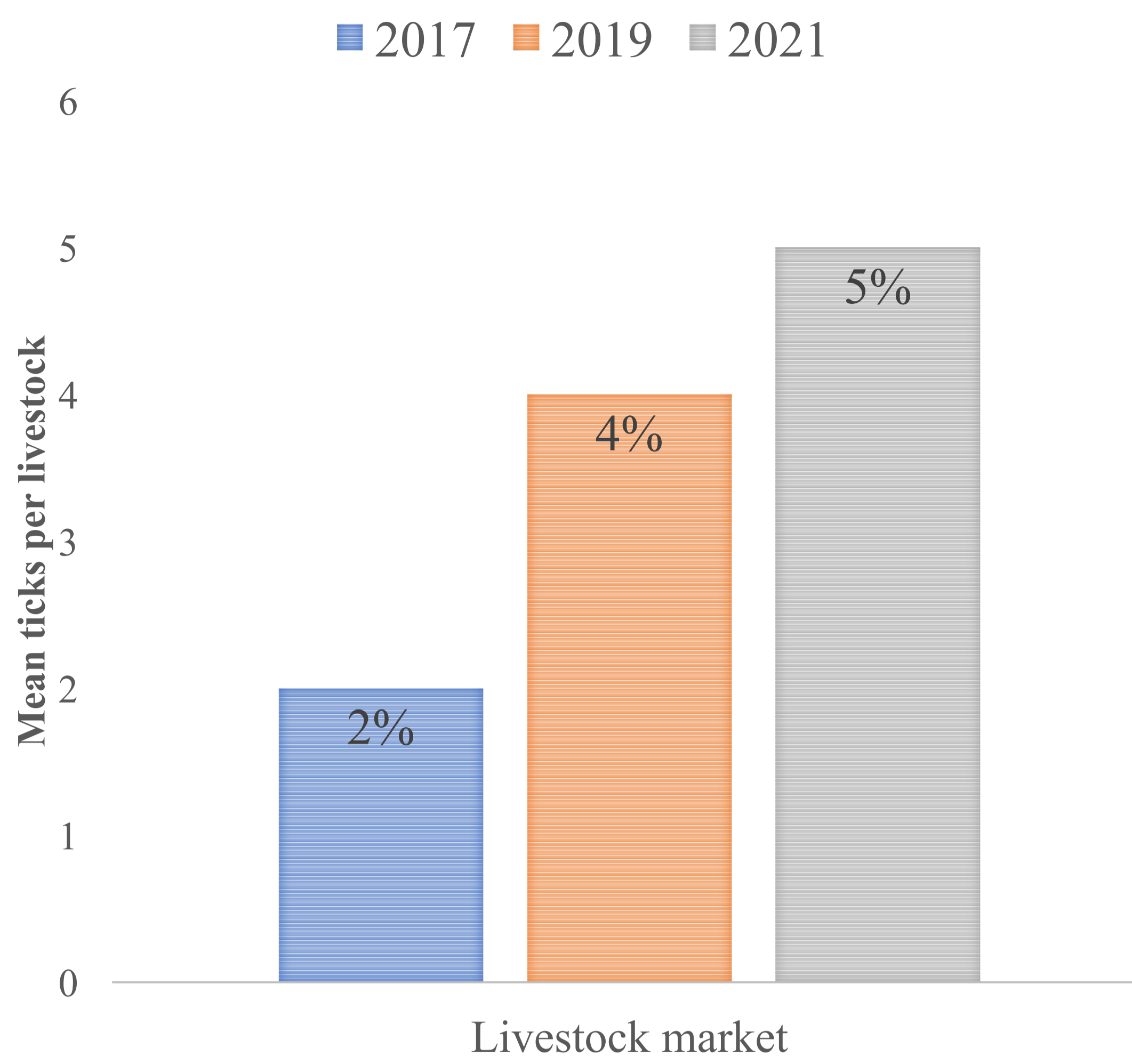


Fig. Bar chart of tick abundance per livestock



Fig. *Hyalomma dromedarii*

## RELATIVE TICK ABUNDANCE

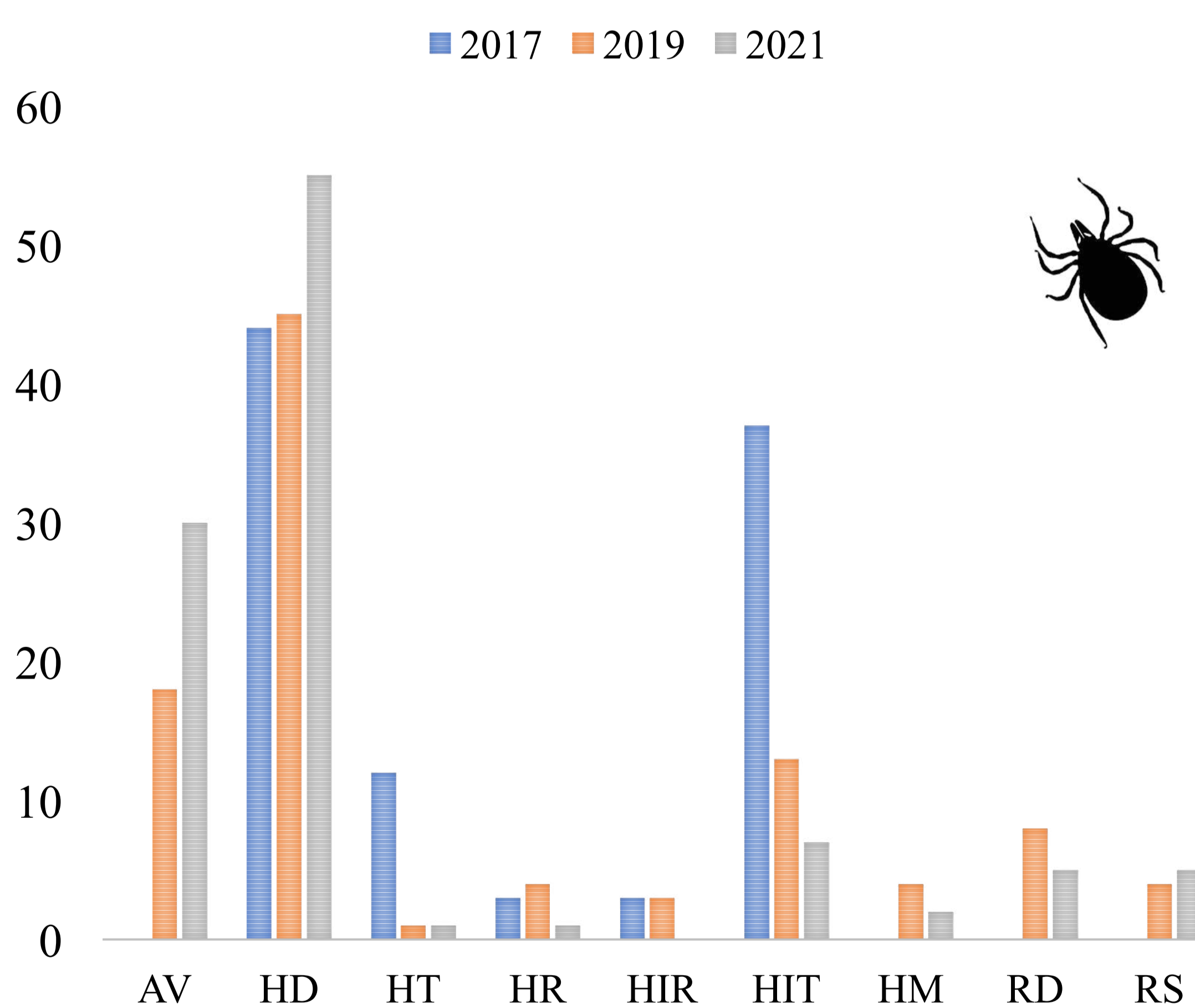


Fig. Bar chart of the relative abundance of the tick encountered

AV = *Amblyomma variegatum*; HD = *Hyalomma dromedarii*; HT = *Hyalomma truncatum*; HR = *Hyalomma rufipes*; HIR = *Hyalomma impressum*; HIT = *Hyalomma impeltatum*; HM = *Hyalomma marginatum*; RD = *Rhipicephalus decoloratus*; RS = *Rhipicephalus sanguineus*



Fig. *Hyalomma impeltatum*

## Relative Tick Abundance

For each of the livestock surveyed, there was a mean infestation of 3.5 adult ticks. However, the relative tick abundance on the livestock varied across the years. It was an increasing trend of the tick abundance per livestock across the year, 2017 witnessed a mean of approximately 2 ticks per livestock, this progressed to 4% and 5% in 2019 and 2021 respectively.

## Tick Diversity

Overall 9 tick species were encountered in both states. With some species showing marked variation in their relative abundance across the years, the camel tick *Hyalomma dromedarii* showed consistency of 44.4%, 45.2% and 54.9% dominating other tick species. For example, *Hyalomma impeltatum* showed a declining trend from 37% in 2017 to 13% and 7% in 2019 and 2021 respectively. Notably is the absence of *Amblyomma variegatum* in 2017, but later accounted for 17% and 30% in 2019 and 2021, showing an increasing prevalence.

## Molecular Result

The molecular results revealed the presence of apicomplexan species as - *Theileria annulata*, *Theileria mutans*, *Theileria velifera*, *Babesia cabali* and free-living apicomplexan species. Striking appearance is *Babesia cabali*, the agent of equine babesiosis on cattle, indicating a change from the norm.



## Conclusion

Ticks represent a complex and significant challenge in realm of public and veterinary health across northern Nigeria, driven by the incessant livestock trade within and with neighboring Sahelian countries. Addressing these challenges will require a multifaceted one health (OH) approach in the region.



University of Salford MANCHESTER

