

Mapping of *Borrelia* in Exotic Farm Animals of Czech Republic

Johana Hrnková¹, Maryna Golovchenko², Natasha Rudenko², Jiří Černý¹



Faculty of Tropical
AgriSciences

¹ Czech University of Life Sciences Prague, Department of Animal Science and Food Processing, Czech Republic

² Institute of Parasitology, Laboratory of Molecular Ecology of Vectors and Pathogens, Czech Republic



Introduction

- Borreliosis is a widespread disease infecting both humans and animals
- The disease is spread by ticks. In central Europe mainly by the *Ixodes ricinus* species
- The circulation of the pathogen in nature has been studied, however animals of exotic origin (zoos, exotic farms, hobby animals) have been underevaluated
- Our study focuses on prevalence of *Borrelia* on animal farms accommodating animals of non-indigenous, exotic origin



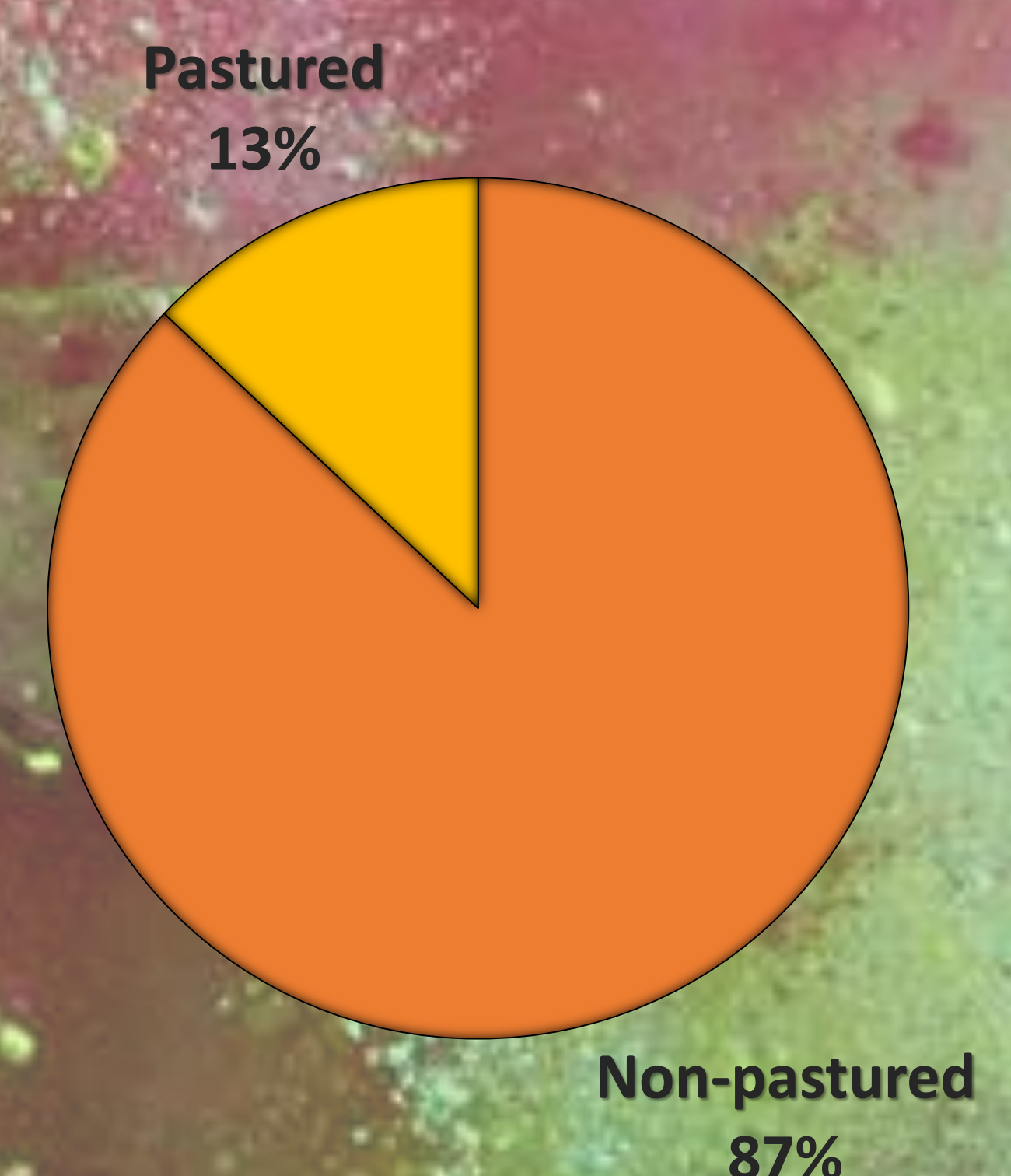
Results

- Collections still ongoing until 2022
- **634 live ticks** collected overall on all sampling sites
 - a. 83 found on **pastured** area
 - b. 551 found on **non-pastured** or transitioning areas
- Paired sample T-test comprising all samplings confirmed that there is a statistically significant difference between the means of these two sample set

Highlights

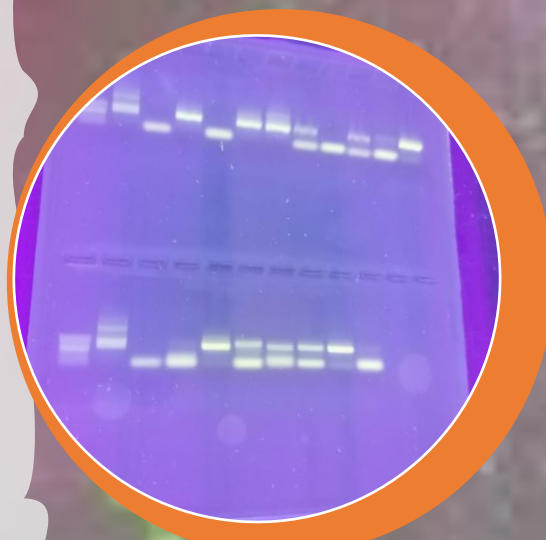
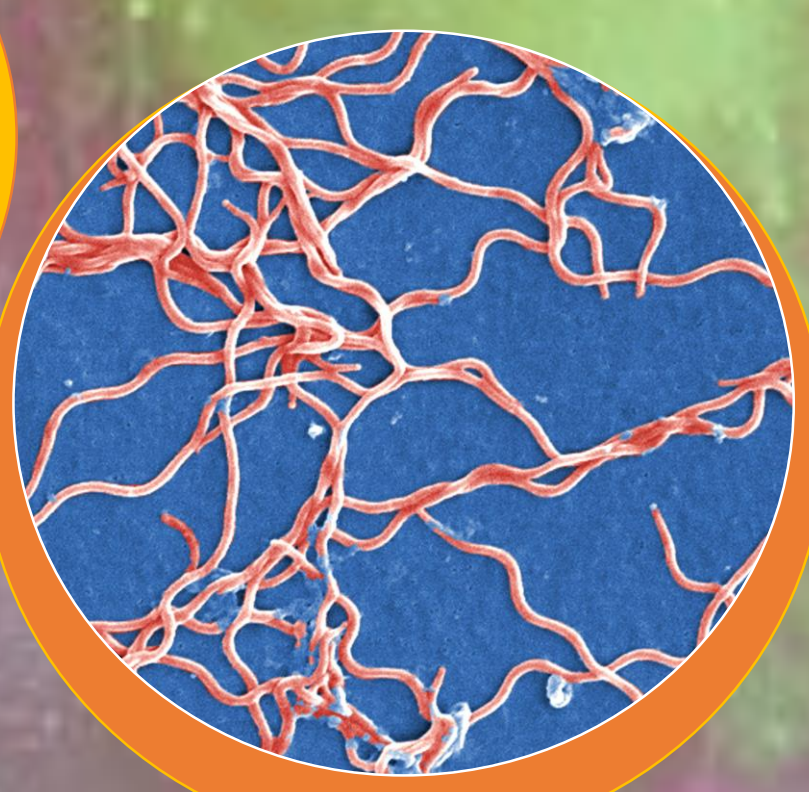
- High prevalence of *Borrelia* spp. in serum samples of common eland (*Taurotragus oryx*) might suggest transovarial or sexual transmission of this pathogen since almost no live ticks were found on and around the farm
- All studied exotic farms had yielded positive results for the presence of *Borrelia* in both tested animals and live ticks
- Even though prevalence of live ticks was substantially reduced on pastured areas, animals still yielded positive samples

Prevalence of live ticks on different farm landscapes



Methods

- **Flagging**
 - a. **Semi-feral enclosures**: selected transects of approx. 300 m² on both pastured and unpastured/transitioning areas
 - b. **Farms**: on active pasture and surrounding areas of the farm
- **Collection of animal sera from whole blood**
 - a. **Farm**: *Taurotragus oryx*, *Camelus dromedarius*, *C. bactrianus*, *Lama glama*, *Bubalus bubalis* european breeds, *Struthio camelus*
 - b. **Semi-feral**: *Bison bonasus*, *Equus ferus* f. *Caballus*
- **Molecular diagnostics**
 - a. **Nested-PCR**: primers focusing on flagellin genes of *Borrelia burgdorferi* s.l. complex sp.
 - b. **Sanger sequencing** of positive samples - outsourced
 - c. **Cultivations** for *Borrelia* spp.



- 68 animals of various species sampled for serum
- High prevalences of *Borrelia* pathogen but small sample sizes
- In the case of antelope farm in Lány (central Bohemia) possibility of non-vector transmission since almost no live ticks were collected

Locality	Animal species	n of samples	n animals positive	Prevalence	Date of collection
Camel farm, S. Bohemia	Camels: dromedary, Bactrian; llama alpaca	16	7	44%	18.11.2020
Antelope farm, Lány	Common eland	78 (from 25 animals)	11	44%	multiple in 2020
Buffalo farm, central Bohemia	Carpathian buffalo	8	1	13%	24.08.2020
Milovice natural reserve	Semi-feral horses, European bison	13	7	54%	15.05.2020
Ostrich farm Moravia	Ostriches	6	3	50%	05.11.2019

Contacts:

Presenting author: hrnkova@ftz.czu.cz, +420603241149

Other authors: jiricerny@ftz.czu.cz, natasha@paru.cas.cz, marina@paru.cas.cz