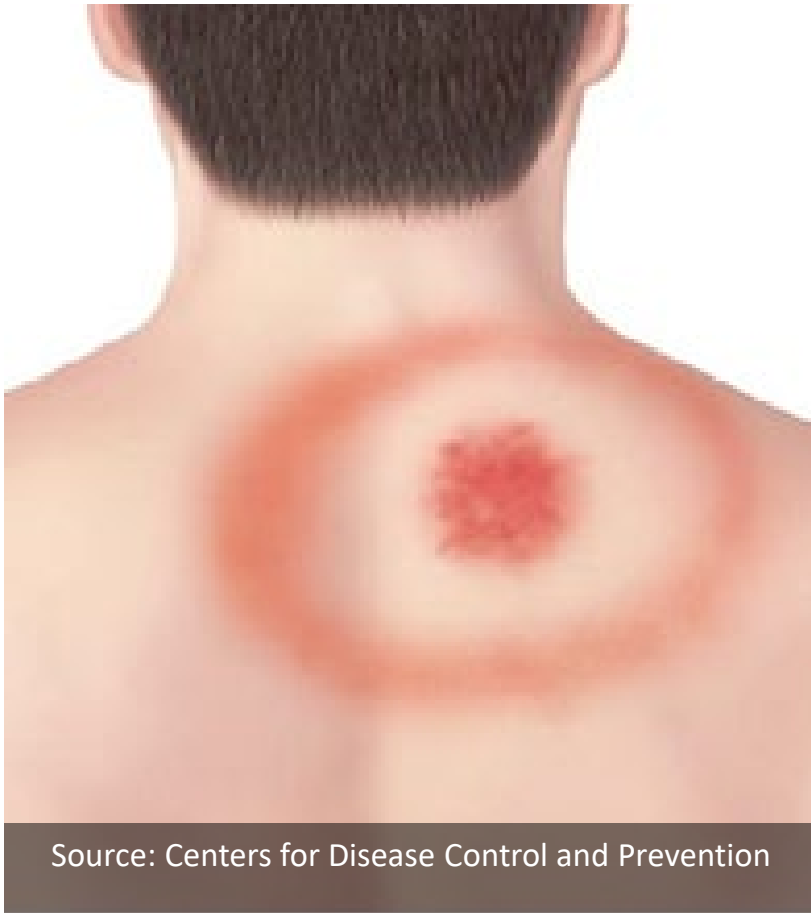


Prevalence of Ticks and Tick-Borne Pathogens in Mined Land Areas of Southeast Kansas

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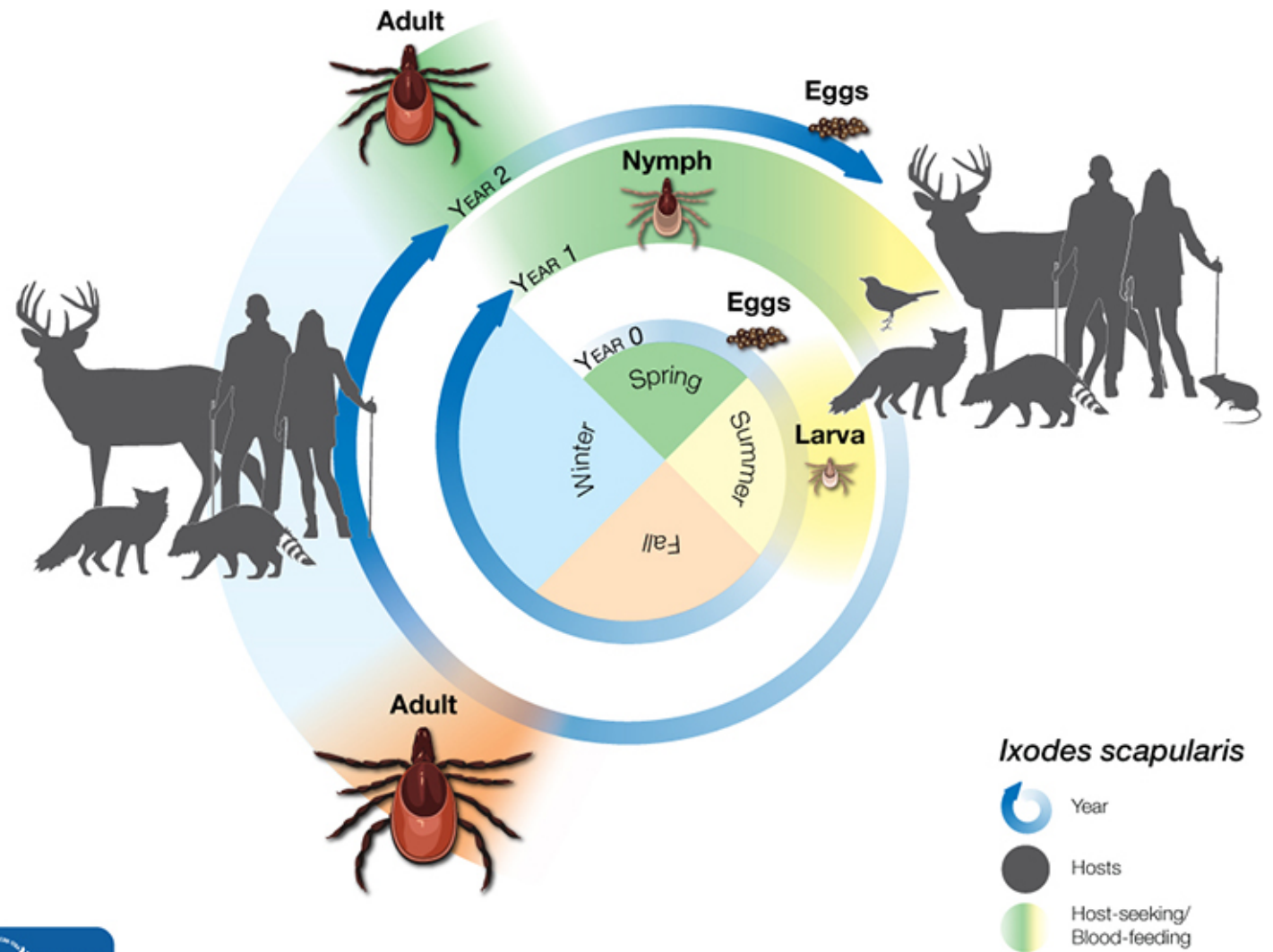
Research Colloquium 2021



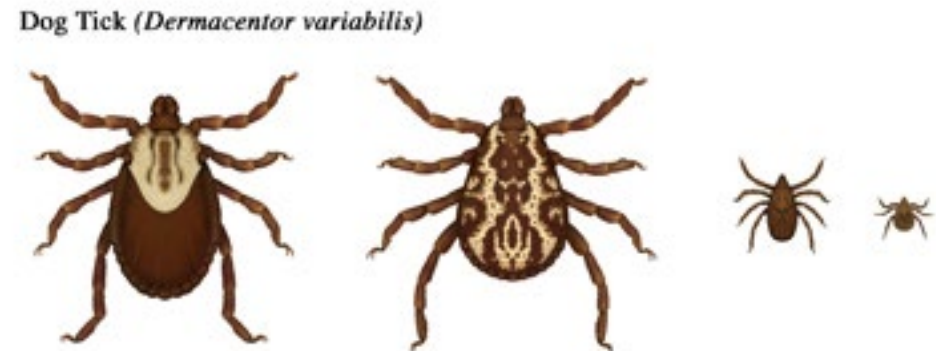
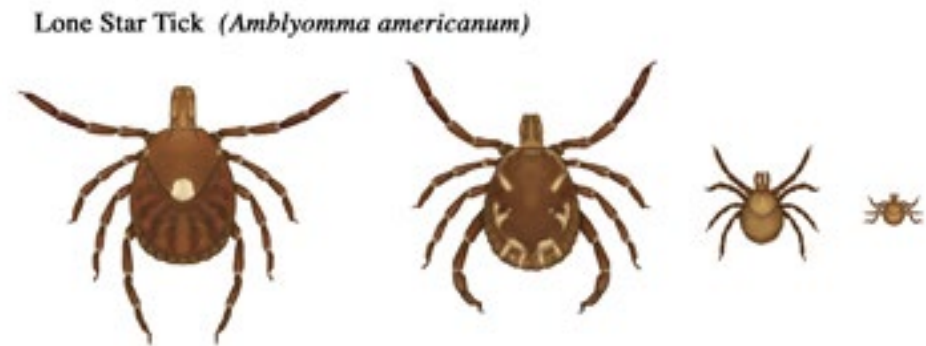
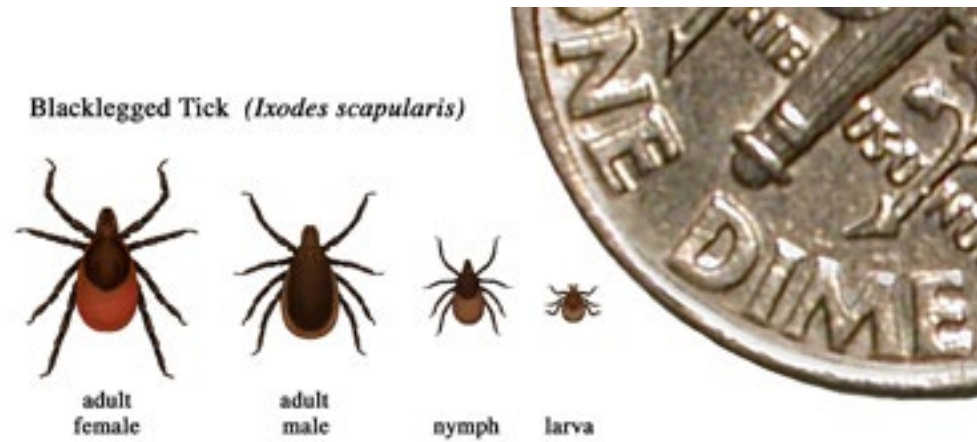
Ticks: An Introduction

- Ticks are common vectors for bacterial and rickettsial pathogens
 - Common tick-borne diseases include:
 - Lyme disease
 - Anaplasmosis
 - Ehrlichiosis
 - Rickettsiosis
 - Rocky Mountain Spotted Fever
 - Tularemia

Tick Life Cycle



Tick Species and Life Stages

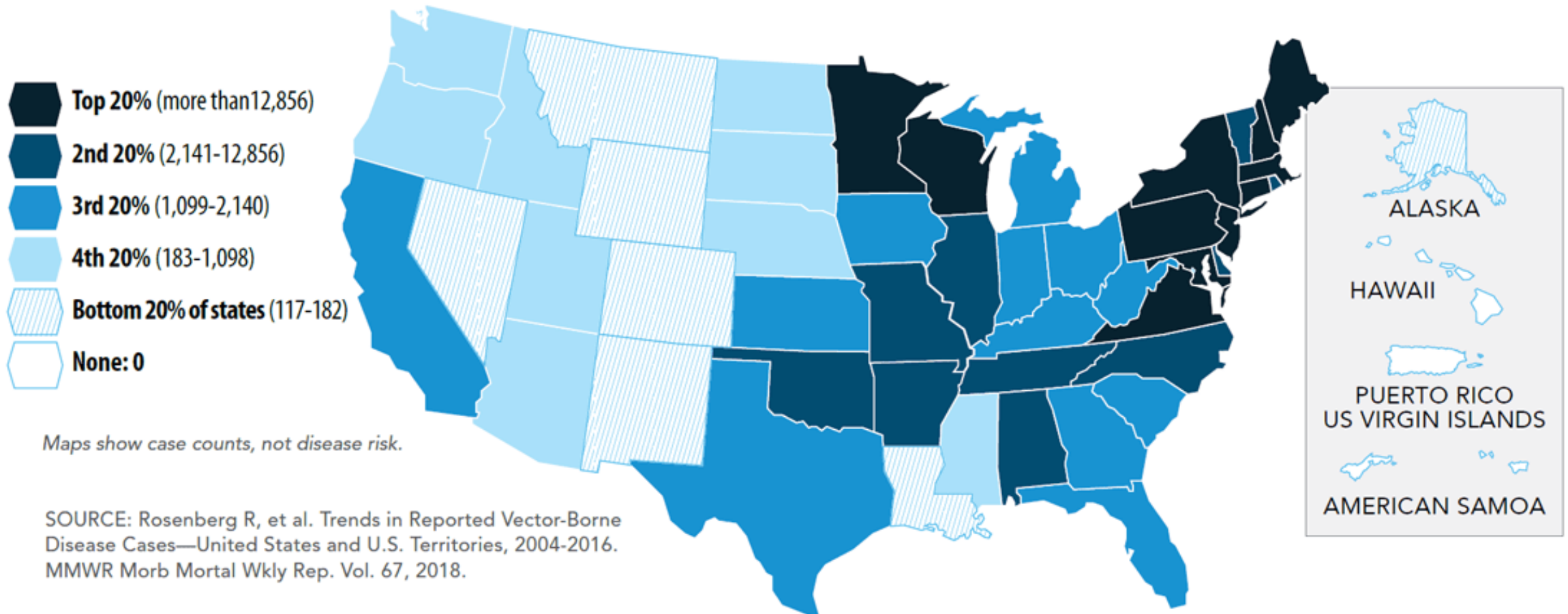


Source: Centers for Disease Control and Prevention

Prevalence of Tick-Borne Diseases



DISEASE CASES FROM TICKS (2004-2016, REPORTED)



Goals

To determine the prevalence of *A. americanum*, *D. variabilis*, and *I. scapularis* in southeast Kansas

To detect pathogens carried by identified ticks

Methods



- Eight site visits were performed (June 2020–January 2021)
- Ticks collected using dry ice traps and Flag/drag technique
- Detailed environmental data recorded during each site visit
- Collected ticks were differentiated by species, sex, and life stage in the laboratory using a dissectoscope

Monahan Outdoor Education Center

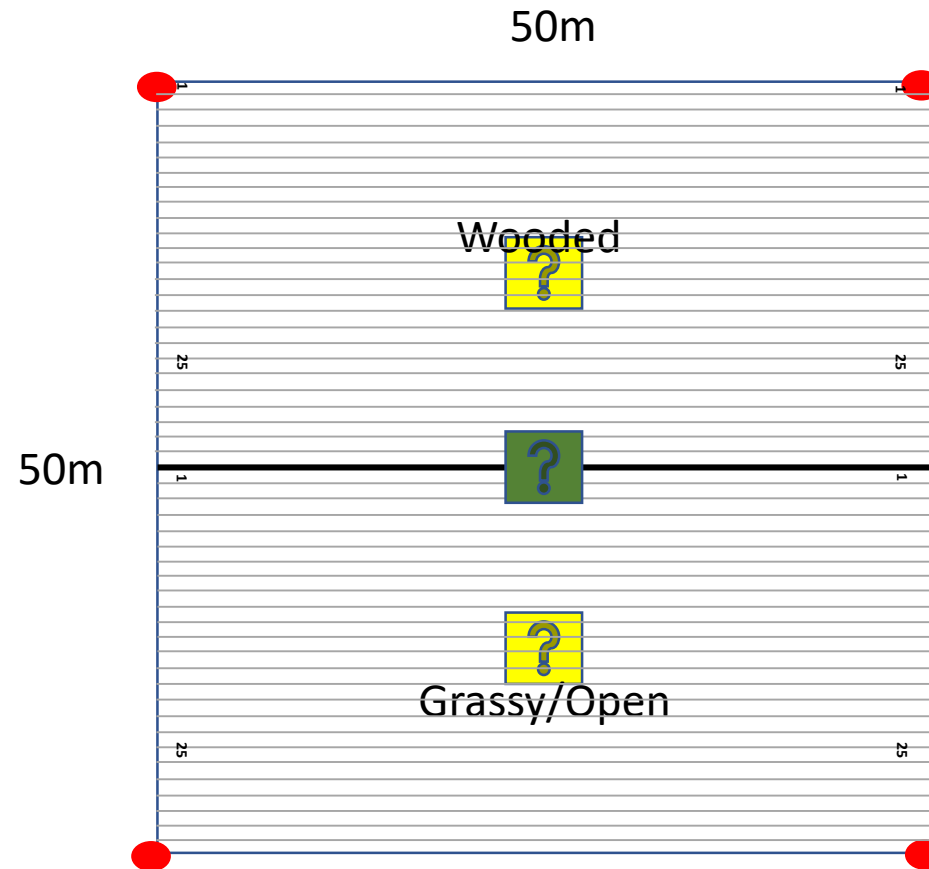




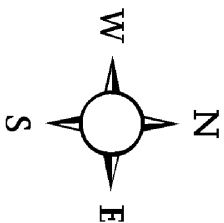
Dry Ice Trapping



Dragging/Flagging

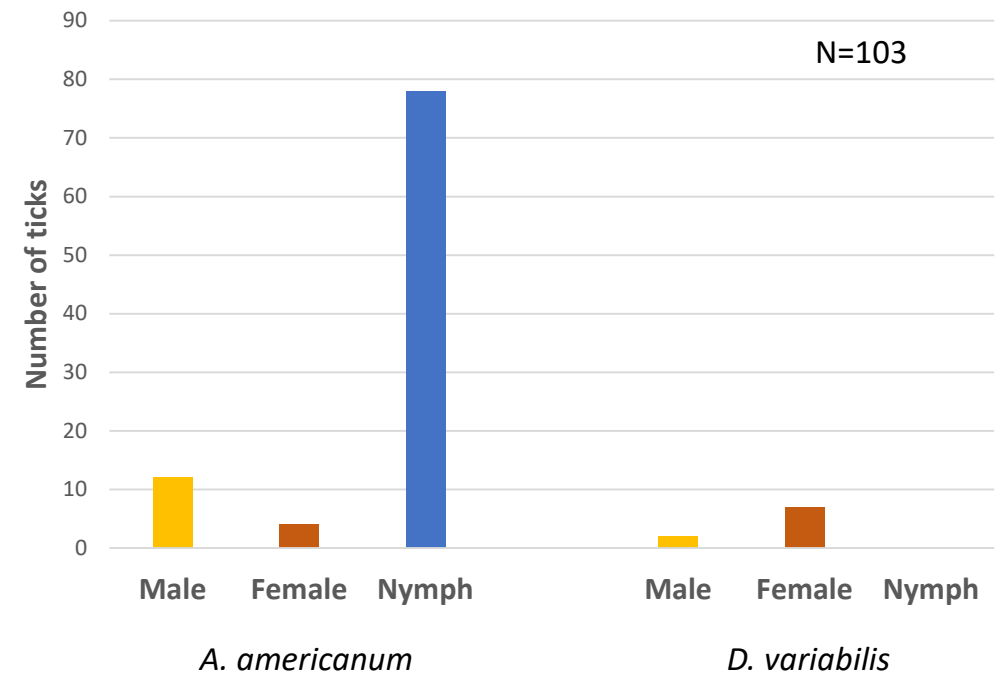


1. GPS coordinates only at corners (●). Provide site map for each location and identify ticks by trap quadrant (1-16) or drag/flag lane (1-25). At some sites 50mx50m will connect, at others not.



Results

- 103 adults and nymphs and 112 larvae were collected from both woodland and grassland areas
- 93% of ticks collected were identified as *Amblyomma americanum*
- 8.7% of ticks collected were identified as *Dermacentor variabilis*
- A total of 112 larvae were collected but not identified in the lab
- Majority (>97%) of ticks were collected using dry ice traps and from the wooded area



Study Outcomes

- This is a long-term collaborative project (2020-2022). Southeast KS is one of the six sites in Kansas that are being investigated. The other 5 sites are being covered by KU.
- The ticks were transported on ice to a laboratory where they are curated and tested for pathogens through molecular analysis
- It is comprehensible that a better understanding of the variations in tick-pathogen prevalence will allow for:
 - Implementing surveillance and management programs
 - Understand risk for human/animal disease.

Acknowledgments

- Funded by NSF EPSCoR RII Track-2
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