CDC Southeastern Center of Excellence in Vector Borne Diseases
The Gateway Program

CDC Lunch & Learn Series
May 1, 2020
Ticks Don’t Social Distance

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Tick Talk
“Ticks Don’t Social Distance”
**Topics Covered**

1) CDC SE CoE VBD Origin Story & Mission

2) Tick Surveillance
   -active (dragging) vs. passive (C02 trap)

3) Protect Yourself Before You Infect Yourself

4) State Research Projects and Student Activities
   -Florida
   -Kentucky
   -Tennessee
   -South Carolina
   -Virginia
   -Alabama

*Tick Workshop @ US National Tick Collection, Georgia Southern University*
Origin Story & Mission

Mission & Goals

- Applied Research
- Responsive Training
- Community of Practice
Tick Surveillance 101
Why collect ticks?
How do you collect ticks?

Different strategies for different tick behaviors
What are the most important ticks in our area?

- Lone Star Tick
- Black-legged Tick
- American Dog Tick
- Brown Dog Tick
- Gulf Coast Tick
- *Ixodes affinis*
Where do ticks live?

- Vegetated areas
- Areas of brush
- Leaf litter

- Gravel pathways
- Sandy pathways
What’s dragging?

• Questing is when a tick waits for a passerby

• Outstretched legs while holding on to leaf or grass pane
What Materials Do You Need?
What Should I Wear?
Let’s go dragging!
Let’s go dragging!
Safety moment

Watch out for snakes and poison ivy!
Let’s go Dragging!
What’s CO2 Trapping?
What Materials Do You Need?
Setting Up a CO2 Trap
Now we wait...
Picking Up a CO2 Trap
Check Yourself Before You Infect Yourself

• Inspect your clothes

• Change your shoes and socks

• Use hot water and high heat to clean clothes

• Take a shower as soon as possible
MYTH: Ticks fall from trees.

FACT: Ticks quest on vegetation and will crawl upwards.

Tuck pant legs into socks/boots, if possible.

During “larval season,” our field crew wraps duct tape around tops of boots.
Tick Prevention

• MYTH: All ticks wash off in the shower.
• FACT: Attached ticks do **NOT** wash off in the shower!
  • That’s what friends are for.
  • Check entire body whenever you’ve been in a tick habitat.
  • Remove attached ticks immediately!
Tick Prevention

- Treat clothes with permethrin
  - Repellant
  - Tick neurotoxin
  - More effective than DEET
  - Purchase at sporting goods store
  - Be careful!
- Send clothes to be treated
  - InsectShield.com
  - 8-10 items=~$90 w/shipping
  - Lasts several washes (70)
- **Best protection:**
  - Permethrin on clothes
  - DEET on skin
Tick Removal

1. Pointy tweezers work best (ticks are small)
2. Disinfect skin with rubbing alcohol
3. Place tweezers close to skin and firmly pull straight up
4. Disinfect skin again
5. Save the tick!
6. A ziploc bag in the freezer, labeled with the date, name and site
We Have Ticks, Now What?

• Identify tick species
• Test for pathogens and insecticide resistance
• Disseminate knowledge to clinical, veterinary and scientific communities
• Leverage baseline surveillance for additional investigations
Florida

Ticks in Florida
Ticks collected from the field!
Florida

The Product: Where to be Especially Careful
Florida

Yuexun Tian, PhD Student Univ. of Florida (Lord/Kaufman Laboratories)

Brown dog tick

*Rhipicephalus sanguineus*

- Worldwide distribution
- Ectoparasite primarily of dogs
- Establish residential populations
- Pathogen vector of dogs and humans
- Resistant to multiple acaricides

Our goal: understanding environmental effects on brown dog tick residential infestations
Florida

Carrie De Jesus, PhD Student University of Florida (Wisely Laboratory)
Kentucky

What does tick surveillance and research look like in Kentucky?

1. Collecting ticks through drag sampling and submissions from veterinarians, county agents, and health departments.
2. Testing ticks for pathogens that cause tick-borne diseases like Lyme Disease, Spotted Fever Rickettsiosis, and more.
What does tick surveillance and research look like in Kentucky?

1. Collecting ticks through drag sampling and submissions from veterinarians, county agents, and health departments.
2. Testing ticks for pathogens that cause tick-borne diseases like Lyme Disease, Spotted Fever Rickettsiosis, and more.
Why do tick surveillance?

1. Surveillance is important for control and management of vectors & disease.

2. Understanding how ticks & tick-borne diseases can impact people and animals in Kentucky helps us better protect and treat them from such diseases.
Tennessee

• Statewide surveillance of ticks and pathogens
• Sharing findings with policymakers and the general public
• Building the community of public health entomologists through trainings at professional and academic levels
Tennessee

Lyme Disease in Tennessee

Counties with reported and established *Ixodes scapularis* populations and locations where *Borrelia burgdorferi* sensu stricto has been identified from unfed adult ticks.
Policymakers
South Carolina

• Establishing a student cadre of tick researchers and public health practitioners

• Statewide surveillance
  • 4 regional managers, collecting in state parks
  • March to October

• Informing Policymakers

• Invasive veterinary species
  • Residential veterinarians, humane societies, and animal shelters
  • Dairy cow farms
Virginia

• Community outreach and engagement

• Statewide surveillance by county
  • Range expansion tracking

• Mathematical modeling and computer simulation of tick-borne diseases
Project Background and Methods

• Funding provided by Alabama Study Commission on Tick Borne Illness

• Determine true presence of tick species and tick-borne disease throughout the state of Alabama

• From 2018-2020 statewide collections are taken through CO2 trapping, host removal, and flagging techniques

• Specimens identified to species then sorted by age and sex

• Specimens undergo nucleic acid extractions and qt-PCR to find pathogen
Please join us for the Lyme Disease Awareness Month Lunch & Learn Series with the Vector-Borne Disease Regional Centers of Excellence

Every Friday in May at
1pm ET / 12pm CT / 10am PT

May 1
“Ticks Don’t Social Distance”
Southeastern Center of Excellence in Vector-Borne Diseases

May 8
“Where Ticks Live & Roam”
Northeast Regional Center for Excellence in Vector-Borne Diseases

May 15
“#NoMoreTicks: How to Protect Yourself Against Tick Bites”
Midwest Center of Excellence for Vector-Borne Disease

May 22
“The Travelling Tick: Studying Ticks Across Borders”
Western Gulf Center of Excellence for Vector-Borne Diseases

May 29
“Ticks in the Wild West”
Pacific Southwest Center of Excellence in Vector-Borne Diseases