

Ticks in Kentucky and the UK Tick Surveillance Program



College of Agriculture,
Food and Environment

Entomology

Dr. Jonathan L. Larson
Extension entomologist

Ticks are a priority issue for the entomology department at UK



Annually, ticks are at the top of the list for arthropods that we get questions about, people worry about bites and pathogens

Ticks are “hematophages” they survive by digesting blood from their hosts



Ticks can wait years long lean periods before succumbing to starvation

Ticks use a rigid, saw-like mouthpart with backward spines, to penetrate the skin



They “cement” into place and can remain attached for 7 to 10 days if undisturbed

**Ticks generally prefer habitat that is shaded,
with lots of tangled overgrowth**



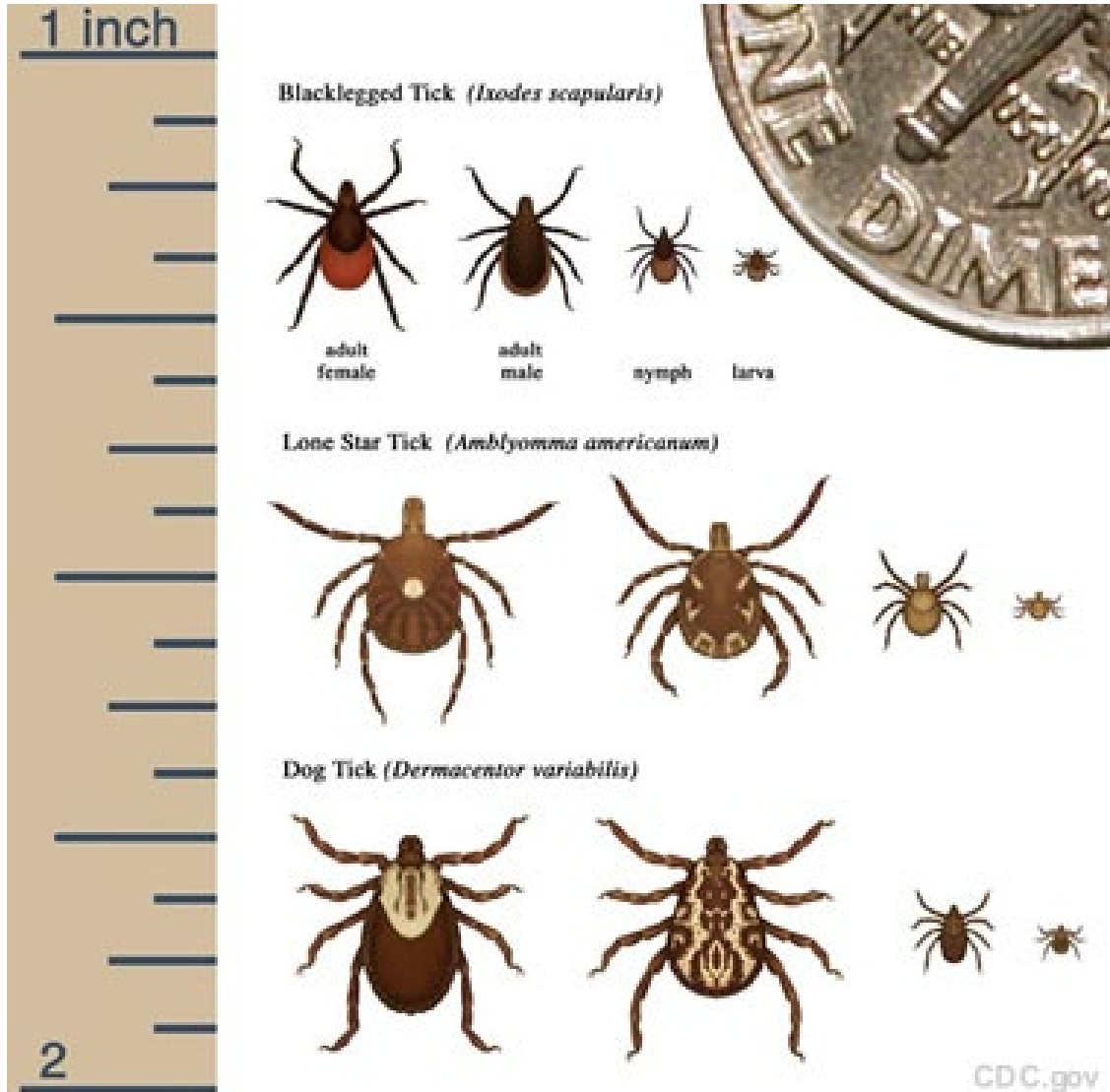
“Questing” ticks can be found at the tips of plant leaves and branches where they will be waiting to grab ahold of a passing animal

Once aboard a potential host, they usually move to a spot with thinner skin and plenty of blood vessels



They will then “plug in” and feed for an extended period of time or until they are discovered and removed

Kentucky has 3 primary tick species, which can impact human health



- **Blacklegged tick: AKA Deer ticks**
- **Lone star tick: AKA turkey ticks or turkey mites**
- **American dog tick: AKA wood ticks**

American dog ticks have short mouthparts and an ornate scutum, more tear-dropped shaped



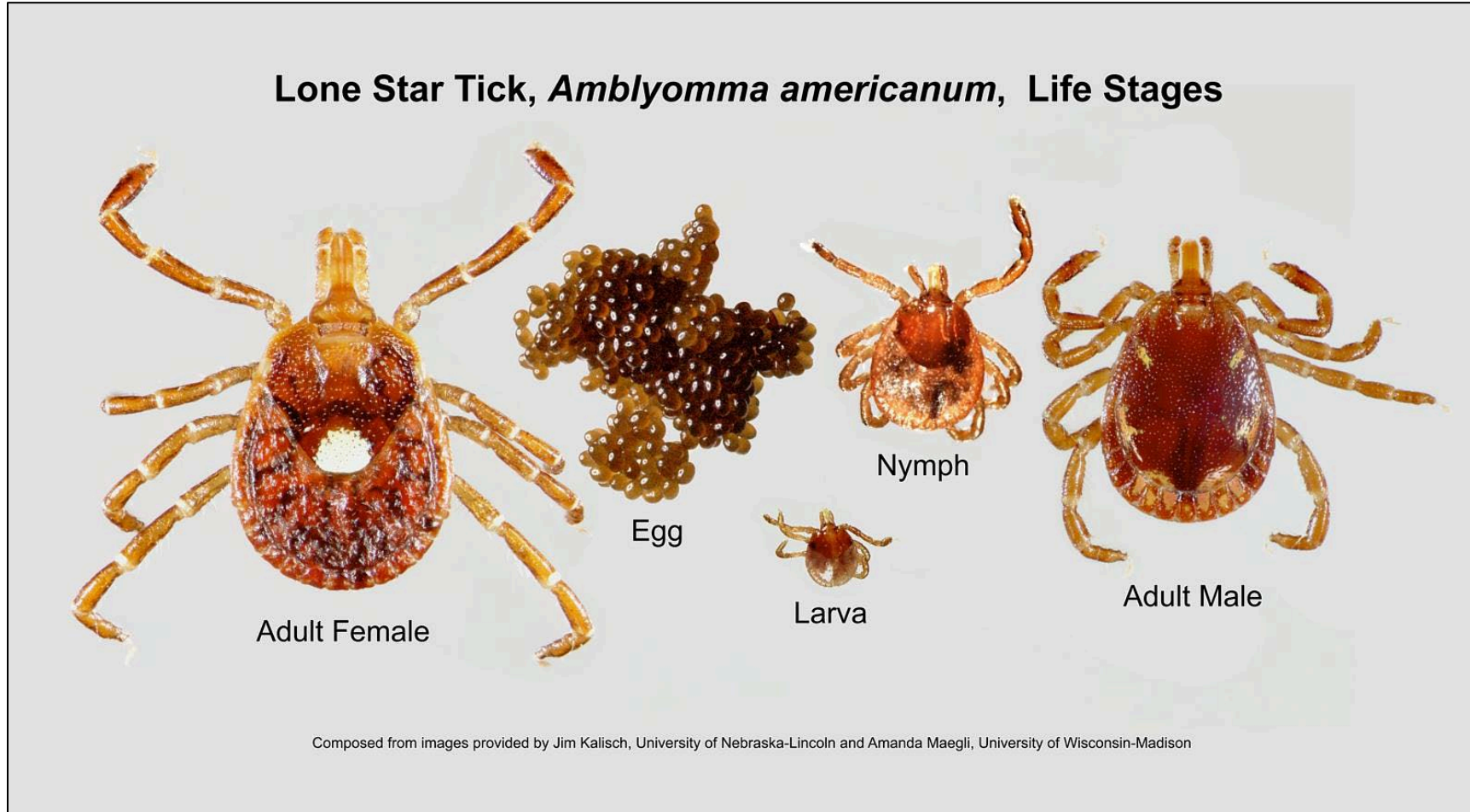
Adult females have a cream-colored collar which males lack

American dog ticks are found in areas with little or no tree cover like grassy fields, along roads, walkways and trails



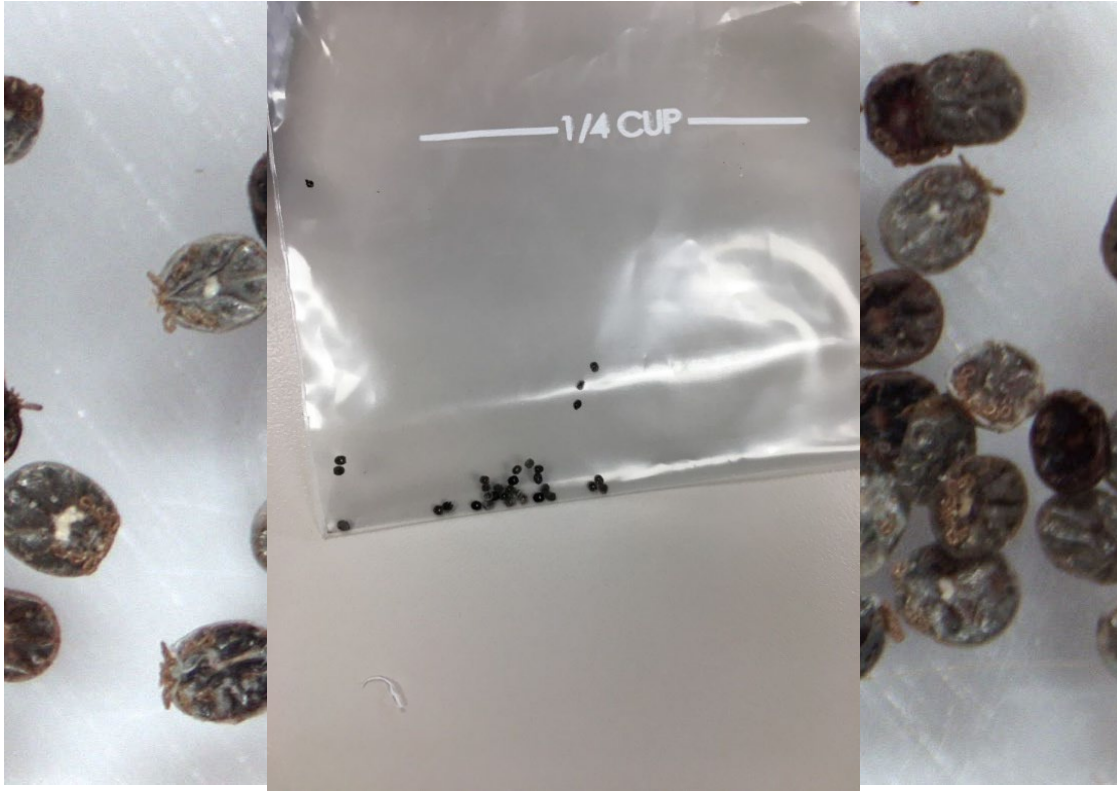
Ticks will “quest” on vegetation with front legs extended at host-height

Lone star ticks have long mouthparts, rounder bodies



Adult female has a single white spot on her scutum

Lone star ticks are found in woodland areas with dense undergrowth



Will quest or actively hunt, can end up with dozens on you at a time

Blacklegged deer ticks are greatly feared for their association with Lyme

 TickEncounter Resource Center ***Ixodes scapularis* (Blacklegged ticks or Deer ticks)**



Larva



Nymph



Adult Male



Adult Female

Blacklegged ticks are found in areas where their preferred host, white tail deer, are found



Adults can be active any day above freezing and are found questing about knee-high on the tips of branches of low growing shrubs

Kentucky has seen an increase in confirmed locations of black-legged ticks



We believe these are a northern variant, which means that they stay above leaf litter and encounter humans more often

There is a new tick on the block too: Asian longhorned tick



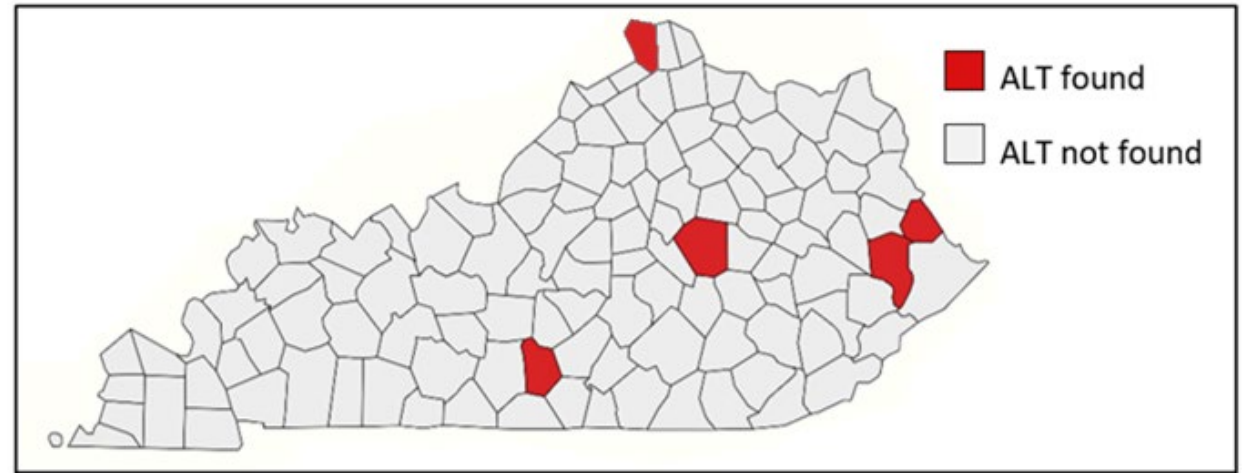
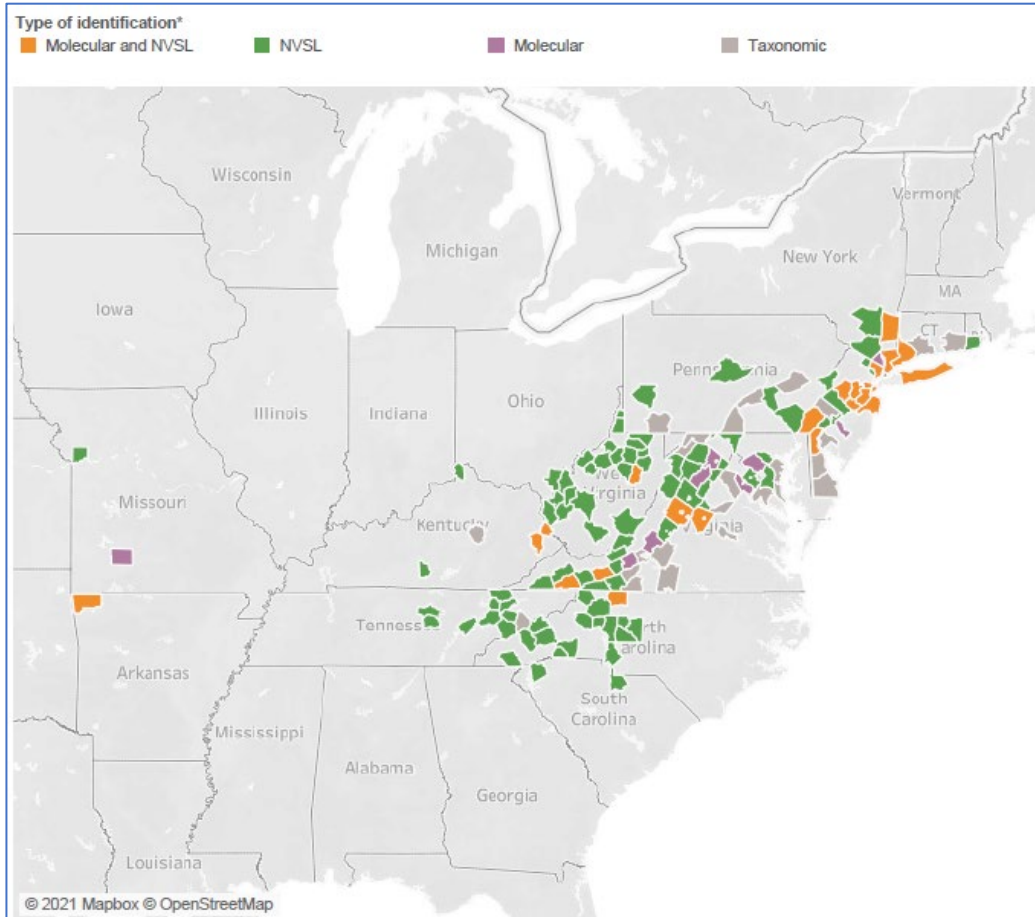
An invasive species from Eastern Asia that was accidentally introduced before 2015

It is an invasive species which is native to East Asia



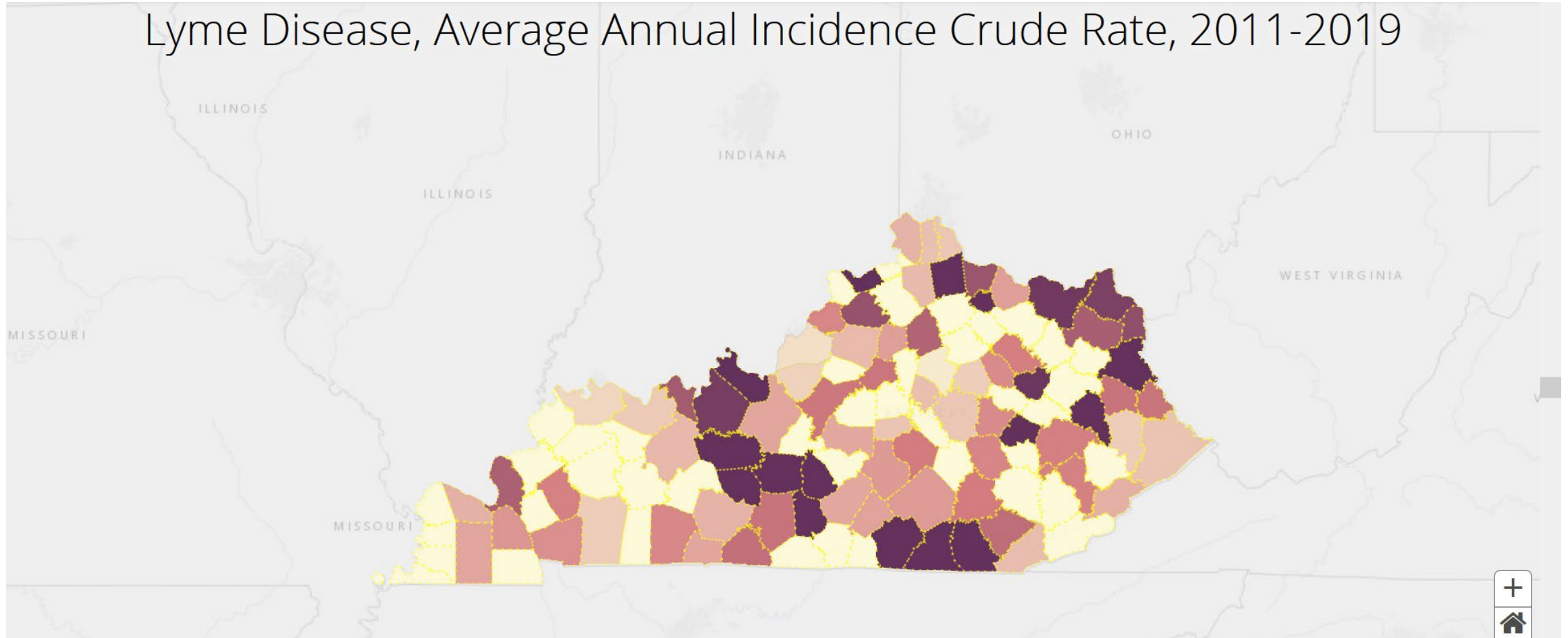
It has been intercepted at ports of entry previously but was confirmed in the US in 2017, with some indications it has been here since 2010

Started in New Jersey and has been slowly moving since 2015 (5 Kentucky reports)



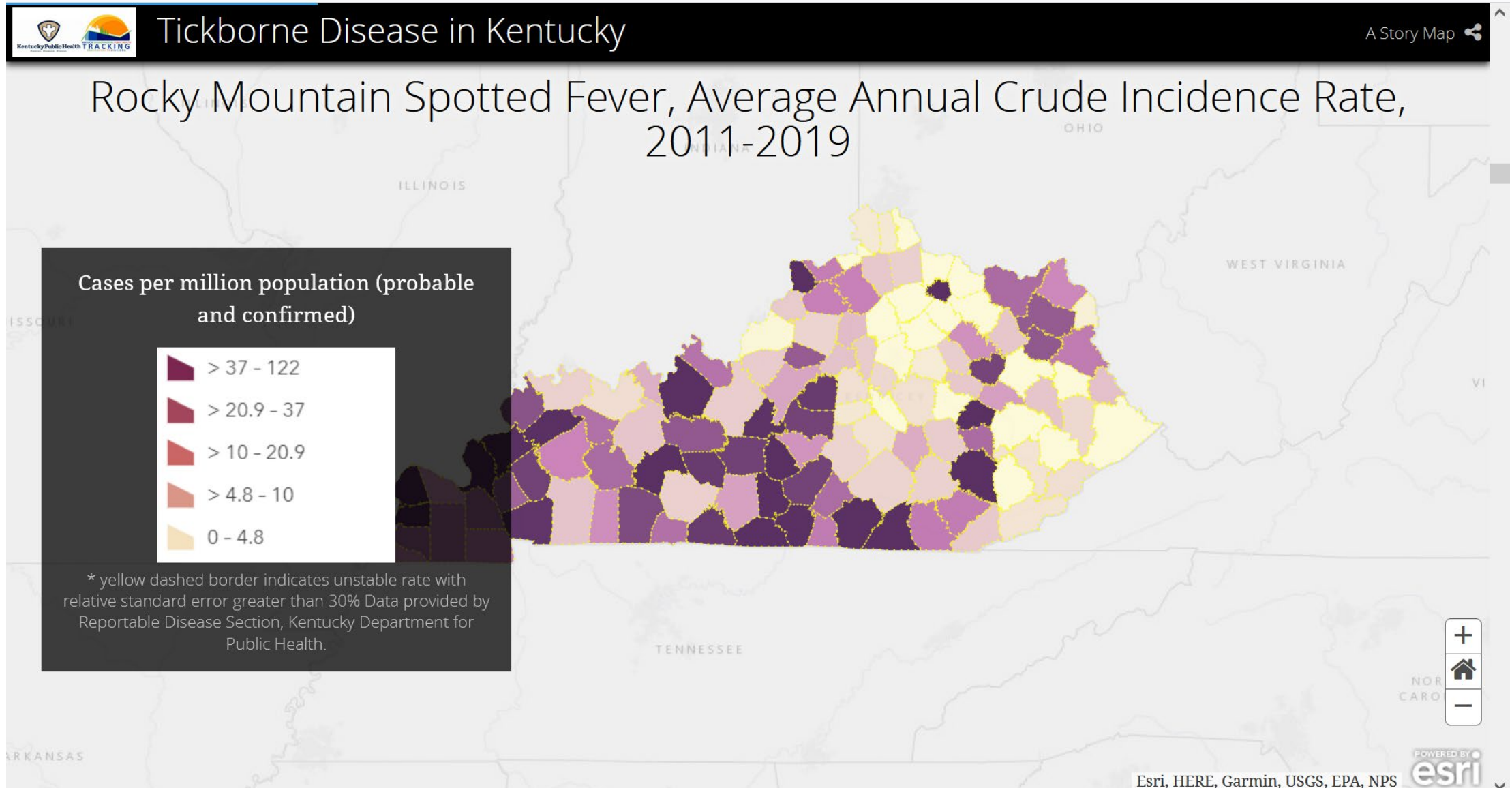
ALT has been found in Boone, Floyd, Madison, Martin, and Metcalfe counties. Findings have occurred on different hosts: a black bear in Floyd county, a human in Madison county, an elk in Martin county, and a cow in Boone and Metcalfe counties.

We have seen rises in cases of tickborne illness in Kentucky- Lyme has gone up 57% between 2012-2018

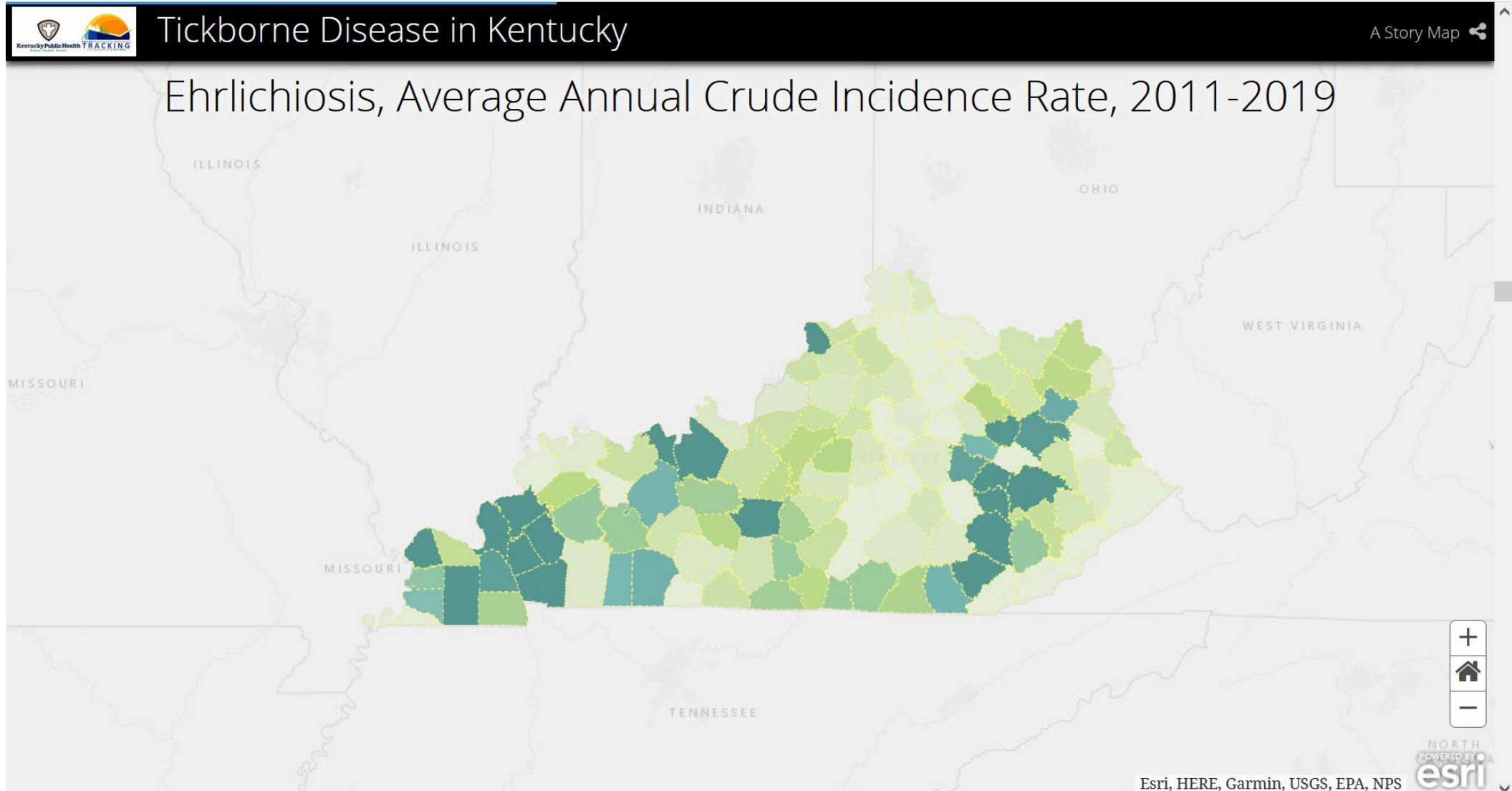


Most cases are associated with border counties, seems to be infiltrating

Rocky Mountain Spotted Fever spread by American Dog tick has gone up 290% between 2012-2018



Ehrlichiosis spread by the Lone star tick has gone up 158% between 2012-2018



Because of these issues, a research group at UK initiated a tick surveillance project



Initially the project was aimed at working with Kentucky veterinary offices and medical facilities to receive ticks from the public

In an attempt to receive more ticks from the general public, there was a press release to discuss the project

Winning the bug battle



April 18, 2022 | By: Katie Pratt
LEXINGTON, Ky.

Every year, people contract diseases from insects and ticks. These diseases can be life altering, and in some cases, life threatening and life ending. Entomologists in the University of Kentucky College of Agriculture, Food and Environment are working hard to develop innovative ways to control troublesome insects that prey on humans.

"Infectious diseases, including those transmitted by mosquitoes and ticks, are increasing worldwide," said Reddy Palli, professor and chair of the UK Department of Entomology and state entomologist. "In 2019, the U.S. Congress passed the Kay Hagan Tick Act that funds research on ticks and mosquitoes. I am excited to see multiple labs in our department are conducting research to tackle vector-borne diseases and other public health problems."

Tick Tacklers

Kentucky's humidity, forests and large deer population make the state an ideal environment for ticks, but until recently, no one knew about the state's tick population or how many carried diseases. Anna Pasternak, Palli's graduate student, is leading the Kentucky Tick Surveillance Program. A partnership with the Kentucky Department of Public Health, the program's goal is to inform entomologists, public

Spread the News

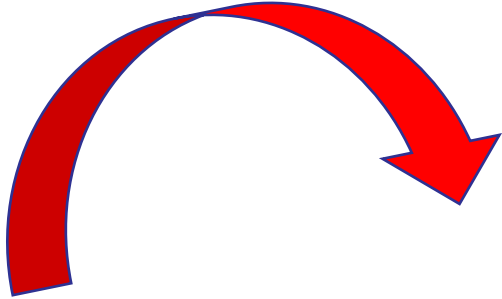


Latest News

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From the Ground Up - Squash vine borer (audio)
- June 10, 2022
KATS to host Drone Pilot Certification Training
- June 7, 2022
KNLA to host 2022 Green Industry Summer Summit

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KENTUCKY

Found a tick? Mail it to this UK professor to see if it carries disease

BY AARON MUDD

APRIL 20, 2022 4:34 PM



Dr. Jonathan Larson, extension entomologist at UK, tells us the best and surprisingly easy ways to stay safe from ticks this year. BY GABI BROEKEMA

This was followed by an article more focused on the tick survey and how if a tick submitted to the project tests positive, an alert would be generated

After this, dozens of newspapers across the state began to report on the project



Tick surveillance program asks you to mail the pests

May 10, 2022

f t e b i

Several different types of ticks found in Kentucky can carry different disease pathogens that can have serious impacts on humans. As a result, researchers in the UK Entomology Department are requesting your help in collecting tick specimens that can be analyzed to see if they are carrying any of these diseases.

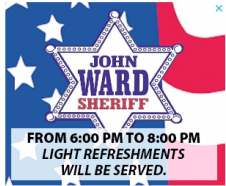
So the next time you find a tick on yourself or someone else, don't destroy it, but mail it to the UK Entomology Department's Kentucky Tick Surveillance Program.

There is a special form that you'll need to fill out about your tick specimen, and these forms are available at any county Extension Service office or can be accessed at entomology.ca.uky.edu/files/tick_submission_information_form.pdf.

If this form is not submitted with your tick sample, the tick will not be examined or identified.

Here's how to submit your tick sample: If you find a tick on yourself, someone else and/or your pet, remove it with tweezers, place it in an alcohol sealed container or bag (double bag is best), and mail it to the UK Entomology Department at the following address: Program Tick Surveillance, c/o Subba Pali, S-225 Ag Science Center North, Lexington, KY 40546-0091.

If, after examination, they detect one of the disease pathogens in your tick, they will contact you and encourage you to contact your physician.



Upcoming Events

- JUN 14** CENTRAL KY MULTIPLE SCLEROSIS SELF-HELP SUPPORT GROUP
Tue, Jun 14, 2022
- JUN 15** GREAT NEWS! NEW YOUTH BIBLE STUDY CLASS.
Wed, Jun 15, 2022

UK entomology department wants to examine ticks

KENTUCKY HEALTH NEWS Apr 25, 2022 Updated Apr 26, 2022 0

Kentucky has 3 primary ticks that can affect human health



UNIVERSITY OF KENTUCKY GRAPHIC

• Blacklegged tick: AKA Deer ticks

• Lone star tick: AKA turkey ticks or turkey mites

• American dog tick: AKA wood ticks



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Ticks are a threat in Kentucky year-round, but especially in the summer months. The next time one bites you, stop and think before flushing it down the toilet. You could help other people by mailing it to the University of Kentucky entomology department to see if it carries disease or not.



Newsletters

Morning Briefing
Have the latest local news delivered every morning so you don't miss out on updates.

Enter email address

Along the way, a recommendation was added to take your ticks to your local Extension office and they would mail it for you

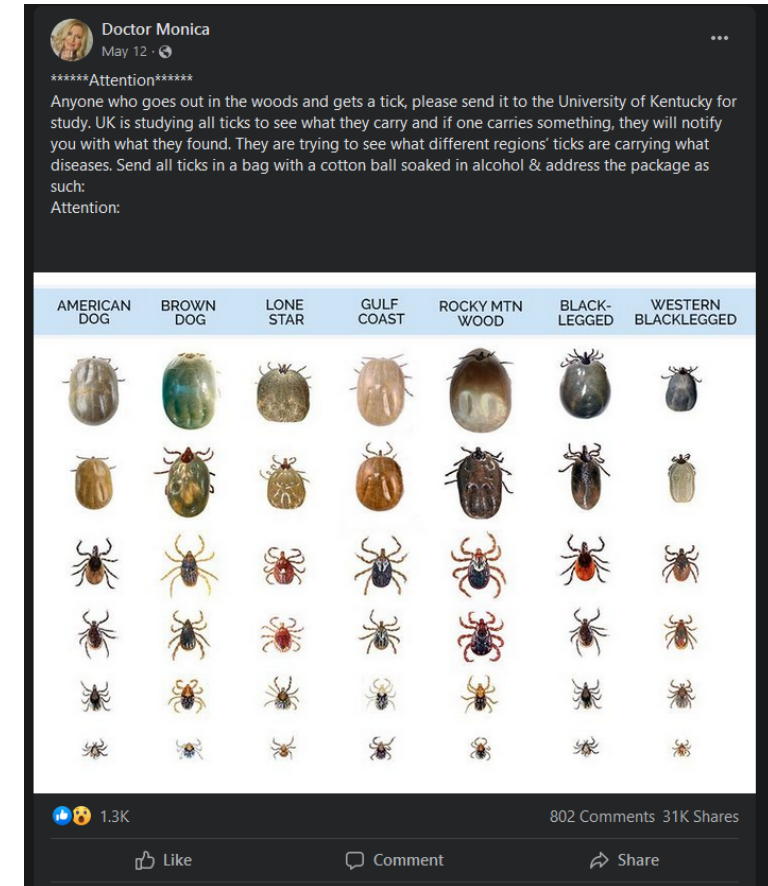
Eventually, the project received attention from multiple social media outlets



[This Photo](#) by Unknown Author is licensed under [CC BY-NC](#)

Initially, private individuals read about the project through the news and generate a Facebook post to share with friends

These posts were widely shared (avg 5-7,000 shares) and were adapted by other people and groups



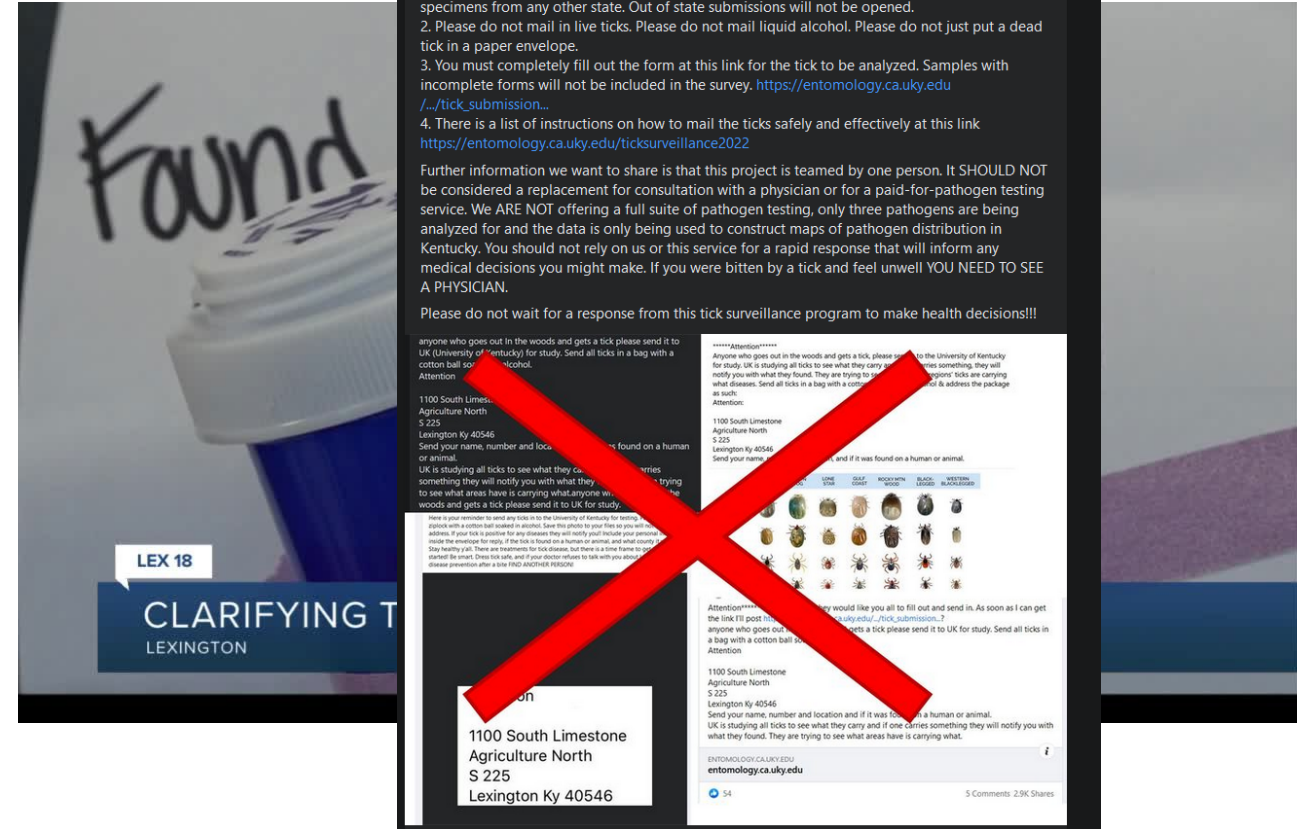
Two adaptations became quite popular and were shared about 56,000 times together (seen by an estimated 1 million people)

Unfortunately, none of these social media posts contained the correct information



At worst, they gave poor instructions on packaging ticks at worst they doxed the graduate student that works on this project

At that point, the tick was out of the bag though (literally in some cases)



We receive about 200 ticks a day now, submitted from all over the country, attempts at correcting misinformation have been slowly received

If you want to participate in the project, there are strict protocols that must be adhered to



You will need the following supplies:

- 91% isopropyl alcohol (can be found at nearly any pharmacy)
- One hard plastic container, for example pill bottles with identifying info removed, small plastic travel jars, etc.
- Tweezers
- One plain cotton ball
- Two Ziploc bags
- A padded envelope

Step 1

Take your hard plastic container and pour alcohol into the container. You only need to pour in enough liquid to submerge the tick into.

Step 2

Use the tweezers to pick the tick up and submerge in the alcohol inside of the container. Leave the tick submerged in alcohol for 24 hours.

Step 3

After 24 hours, pour the excess alcohol out of the container into a waste receptacle. There should be no liquid alcohol left. Next, take a cotton ball, or a cut off section of cotton ball, and stuff it into the container.

Step 4

Seal the tick and cotton ball into by closing the container lid. Take the closed container and insert it into a sealable Ziploc bag. Then, seal the Ziploc shut.

Step 5

The Ziploc bag that has the container with the tick and cotton ball in it will then itself be inserted into a second sealable Ziploc bag which is also sealed shut. This double bagging helps preserve the sample. The sample is now ready for shipping.

Insert the double bagged sample into a padded envelope. Ship the padded envelope and contents to this address:

<https://entomology.ca.uky.edu/ticksurveillance2022>

First, the tick should be from KY and collected recently- it should also be dead when submitted, to preserve it, we have a guide

Your tick must also be accompanied by a form found on our website

Kentucky Tick Surveillance Program **Submission Form**

Please fill out this form to the best of your ability and include it in the submission. Ticks received without this form will not be identified or tested for pathogens. Only samples from Kentucky will be processed
Mail the submission to:

Tick Surveillance Program
C/O Subba Palli
Department of Entomology
S-225 Ag Science Center N
Lexington, KY, 40546-0091

THIS SECTION IS REQUIRED

- | | |
|--|---|
| 1. Your name
<hr/> | 4. When did you discover the tick?
<hr/> |
| 2. What is your Kentucky mailing address
<hr/> <hr/> | 5. What day did you ship the tick?
<hr/> |
| 3. Please provide a contact email address
<hr/> | 6. What Kentucky county do you believe you acquired the tick from?
<hr/> |
| 7. Yes or no, could you have picked the tick up while traveling to a different state or country? If yes, what state or country could it have come from?
<hr/> | |

https://entomology.ca.uky.edu/files/tick_submission_information_form.pdf



If there is no form, the tick is not included in the sampling! The ticks will not be tested quickly, this is not a medical service, if you feel sick go to the Dr.

Ticks can be active year-round, but high tick season in Kentucky is May/June

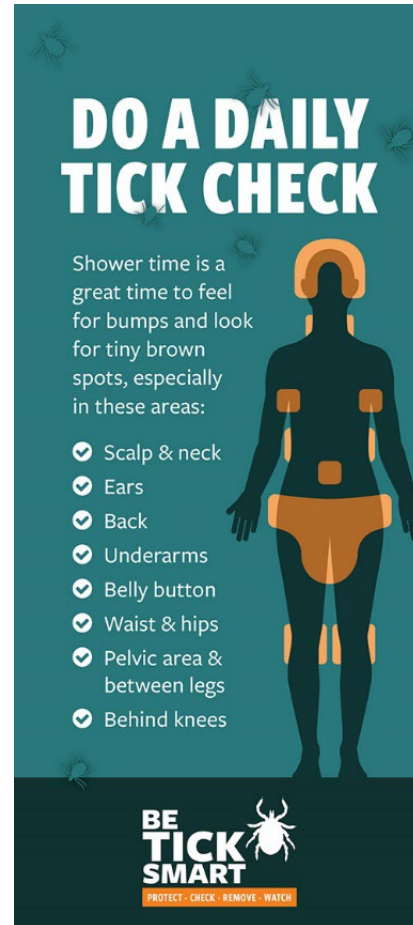


Lone Star Tick nymph attached to wrist

Tick toc it's tick time!



To prevent tick bites, wear protective clothing, use effective repellents, wear permethrin-treated clothing



Consider treating family pets, and **perform regular tick checks**

Skin applied repellents can help, but should not be relied upon alone for protection from ticks



Coleman Botanicals Repellent



Coleman SkinSmart Repellent



Coleman 100 Max DEET



Coleman 40% DEET



Coleman Gear and Clothing Aerosol



Sawyer Picaridin

Active Ingredient	Oil of Lemon Eucalyptus	IR3535	DEET (98.11%)	DEET (40%)	Permethrin
Protection	6 Hours	8 Hours	10 Hours	8+ Hours	2 Weeks (clothing)

Picaridin 20%

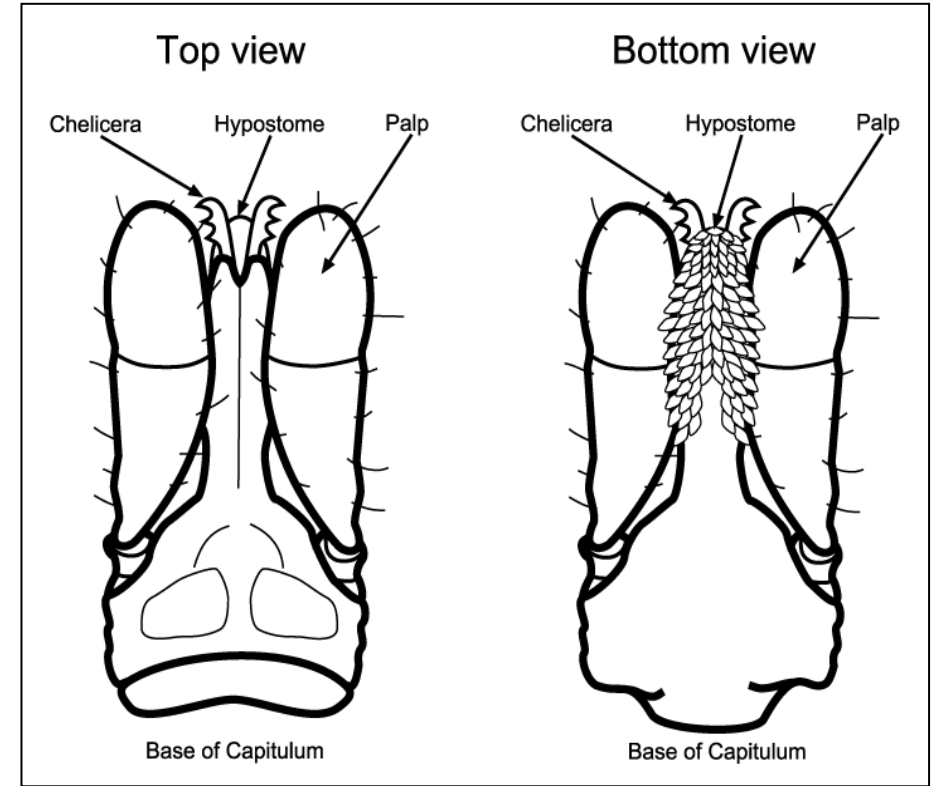
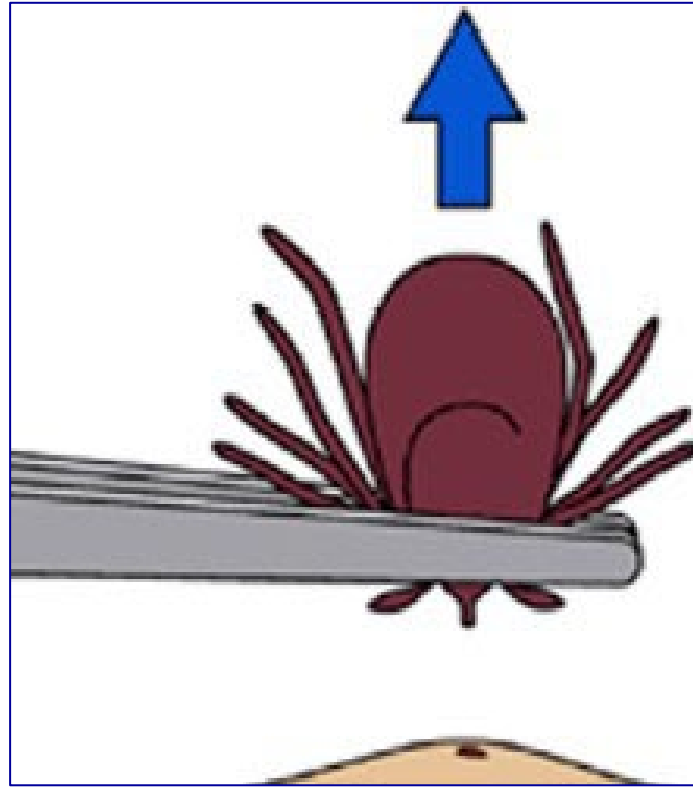
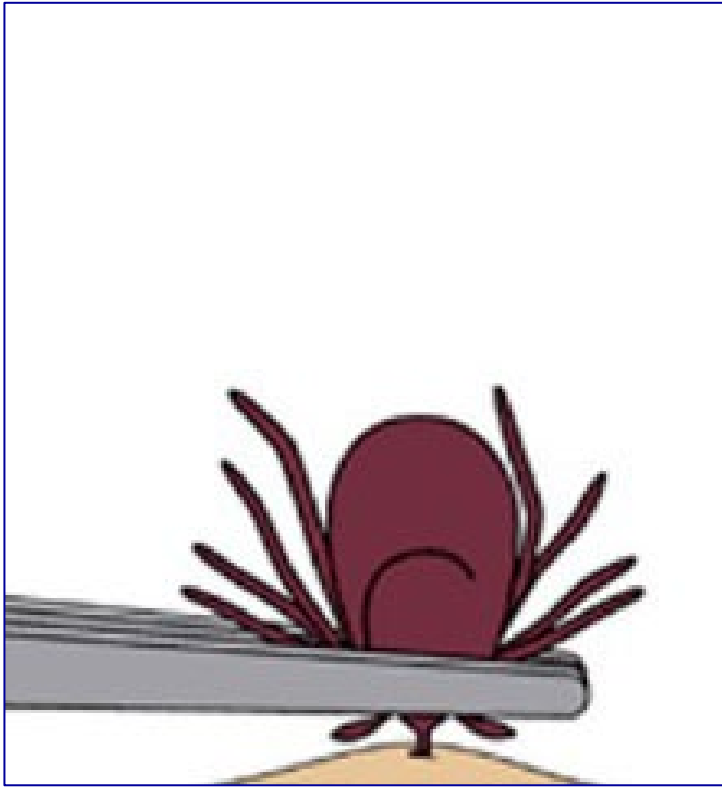
8.5 hours

Permethrin is great for tick bite prevention, should only be applied to clothes or gear



Do not apply to the skin directly, this is an insecticide rather than a repellent; you will find dead ticks stuck on your clothes

Remove embedded ticks ASAP with pointy tweezers



Grasp the tick close to skin's surface and pull straight out, do not use fire, alcohol, essential oils, etc. to kill the tick first

Questions and Contact Info



Jonathan L. Larson

jonathan.larson@uky.edu

@bugmanjon



Let me know if I can
help in any way!