

Updates on the Asian longhorned tick & why this tick is important



R. T. Trout Fryxell – Entomology & Plant Pathology

D. Vann – UT CVM Veterinary Medicine Student

R. Butler – Entomology & Plant Pathology

D. Grove – Forestry, Wildlife, & Fisheries

K. Vail – Entomology & Plant Pathology

J. Ivey – Animal Science

G. Bates – Plant Science

J. Schaefer – UT CVM, Parasitology

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Asian Longhorned Tick

Joint Announcement 24 May 2019

- **Tennessee
Department of
Agriculture**
- **USDA-APHIS**
- **Tennessee
Department of
Health**
- **University of
Tennessee Institute
of Agriculture**



FOR IMMEDIATE RELEASE
May 24, 2019

CONTACT
Will Freeman
615-253-3224 or 615-289-7955
william.h.freeman@tn.gov

INVASIVE TICK DETECTED IN TENNESSEE

NASHVILLE – The Tennessee Department of Agriculture, United States Department of Agriculture – Animal and Plant Health Inspection Services, Tennessee Department of Health, and University of Tennessee Institute of Agriculture (UTIA) today announced the detection of the invasive Asian longhorned tick in Tennessee.

The Asian longhorned tick has now spread to 11 states. The Centers for Disease Control and Prevention reports that there is no evidence that the tick has transmitted pathogens to humans or animals in the U.S.

Two Asian longhorned ticks were recently found on a dog in Union County, and five were found on a cow in Roane County. In the U.S., the tick has been reported on 17 different mammal species.

“Tennessee has a relatively large amount and variety of ticks,” Dr. R.T. Trout Fryxell, Associate Professor of Medical and Veterinary Entomology for UTIA, said. “It is important to be diligent and keep an eye out for all ticks because many varieties can transmit pathogens or cause painful bites.”

Tips to prevent tick bites in animals and livestock include:

- Coordinate with your veterinarian to determine appropriate pest prevention for pets and livestock.
- Check pets and livestock for ticks frequently.
- Remove any ticks by pulling from the attachment site of the tick bite with tweezers.
- Monitor your pets and livestock for any changes in health.

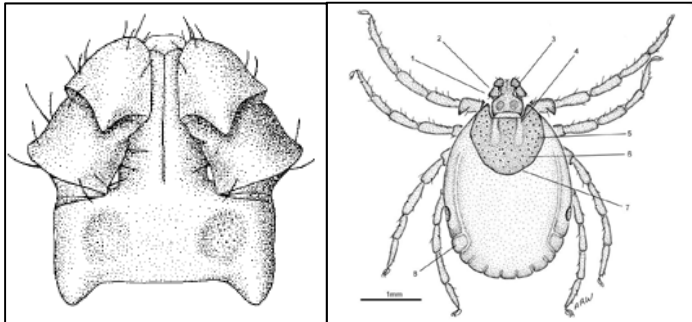
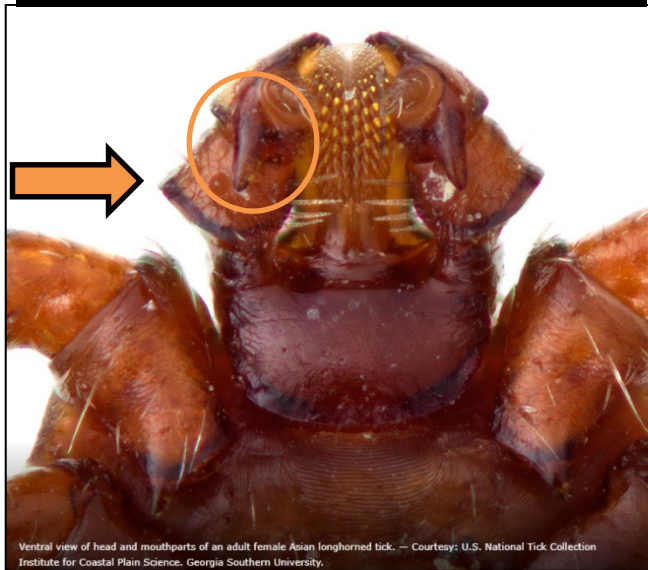
If your animals are bitten by a tick, Dr. Trout Fryxell suggests putting the tick in a ziplock bag, writing down the date and where the tick was most likely encountered, and storing it in a freezer. If any symptoms of a tick-borne disease begin to develop, you should bring the tick to your veterinarian.

For additional information about the longhorned tick in the United States, visit www.aphis.usda.gov/publications/animal_health/fs-longhorned-tick.pdf. To find more information on tick-borne diseases, visit www.cdc.gov/ticks/tickbornediseases/index.html.

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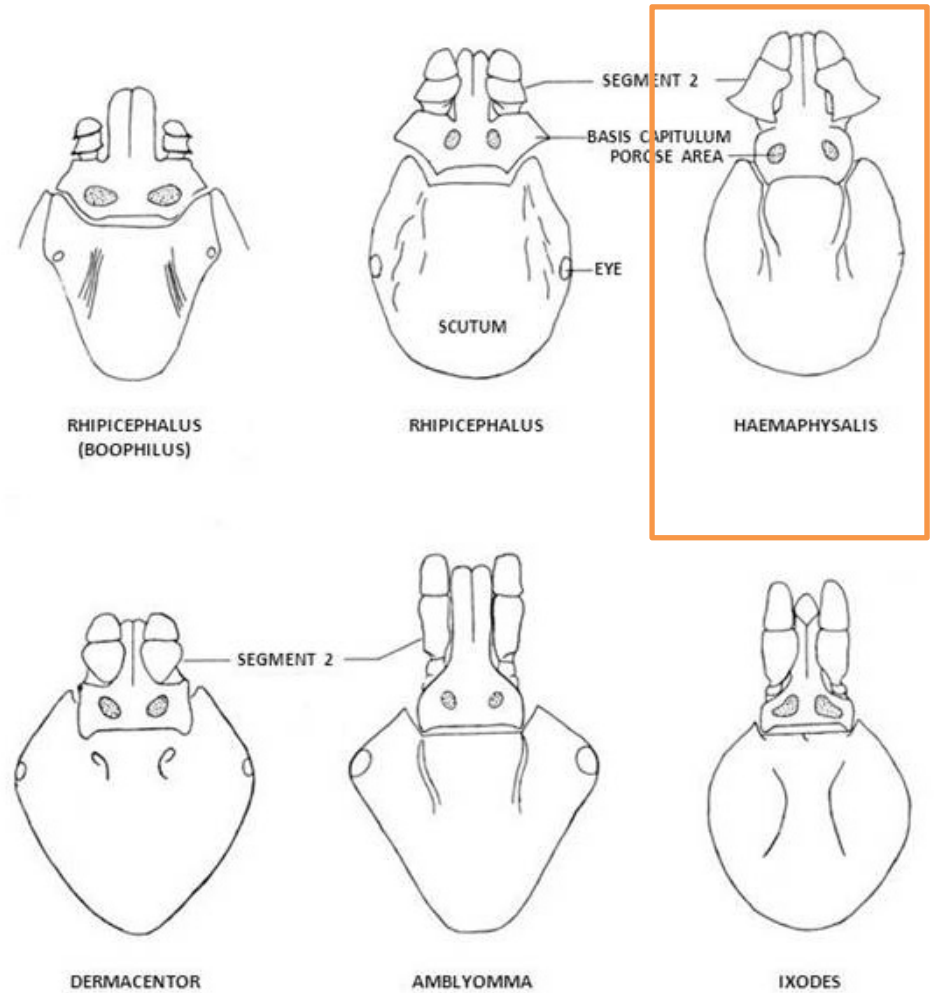


Identification



- No eyes or anal groove ring
- Adults have festoons & palpal horns (“fangs”)

DORSAL VIEW OF THE SCUTA AND CAPITULA OF SOME FEMALE IXODIDAE (HARD TICKS), SHOWING THE CHARACTERISTICS OF THE GENERA



Used by permission, USDA APHIS, Agriculture Handbook No. 485.

Identification

Asian longhorned nymph Lone star nymph

- Short / pointed mouthparts

- Long mouthparts



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Importance

Livestock Concern!

- Direct damage
Irritation & blood loss leads to calf death
25% reduction in dairy milk
- Pathogen Transmission
Anaplasma, Babesia, & Theileria species

Companion Animal Concern!

- Direct damage
Irritation & blood loss
- Pathogen Transmission
Babesia, Ehrlichia, & Hepatozoon species

Wildlife Animal Concern

- Direct damage
Irritation & blood loss
- Pathogen Transmission
Anaplasma, Babesia, & Theileria species

Human Health Concern!

- Pathogen Transmission
Borrelia, Ehrlichia, & Rickettsia species
Many viruses
Alpha-gal allergy (red meat)

Current U.S. Hosts



2 Humans

Livestock

Sheep

Goats

Horses

Cattle

Chickens (new host)

Companion Animals

Dogs & Cats

Wildlife

Elk & White-tailed deer

Opossums

Raccoons

Coyotes

Red & Gray foxes

Striped skunks

Eastern cottontail rabbits

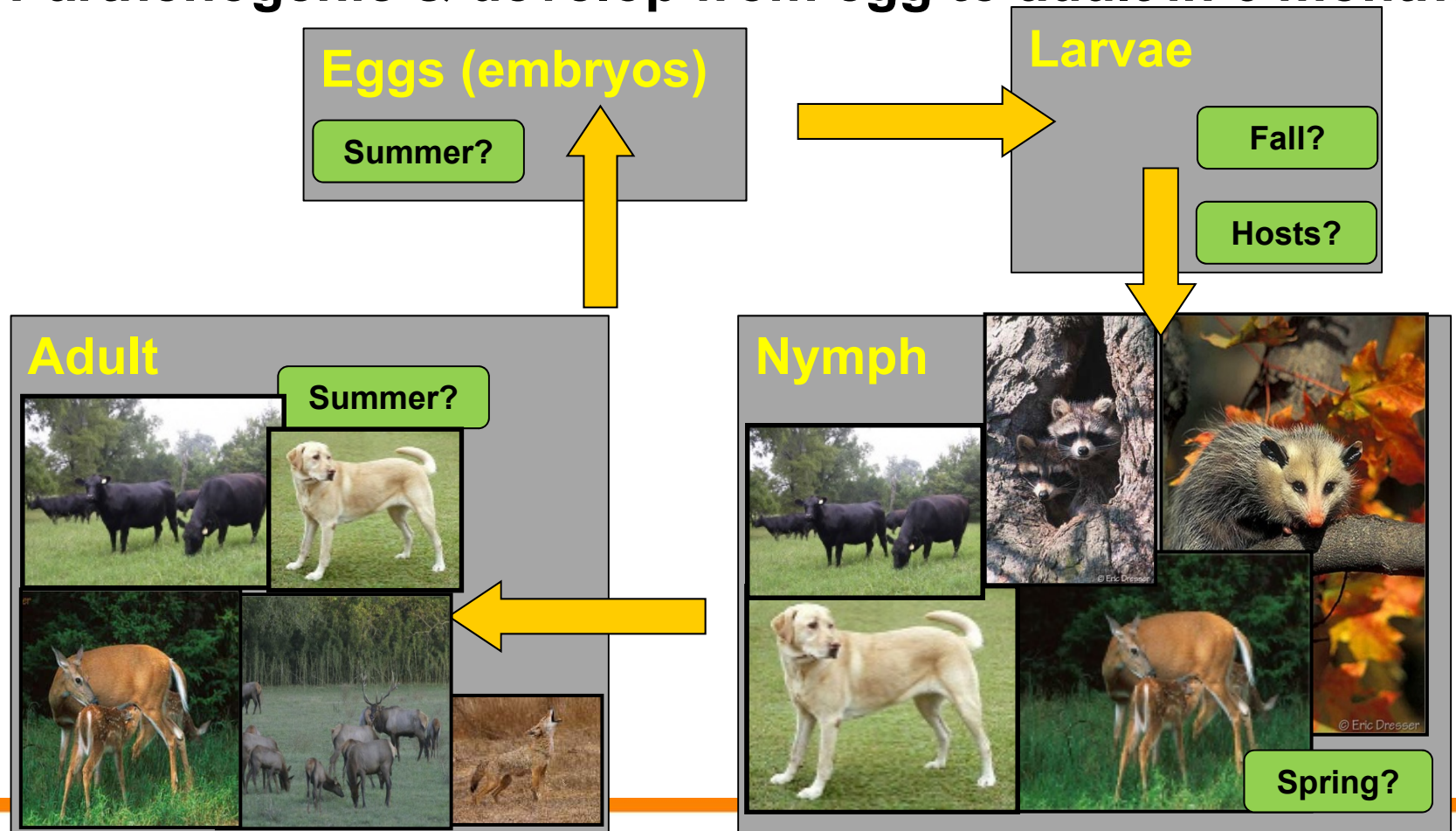
Groundhogs

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Predicted Life Cycle

Unique about this species:

Parthenogenetic & develop from egg to adult in 6 months



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Predicted Habitats



IC: R. Trout Fryxell, UTIA

- Forests & Grasslands
- Humid environments btwn 68-86°F (20-30°C)
- Sites with *Paspalum* grass & rushes
 - Ex. Dallis grass
- Shaded areas where animals rest

Asian longhorned tick habitat in southwest Virginia



IC: G. Hickling, UTIA



IC: USDAG. Hickling, UTIA



© Larry Allain

IC: USDA

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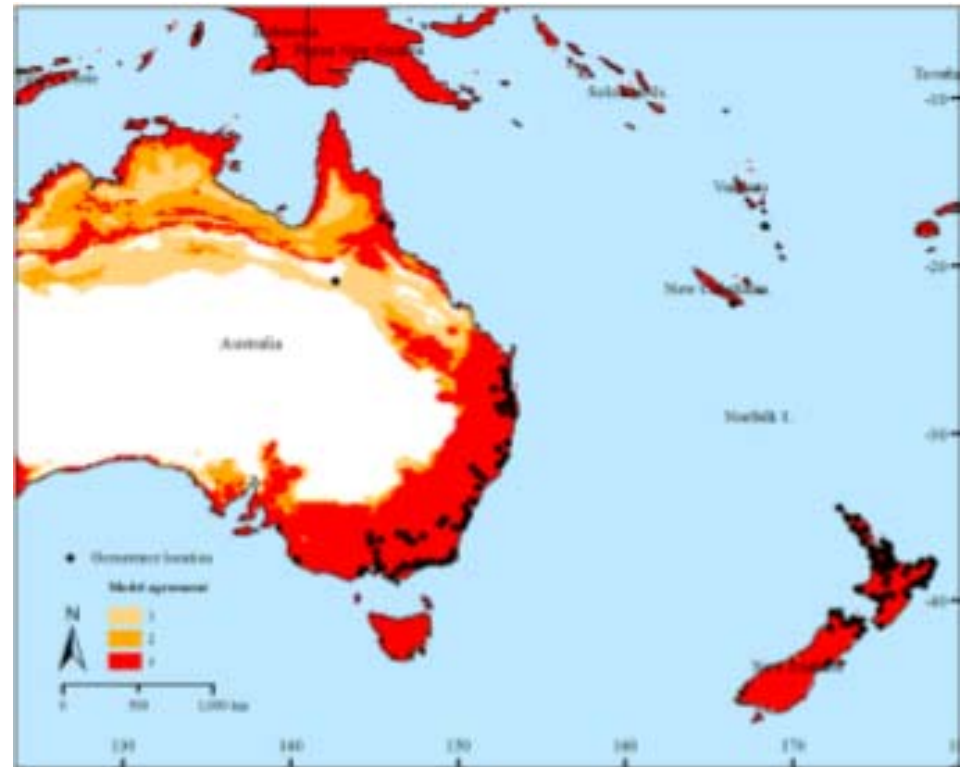
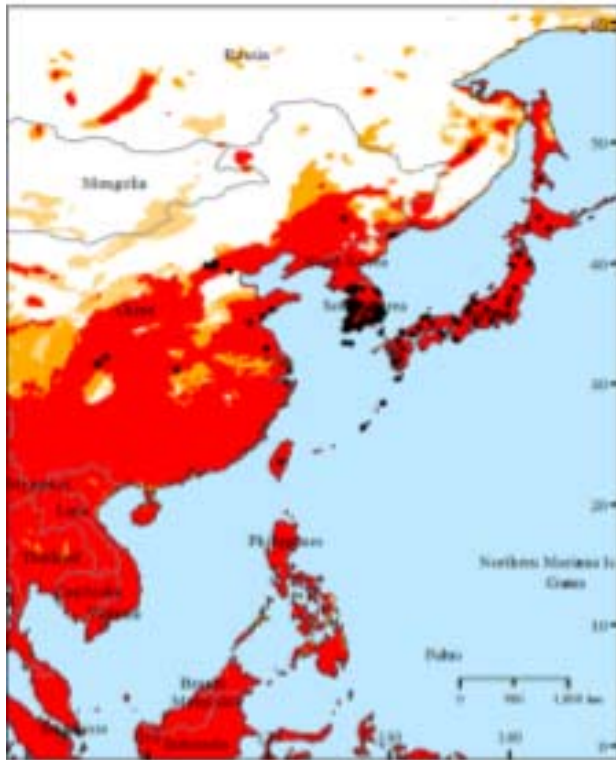
Forest-Grass edge (humid areas)

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Previously Known Distribution

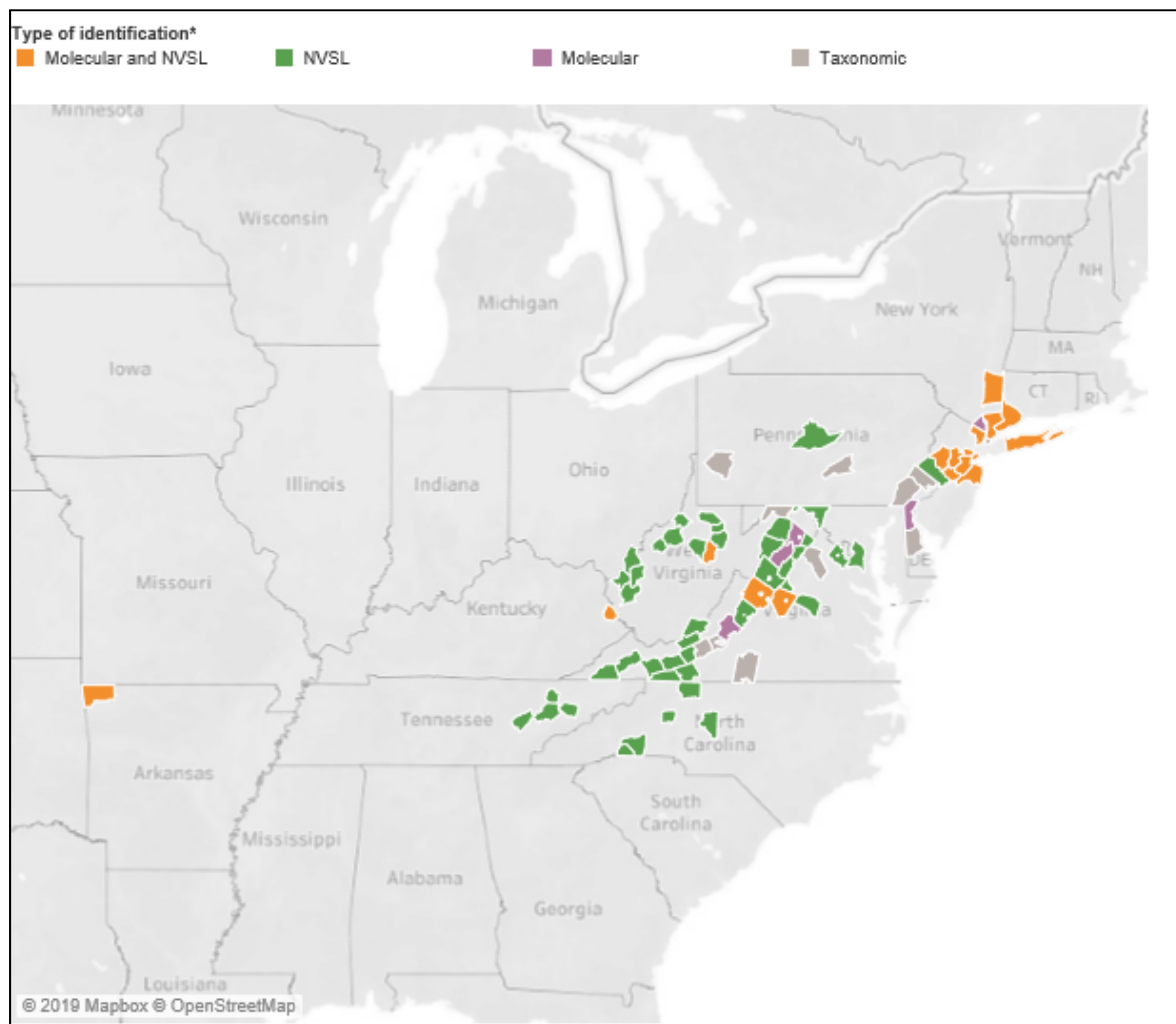
Native: China, Japan, Korea, Russia, & Taiwan

Invasive: Australia & New Zealand



Known occurrence locations (black dots) from Raghavan et al. 2019

Current Known Distribution (Aug5)



State (No. Counties)

- Virginia (27)
- West Virginia (15)
- New Jersey (7)
- New York (6)
- Pennsylvania (6)
- North Carolina (5)
- Maryland (3)
- Delaware (2)
- Arkansas (1)
- Connecticut (1)
- Kentucky (1)
- Tennessee (4)

Questions

- **How did this tick get to Tennessee?**
- **What will be its impact?**
- **How will we control it?**

(1) Develop a tick surveillance network for baseline information

(2) Create & distribute specific educational material for stakeholders

(3) Evaluate current-control methods

(1) Tennessee Tick-Surveillance Network



Companion

27 Animal Shelters
UT Necropsy



Livestock

Livestock Auctions
USDA-VS
Univ. Tenn.

farm animal clinical service,
field service, necropsy, RECs, EXT



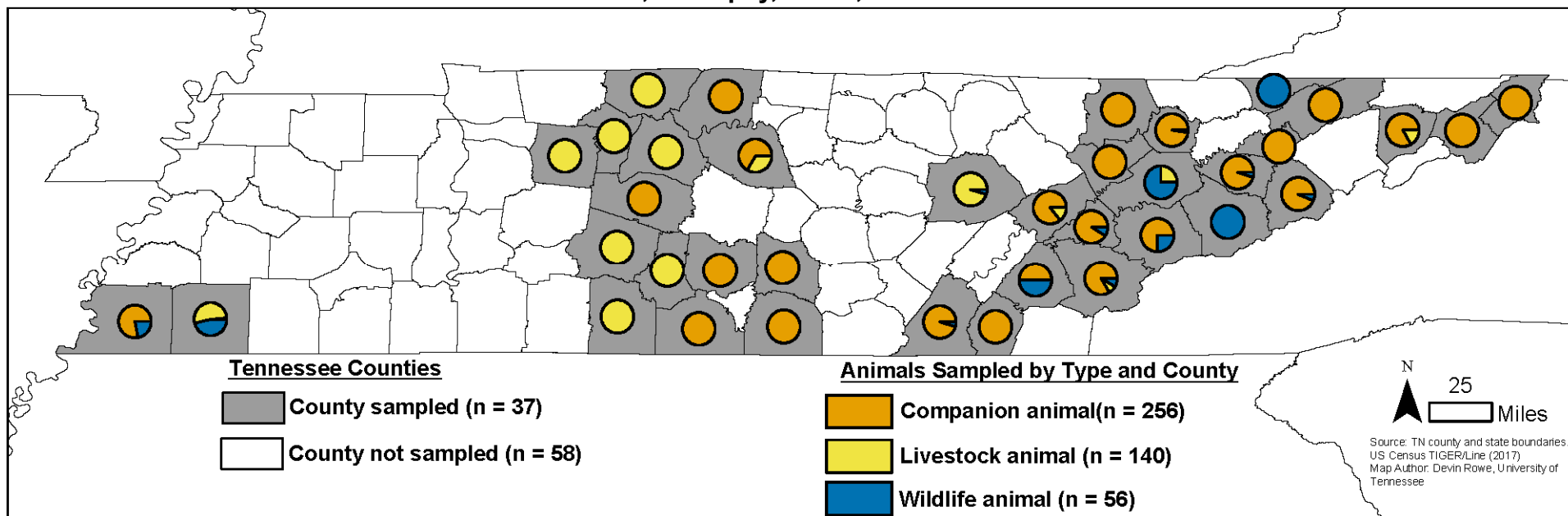
Wildlife

TWRA
USDA-F&G
UT Necropsy
Rehabilitation Centers



Humans

TDH
USDA-FS
UT-Extension



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(1) Tennessee Tick-Surveillance Network



Companion

23 Animal Shelters
UT Necropsy



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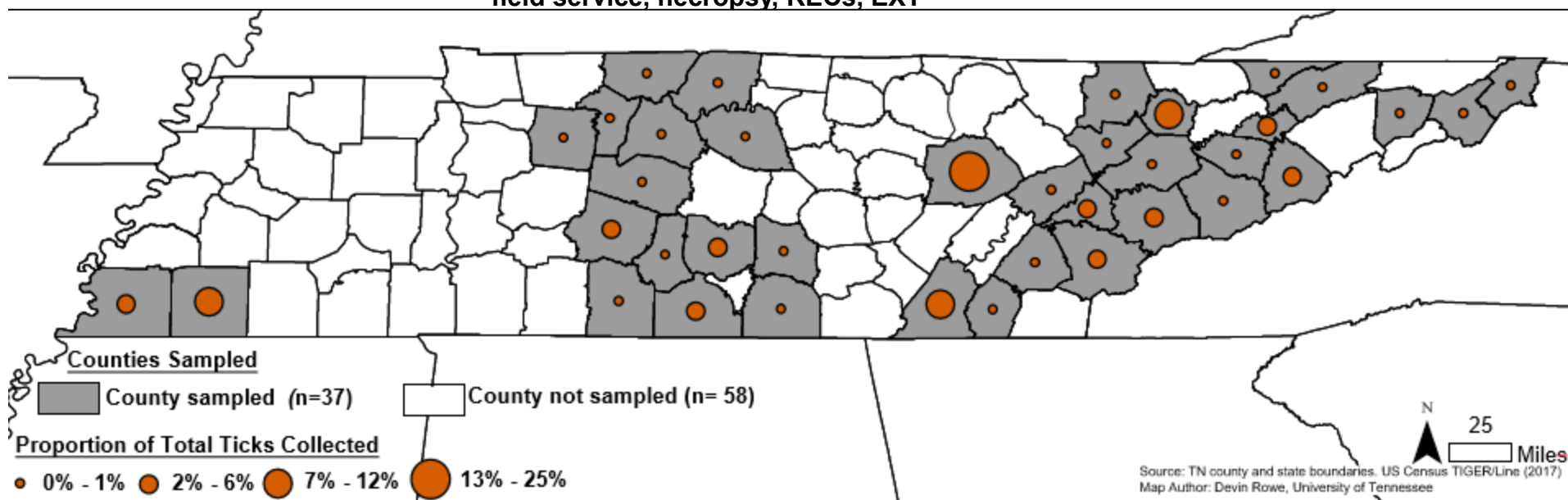
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(1) Tennessee Tick-Surveillance Network



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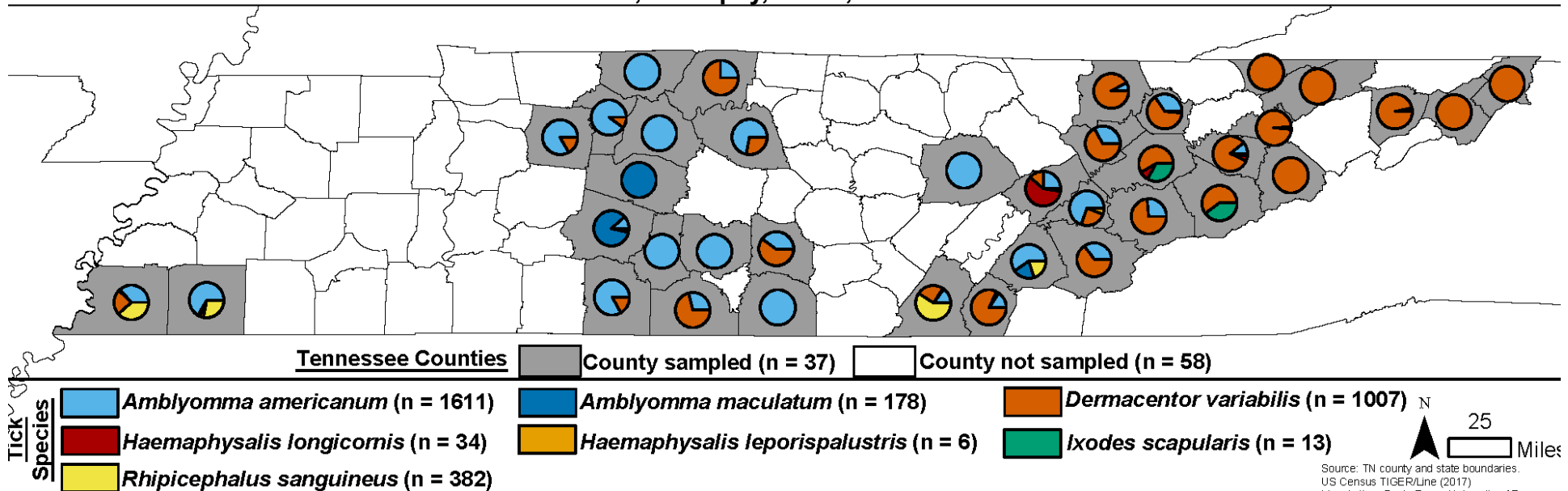
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Humans

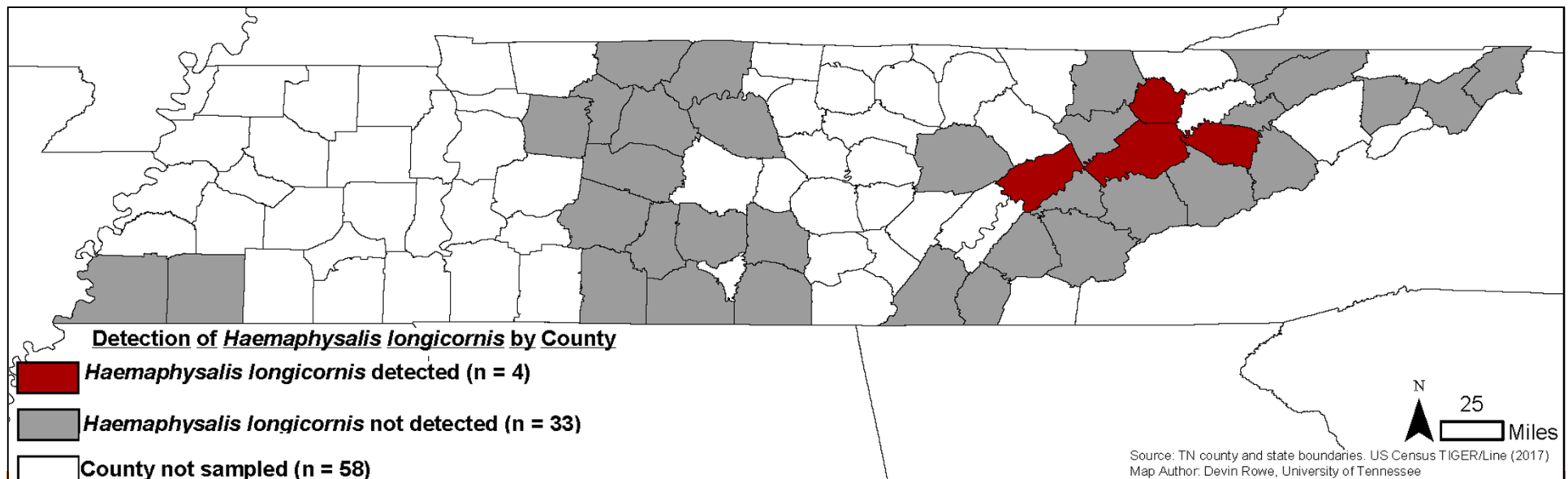
TDH
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Current Known Distribution (31 July)

- 9-13 May – Union - canine(s) - 2 nymphs
- 22 May - Roane - cow - 1 nymph & 5 females
- 7 June - Knox – bull – 1 female
- 12 June - Union- 2 canines – 3 nymphs
- 21 June – Knox – fawn – 1 female
- 9 July - Jefferson- canine – 2 females



Roane Farm – “Baseline”

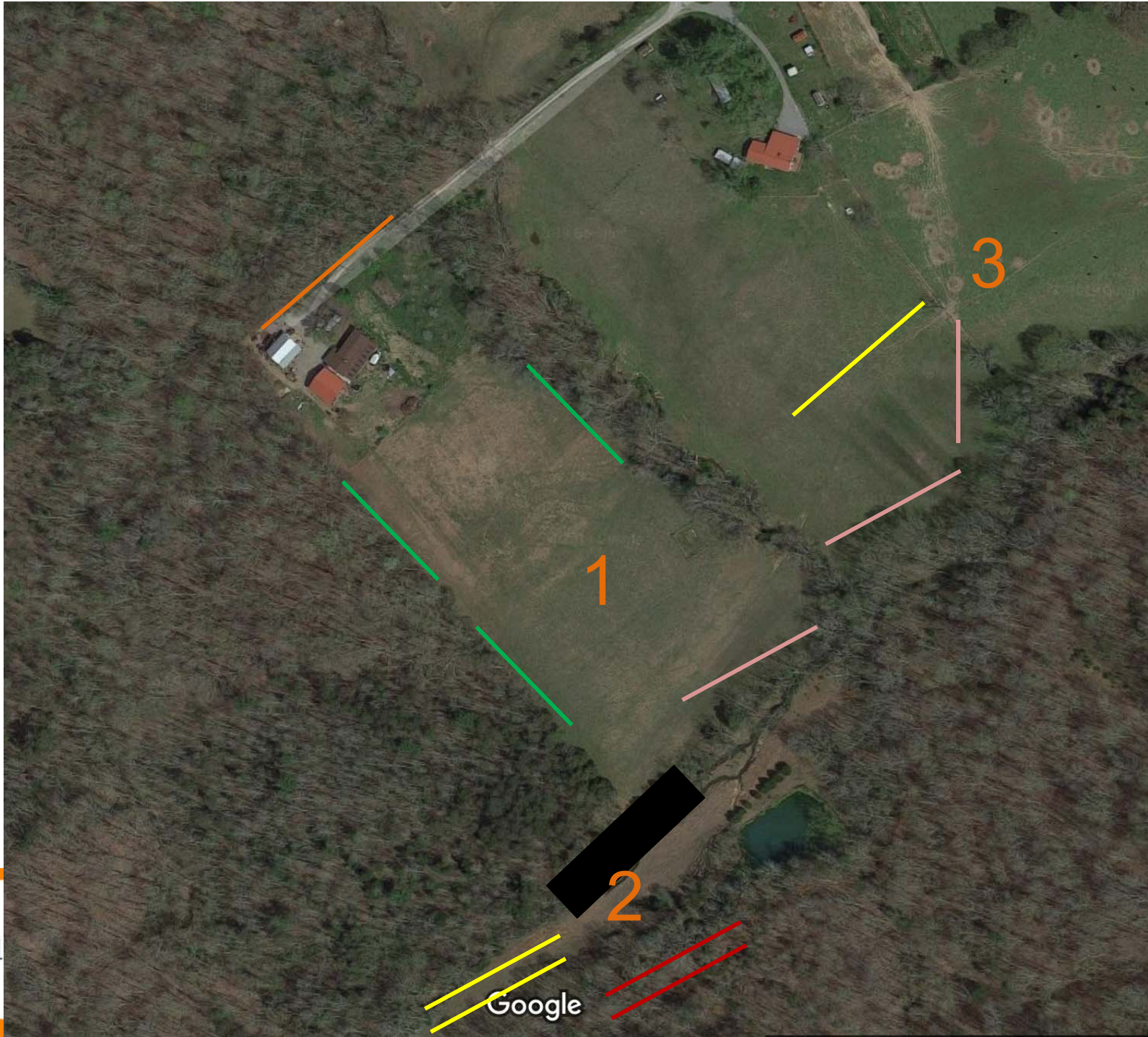
22 May 2019

- Cow presented to UT Vet.Med. Necropsy
 - Donnell noted many ticks on animal & collected them
 - Schaefer identified ticks as *H. longicornis*
 - COD bacterial pneumonia (blood negative)

14 June 2019 – 1st visit

- 12 animal deaths since March
- 2 of 3 canines diagnosed w/ Ehrlichiosis (13/6/2 *HL*)



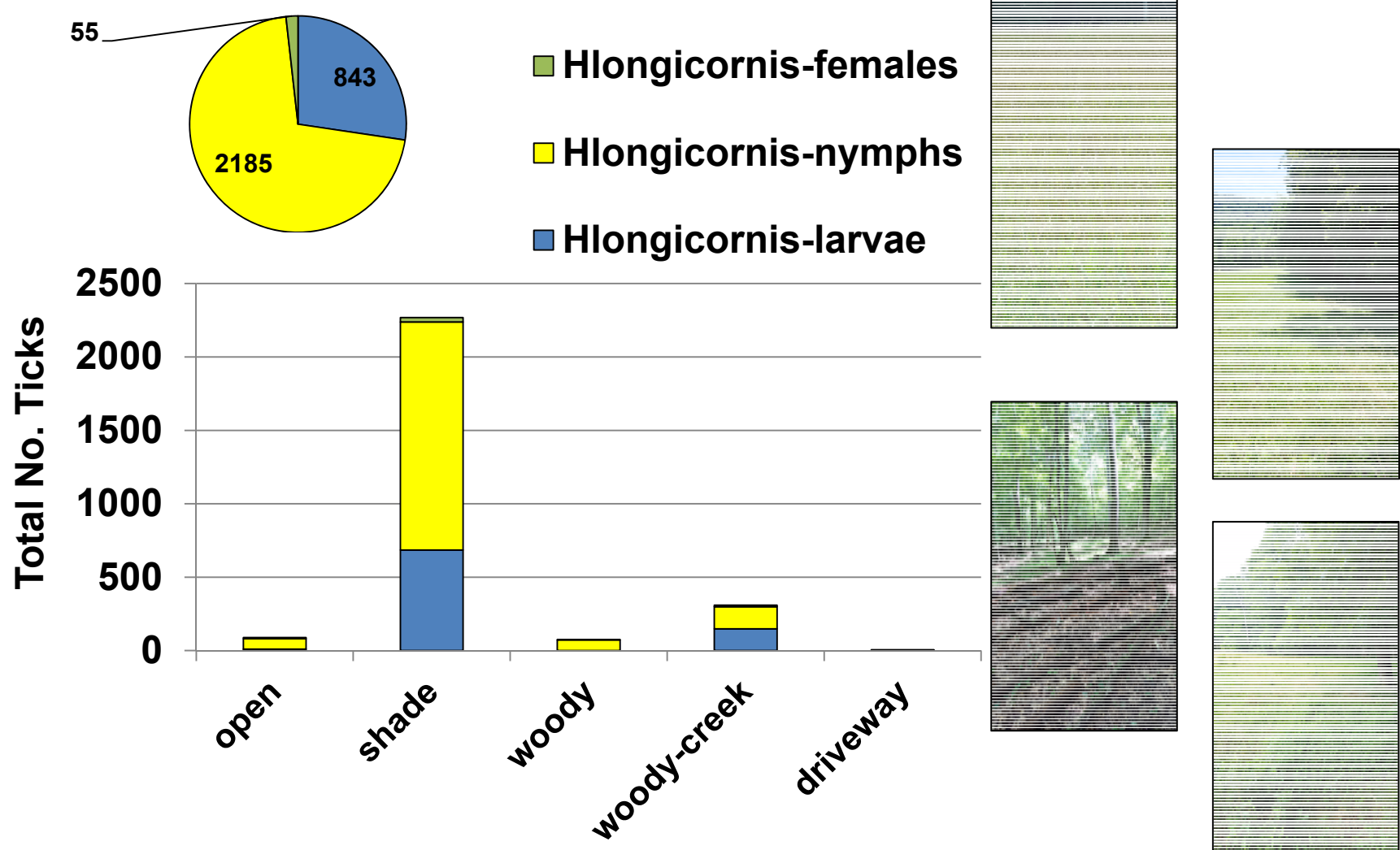


Real

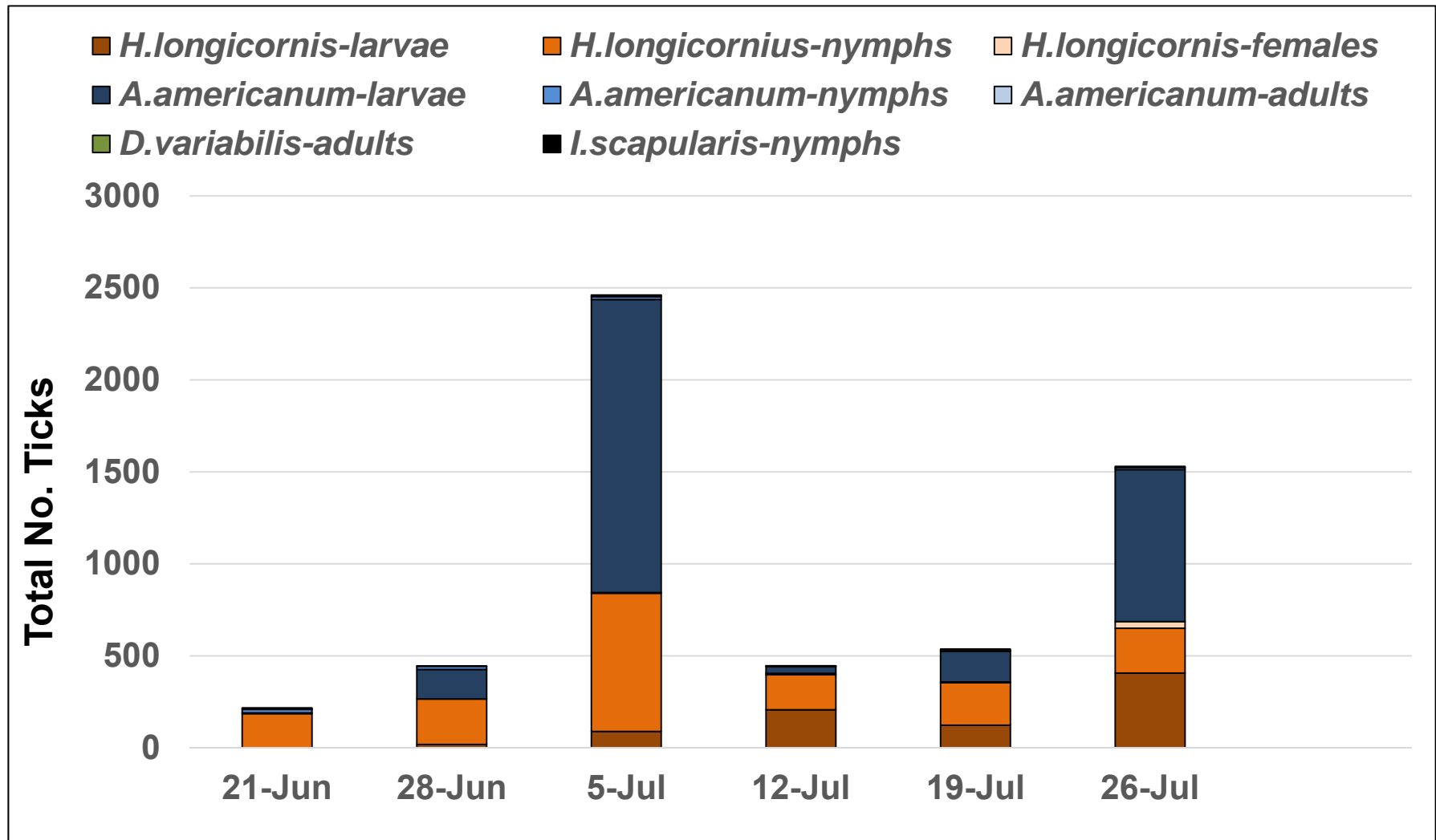
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Roane Farm: Pasture Habitats

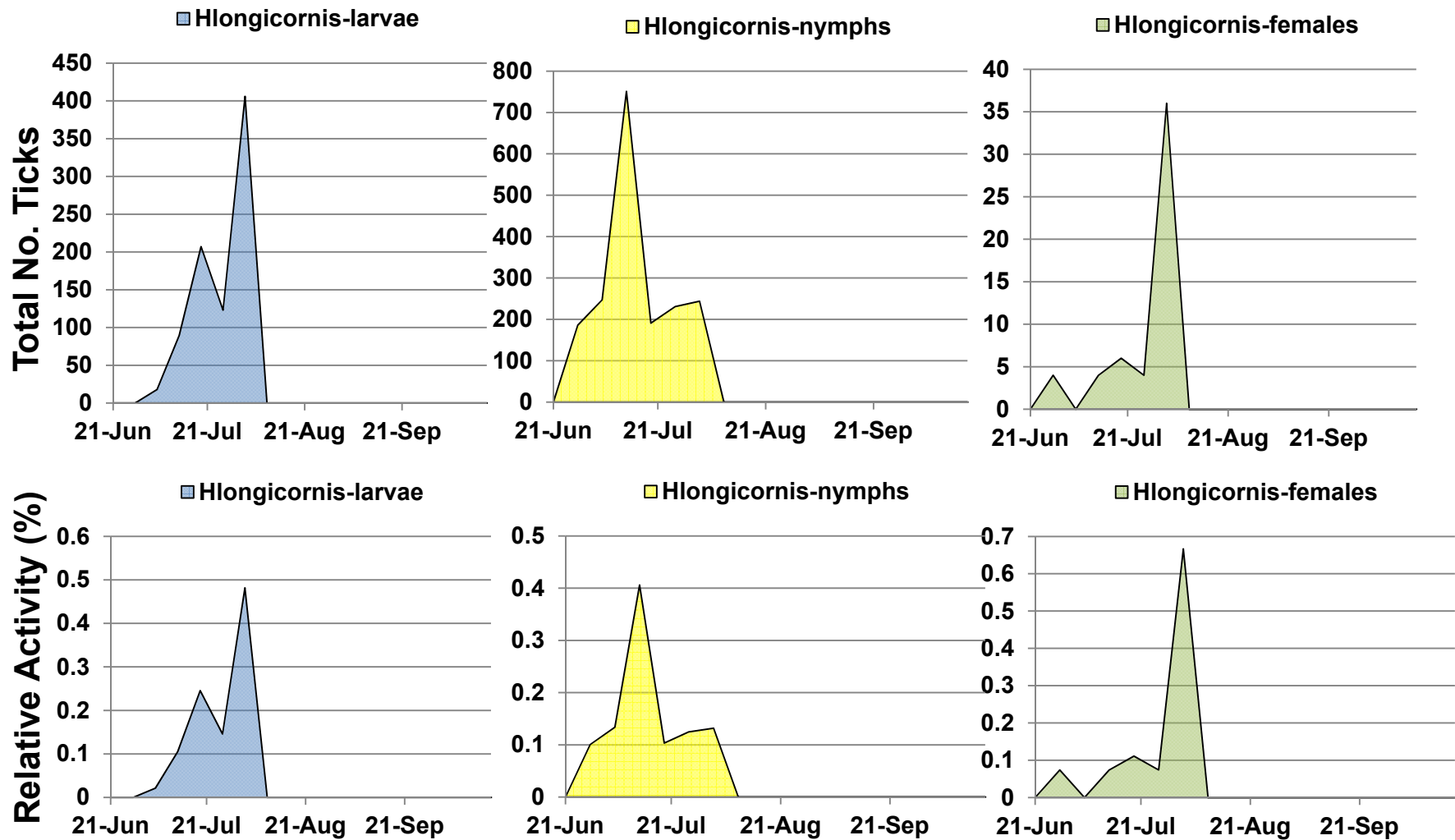


Roane Farm: Tick Phenology



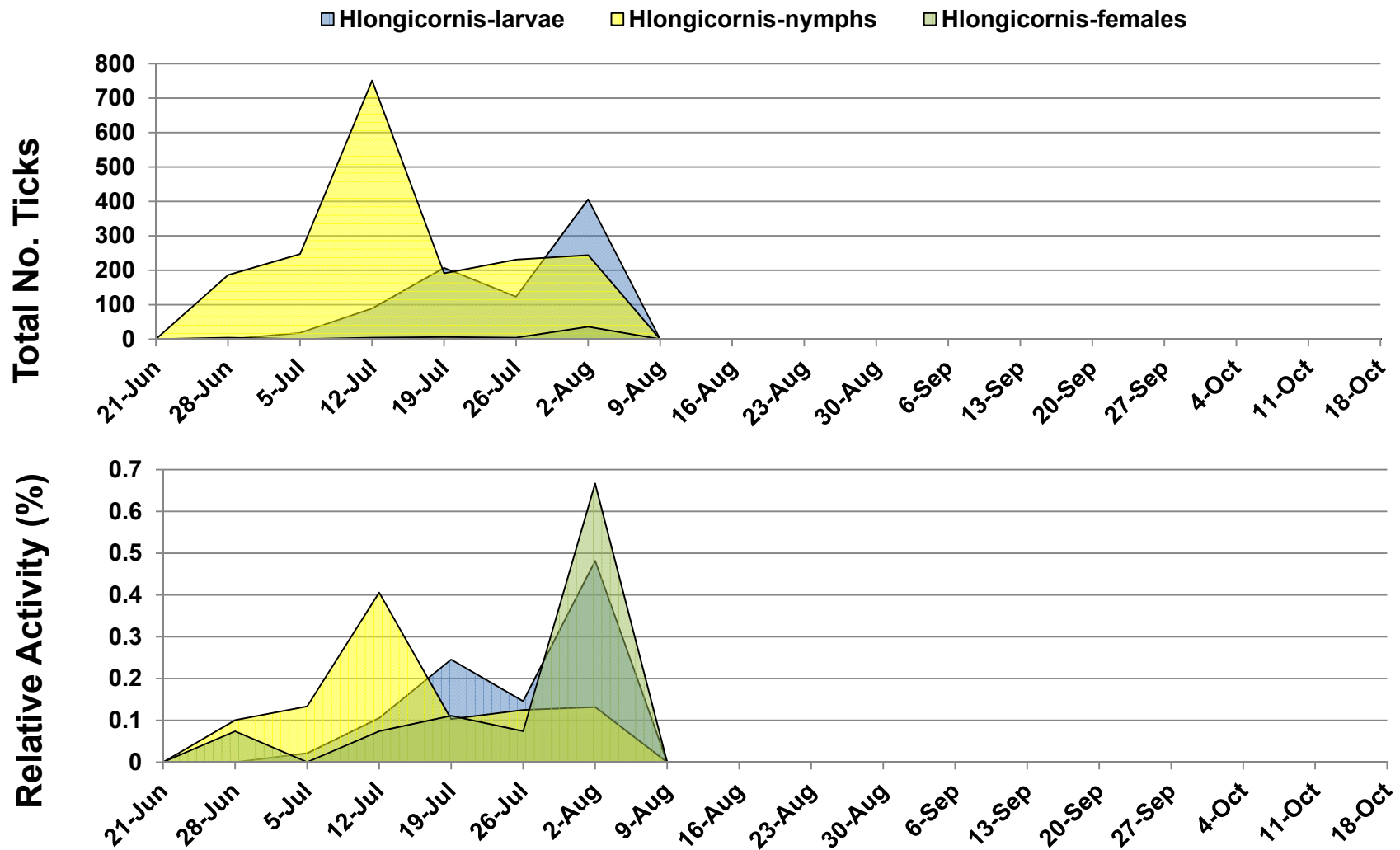
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Roane Farm: Phenology



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Roane Farm: Phenology



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(2) Education: Print, Online, & Class

W 826

Asian Longhorned Tick


Daniel Grove, Assistant Professor and Extension Specialist, Department of Forestry, Wildlife and Fisheries
Rebecca Trout Fryxell, Associate Professor, Department of Entomology and Plant Pathology
Graham Hickling, Professor, Department of Forestry, Wildlife and Fisheries
Karen Vail, Professor and Extension Specialist, Department of Entomology and Plant Pathology
Jennie Ivey, Assistant Professor Extension Equine Specialist, Department of Animal Science

BACKGROUND

The Asian longhorned tick (*Haemaphysalis longicornis* Neumann; alternative names include Asian longhorned tick, Asian tick, bush tick, New Zealand cattle tick) is a species of hard tick in the family Ixodidae. It is native to eastern China, Japan, the Russian Far East and Korea. It has also established in Australia, New Zealand and several Pacific islands, where it is considered a severe exotic pest of livestock. In late 2017, the United States Department of Agriculture's National Veterinary Services Laboratories (NVSL) confirmed the presence of the Asian longhorned tick in the United States. These ticks were first identified in New Jersey, but have since been found in archival samples from West Virginia as far back as 2010. The origin of the tick in the US remains unknown. Some possible routes of entry include entering on domestic pets, horses, livestock or humans. The real impact of the introduction of this tick into the US is not clear at this time, but animal health officials are concerned about potential detrimental impacts on livestock and wildlife.

IDENTIFICATION

Asian longhorned ticks are light brown and do not have distinctive markings on their scutum (back). The adult female grows to about 10mm (0.4 in) in length when bloodfed and has a large spur on its basal palpal segment, which is a portion of the mouthpart. Males are rare and as of printing have not been found in the US. Immature lifestages are very small: nymphs are about the size of a poppy seed and larvae are even smaller.



© Centers for Disease Control and Prevention


IMPACT

At present, the establishment of these ticks in the US is uncertain, but there is great concern amongst animal health officials about the potential impacts on livestock and wildlife. This tick can feed in large populations (known as a tick mass) on warm-blooded host animals which can lead to reduced growth, animal production, and in severe cases sufficient blood loss can result in death.

Outside of the US, these ticks have been shown to carry the causative agents for anaplasmosis, babesiosis, ehrlichiosis, theileriosis, and rickettsiosis, as well as several viruses. However, to date, no infectious agents have been identified in the Asian longhorned ticks found in the US.

UNITED STATES GEOGRAPHIC DISTRIBUTION

By early 2019, Asian longhorned ticks had been detected in AR, CT, KY, MD, NJ, NY, NC, PA, VA and WV (indicated in orange). A travel-associated case was identified in NH. In May 2019, the Tennessee Department of Agriculture announced that Asian longhorned ticks had been found in Roane and Union counties.



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YouTube utbeef

Pictured: female Asian longhorned tick



UTBEEF.COM

Checking Cattle for Ticks

https://www.youtube.com/watch?v=k0jmuDB_8bA&t=7s



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(3) On-Animal Control

Accumulating a list of tick-control active ingredients for different animals, then we will start evaluating them.

	NATIONAL - United States														INTERNATIONAL - Australia/New Zealand							
	Fluralaner ¹	Lotilaner ²	Afoxolaner ³	Sarolaner ⁴	Fipronil ⁵	Flumethrin ⁶	Deltamethrin ⁷	Permethrin	Amitraz	Coumaphos	B - cyfluthrin	Diazinon	Tetrachlorvinphos	Phosmet	Flumethrin	Fluralaner	Afoxolaner	Pyriprole	Permethrin	Amitraz	Cypermethrin	Deltamethrin
Canine (Dog)	X	X	X	X	X		X	X	X						X	X	X	X	X			
Feline (Cat)	X			X	X	X									X							
Lactating Dairy							X			X		X		X					X			
Nonlact. Dairy							X		X	X	X	X	X	X					X	X	X	
Bovine (Beef)							X		X	X	X	X	X	X					X	X	X	
Equine (Horse)							X		X					X						X		
Caprine (Goat)							X													X		
Ovine (Sheep)							X															
Porcine (Pig)													X									
Cervid (Deer)														X						X		

1. Products containing fluralaner as an active ingredient include Bravecto

2. Products containing lotilaner as an active ingredient include Credelio

3. Products containing afoxolaner as an active ingredient include Nexgard

4. Products containing sarolaner as an active ingredient include Simparica and Revolution Plus

5. Products containing fipronil as an active ingredient include Catego, Effipro/Effipro Plus, Frontline Plus, Effitix/Effitix Plus, and Parastar/Parastar Plus

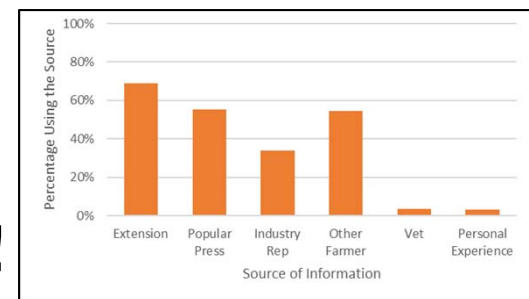
6. Products containing flumethrin as an active ingredient include Seresto Collars

7. Products containing deltamethrin as an active ingredient include Activyl Collars

What can a producer do?

- Preventative steps
 - Monitoring - Increase frequency of tick checks
 - Acaricides - Preventative when purchasing animals
 - Other hosts - Reduce wildlife access to pasture
 - Pasture management - Mowing grass in shady habitats
- Reactive steps
 - Acaricides- product labeled for tick control
 - US AIs: permethrin, coumaphos, B-cyfluthrin, diazinon, tetrachlorvinphos, or phosmet
 - Pasture management
 - Acaricide to tick-infested premise/vegetation
 - Mowing grass in shady habitats

Speak to your veterinarian!



Reminder to Check for Ticks

EMERGING INFECTIOUS DISEASES®

EID Journal > Volume 25 > Ahead of Print / In Press > Main Article

Disclaimer: Ahead of print articles are not considered as final versions. Any changes will be reflected in the online version in the month the article is offi

Volume 25, Number 9—September 2019

Research

Theileria orientalis Ikeda Genotype in Cattle, Virginia, USA

Vanessa J. Oakes, Michael J. Yabsley, Diana Schwartz, Tanya LeRoith,Carolynn Bissett, Charles Broaddus, Jack L. Schlater, S. Michelle Todd, Katie M. Boes, Megan Brookhart, and Kevin K. Lahmers✉

Abstract

Theileria orientalis Ikeda genotype is a parasite that causes a disease in cattle that results in major economic issues in Asia, New Zealand, and Australia. The parasite is transmitted by *Haemaphysalis longicornis* ticks, which have recently been reported in numerous states throughout the eastern United States. Concurrently, cattle in Virginia showed clinical signs consistent with a hemoprotozoan infection. We used amplicons specific for the major piroplasm surface protein and small subunit rDNA of piroplasms to test blood samples from the cattle by PCR. Bidirectional Sanger sequencing showed sequences with 100% identity with *T. orientalis* Ikeda genotype 2 sequences. We detected the parasite in 3 unrelated herds and from various animals sampled at 2 time points. Although other benign *T. orientalis* genotypes are endemic to the United States, detection of *T. orientalis* Ikeda genotype might represent a risk for the cattle industry in Virginia.

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Reminder to Check for Ticks

Officials Warn Animal Owners To Be Vigilant With Tick Prevention

By WILL MICHAELS • JUL 8, 2019

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The underside of an adult female Haemaphysalis longicornis tick, commonly known as the longhorned tick.

CREDIT JAMES GATHANY / COURTESY OF THE CENTERS FOR DISEASE CONTROL

The state Department of Agriculture is telling animal owners to be vigilant with tick prevention after finding an invasive species on livestock in Surry County.

The office of the state veterinarian says five cows recently died of acute anemia connected to an infestation of Asian long-horned ticks. Veterinarians say they each had more than 1,000 ticks on them.

This is the fourth confirmed case in North Carolina since last year, but the

Asian tick has spread to at least ten states in the Southeast.

Michael Neault, the state's director of livestock health programs, says an infestation can be fatal in animals if it goes unchecked.

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Acknowledgements

- Roane Family Farm
- Animal Shelters
- Univ. of Tennessee
- Med.Vet.Lab
 - Dené Vann
 - Dave Paulsen
 - Devin Rowe
 - Travis Davis
 - Micah Willis



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RFryxell@utk.edu

Twitter: @DrVectorBio

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