



Tick-Borne Infections Council
of North Carolina, Inc.

NEWSLETTER 2018 Volume 2



Quote of the season: - “It occurs in more than 80 countries and is the most commonly reported vector-borne disease in the Northern Hemisphere. In the United States alone, it spawns 300,000 new cases each year. Yet Lyme disease — caused by species of *Borrelia* bacteria carried by ticks of the *Ixodes* genus — remains one of the most poorly understood infections. It has divided researchers, clinicians and patients, and triggered intense public suspicion and confusion.” From *Conquering Lyme Disease: Science Bridges the Great Divide* by Brian A. Fallon & Jennifer Sotsky, Columbia University Press: 2017. --James Logan, www.nature.com/articles/d41586-017-08442-8

Highlights...

- **Federal Tickborne Disease Work Group Report**
- **Lyme disease cases increasing in West Virginia**
- **Exotic tick found in New Jersey in late 2017**
- **Elk introduced into Kentucky act as host to a diversity of tick species**
- **\$57 million damage suit against the CDC in July 2017 filed by a US pathologist**
- **Monkeys showed persistence of Lyme disease bacteria after antibiotic treatment**

Scroll down to see these features and more!

State Vector-Borne Disease Working Group 2018 Meeting Schedule

Tentative 2018 VBWG meeting dates: April 16th, Jul 27th, and October 26th
(Check with us before going to confirm date as they occasionally change.)

Location:

Office of the Chief Medical Examiner
4312 District Drive
Raleigh, NC 27607

Photo ID required.


Links to Letters to Medical Providers from the State Department of Public Health on Lyme Disease and Rickettsial Diseases

See right side of Home Page on our website: www.tic-nc.org

Where To Find CDC Case Definitions and their Statement that the Surveillance Case Definitions Are “not to be used as the sole criteria for establishing critical diagnosis”

Go to: www.cdc.gov/lyme/healthcare/index.html. (The links below in a clip of the website are not active.) Scroll down and find “Case Definition and Report Forms”. See the grey box with “Note” containing the disclaimer.

Case Definition and Report Forms

- [Lyme Disease Surveillance Case Definition](#) (revised Jan 2017)
- [Lyme Disease Surveillance Case Report Form](#)  [PDF – 2 pages] (for public health officials' use)

Note: Surveillance case definitions establish uniform criteria for disease reporting and should not be used as the sole criteria for establishing clinical diagnoses, determining the standard of care necessary for a particular patient, setting guidelines for quality assurance, or providing standards for reimbursement.

Accessed and copied 15 August 2017.

NC EDSS Event Data – Cases Submitted to CDC

Disease	Total Cases/Confirmed cases by year of report 2016†	Total preliminary confirmed and probable Events in NCEDSS created between 1/2/2017 - 10/19/2017*	Total Events Reviewed and closed by NC DPH 1/2/17 - 10/19/2017	Total Events Still Under Investigation by LHD 1/2/17 - 10/19/2017	Total Events created in NCEDSS 1/1/17 - 10/19/2017
Lyme Disease	274/32C	225/50C	1318	122	1440
RMSF	682/6C	418/6C	2039	282	2321
Ehrlichiosis	61/10C	51/8C	192	18	210
Anaplasmosis	16/1C	9/4C	29	4	33

Note: By the *former* CDC definition, six counties had confirmed cases of Lyme disease in two persons who had not traveled out of the county for 30 days after their tick exposure. **Therefore, these counties were endemic for Lyme disease by the former CDC definition: Wake, Guilford, Haywood, Alleghany, Buncombe, and Wilkes.** Counties with one case of locally acquired Lyme disease were: Cleveland (2008), Wilson (2009), Pitt (2009), Carteret (2009), Gates (2011), Perquimans (2011), Rowan (2013), Union (2013), Caldwell (2013), Franklin (2014), Stanley (2014), Duplin 2014.

TIC-NC Talks and Materials Distributed

Brochures/booklets:

Fearrington Village Club Fair
Carolina Women's Show, Pittsboro

Talks: Chatham County Lyme disease support group

National Environmental Health Association

15th International Conference
on **Lyme Borreliosis** and other
TICK-BORNE Diseases

Tom Harkin Global Communications Center
Atlanta GA September 11-14th, 2018

The Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the National Environmental Health Association (NEHA) are excited to announce that the **15th International Conference on Lyme Borreliosis and Other Tick-borne Diseases** will be held on September 11-14, 2018, in Atlanta, Georgia.

The meeting will begin the afternoon of September 11 ([security](#) check-in at CDC followed by the keynote address and opening reception at the [Emory Conference Center Hotel](#) in the evening). The remaining sessions on September 12-14 will be held at [CDC's Tom Harkin Global Communications Center](#).

A call for abstracts, conference website, and additional conference information will follow in early 2018. Mark your calendars now as you don't want to miss this amazing educational opportunity!

To add your e-mail address to our distribution list, please send an e-mail to bzb_public@cdc.gov.

The CDC and the NIH are holding their 15th International Conference on Line Borreliosis and Other Tickborne diseases in Atlanta in September.

<http://hosted.verticalresponse.com/527519/b0c27585b6/1504146378/8b6316a979/>

Report from the state Vectorborne Disease Work Group meeting

No meeting was held in January.

Report from the Federal Vectorborne Disease Work Group



The federal Tick-Borne Disease Working Group, which first met in December, has selected **subcommittee** topics and co-chairs:

1. Disease Vectors, Surveillance and Prevention (includes epidemiology of tick-borne diseases). (Pat Smith/Ben Beard)

2. Pathogenesis, Transmission, and Treatment (Wendy Adams/Estelle Jones)
3. Testing & Diagnostics (includes lab-based diagnoses & clinical-diagnoses) (Lise Nigrovic/Vanila Singh/Designee)
4. Access to Care Services and Support to Patients (Karen Vanderhoof Forschner/Scott Cooper)
5. Vaccine and Therapeutics (Dennis Dixon/ New WG Member TBA [Gary Wormser who had been selected for the Working Group resigned after protests])
6. Other Tick-Borne Diseases and Co-infections (Richard Horowitz/Allen Richards)



Subject matter experts and Lyme patient representatives were invited to apply to serve on subcommittees. It is expected that each subcommittee will have 8-10 members.

XX TIC-NC Activities XX

Kudos to TIC-NC member Tami McGraw who keeps thumbtacks in her car ready to post our educational material and leaves booklets at vets' offices, trailheads, and on random bulletin boards.

We staffed a booth at the March UNC Health Expo that is open to all UNC employees. There was a great deal of interest. We heard many stories about ticks and tickborne illnesses from people stopping by, gave out a lot of educational materials, and got a number of new members.



Board members Joanie Alexander and McGregor Bell in action at the Expo.

»» North Carolina and the South »»


Lyme disease cases increasing in West Virginia

From a report from the state's (WV) DHHR Bureau for Public Health: WV has the highest number of Lyme disease cases on record for 2017. As of November 8, 2017, there were 571 confirmed & probable cases. In 2016, there were 368 cases. The incidents have been found in 45 out of 55 counties so far. In 2012, the disease was found in only 11 counties.


■ ■ National Section ■ ■

Exotic tick found in New Jersey in late 2017

Governor Chris Christie • Lt. Governor Kim Guadagno
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STATE OF NEW JERSEY
DEPARTMENT OF AGRICULTURE



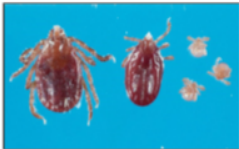
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Exotic Tick Species Identified on Hunterdon County Farm

IMMEDIATE RELEASE
November 21, 2017
www.nj.gov/agriculture
PO Box 330
Trenton, New Jersey 08625-0330

Contact:
Jeff Wolfe
P: (609) 633-2954
C: (609) 433-1785
E: jeff.wolfe@ag.state.nj.us



(TRENTON) – New Jersey Secretary of Agriculture Douglas H. Fisher today announced the United States Department of Agriculture's National Veterinary Services Laboratory (NVSL) in Ames, Iowa has confirmed the finding of an exotic East Asian tick, also known as the longhorned tick or bush tick, on a farm in Hunterdon County on November 9. Initial identification was made by the Monmouth County Tick-borne Diseases Lab, located at Rutgers University and the Hunterdon County Division of Health. This tick is not known to be present in the U.S., although there are records of at least a dozen previous collections of this species in the country on animals and materials presented for entry at U.S. ports.

The animals and the property where the tick was found have been treated to eliminate the tick. To determine if the tick has spread to nearby wildlife, ongoing surveillance is being conducted by the NJ Division of Fish and Wildlife, Department of Environmental Protection (DEP) in cooperation with Wildlife Services from the United States Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) and the Southeastern Cooperative Wildlife Disease Study at the University of Georgia.

The potential impact of this tick on tickborne illness in New Jersey residents is not yet known. In other parts of the world, the bush tick has been associated

proved/press171121.html

1/2

Department of Agriculture | Exotic Tick Species Identified on Hunterdon County Farm

with several tickborne diseases, some of which are found in New Jersey, such as spotted fever rickettsioses. The Department of Agriculture is investigating if the ticks found locally are carrying any potential pathogens that may impact human or animal health.

The above are excerpts from the state letter regarding this tick. More information at:

http://www.nj.com/hunterdon/index.ssf/2017/11/this_rare_exotic_tick_just_surfaced_in_nj.html

The national Tickborne Disease Work Group membership

The 14 individuals serving as members of the Tick-Borne Disease Working Group have bios at this link. This is the revised list after Gary Wormser, MD was removed.

<http://www.hhs.gov/ash/advisory-committees/tickbornedisease/members/index.html>

Informative review of rickettsial diseases such as Rocky Mountain spotted fever and its cousins in the United States

Suspected and Confirmed Vector-Borne Rickettsioses of North America Associated with Human Diseases

The identification of pathogenic rickettsial agents has expanded over the last two decades. In North America, the majority of human cases are caused by tick-borne rickettsioses but rickettsiae transmitted by lice, fleas, mites and other arthropods are also responsible for clinical disease. Symptoms are generally nonspecific or mimic other infectious diseases; therefore, diagnosis and treatment may be delayed. While infection with most rickettsioses is relatively mild, delayed diagnosis and treatment may lead to increased morbidity and mortality. This review will discuss the ecology, epidemiology and public health importance of suspected and confirmed vector-transmitted *Rickettsia* species of North America associated with human diseases. Yoshimizu et al. *Tropical Medicine and Infectious Disease* **2018**, 3(1), 2; doi:[10.3390/tropicalmed3010002](https://doi.org/10.3390/tropicalmed3010002) Open access.

A historical snapshot of *Ixodes scapularis*-borne pathogens in New Jersey ticks reflects a changing disease landscape

Historical specimens, when available, can provide new insight into the distribution and evolution of pathogens that may not be discernible from more recent samples. We used ticks collected from hunter-killed white-tailed deer in New Jersey in 2002 to examine the prevalence and distribution of four pathogens transmitted by *Ixodes scapularis*, the blacklegged tick. Infection with *Borrelia*

burgdorferi sensu stricto, *Babesia microti*, and *Anaplasma phagocytophilum* (the agents of Lyme disease, human babesiosis, and human granulocytic anaplasmosis, respectively) was highest in the Coastal Plain and lowest in the northwestern Skylands region. These patterns correspond well with the historically observed northward expansion of *I. scapularis* within New Jersey and the comparatively recent increase in human cases of these pathogens in the northern part of the state. Additionally, we provide evidence that *Borrelia miyamotoi*, a relatively new emerging pathogen and agent of relapsing fever, was widespread (though not common) throughout the state in 2002. Our findings highlight the need for enhanced awareness of tick-borne diseases other than Lyme and implementation of large-scale tick surveillance in endemic regions. Egizi et al. *Ticks and Tick-borne Diseases*. doi.org/10.1016/j.ttbdis.2017.12.009

Elk introduced into Kentucky act as host to a diversity of tick species

A Survey of Tick Species in a Recently Reintroduced Elk (*Cervus elaphus canadensis*) Population in Southeastern Kentucky with Potential Implications for Interstate Translocation of Zoonotic Disease Vectors

In the late 20th century, elk (*Cervus elaphus canadensis*) were reintroduced into southeastern Kentucky, US. This population has since been used as a stock population for additional elk reintroductions in other eastern states. Although reintroduction and translocation practices are effective, they can disseminate vectors and pathogens. Therefore, we surveyed tick species residing on elk hosts a decade after elk reintroduction in Kentucky by examining 263 captured individuals (female=86; male=177) from 2011 to 2013. A total of 1,617 ticks were collected from 255 elk. We found five tick species: American dog (*Dermacentor variabilis*), Gulf Coast (*Amblyomma maculatum*), winter (*Dermacentor albipictus*), deer (*Ixodes scapularis*), and Lone Star (*Amblyomma americanum*). The most prevalent ticks were winter tick (52.3%) and American dog tick (42.1%). We found no difference between female and male elk in mean intensity of American dog tick (mean=2.6, 95% confidence limits: -2.6, 2.7; $P=0.701$) or winter tick (mean=3.28, 95% confidence limits: -2.21, 2.07; $P=0.274$). Our findings demonstrated that the elk population acts as host to a diversity of tick species, suggested a broader distribution of tick species than previously reported in Kentucky, and highlighted the potential for inadvertent spread of ticks through translocation and reintroduction efforts, even on a local scale. Sclaback et al. *Journal of Wildlife Diseases* 2018.

International & General Section

Dr. Sin Lee, a US pathologist and owner of Milford Molecular Diagnostics filed a \$57 million damage suit against the CDC in July 2017.

UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES

SIN HANG LEE, M.D. : CENTERS FOR DISEASE CONTROL
AND PREVENTION
v. :
BETH P. BELL, M.D., M.P.H. and :
CENTERS FOR DISEASE CONTROL :
AND PREVENTION : JULY 19, 2017

COMPLAINT

I. INTRODUCTION

1. The Complainant, Sin Hang Lee, M.D. ("Dr. Lee") has developed a no-false-positive DNA sequencing-based molecular test for accurate diagnosis of Lyme disease (Lyme borreliosis), which is significantly more accurate than any other test currently used. The Respondents United States Centers for Disease Control and Prevention ("CDC") and Beth P. Bell, M.D., M.P.H. ("Dr. Bell") have, since 2013, engaged in an anti-competitive campaign to stifle the use and availability of his test despite knowing of its effectiveness and accuracy, thereby causing significant harm to Dr. Lee, his laboratory and the general public. In furtherance of this campaign, Dr. Bell also has defamed Dr. Lee and his test, causing further significant reputational and financial harm.

Through the law firm of Moore Leonhardt & Associates LLC, Dr. Sin Lee of Milford Molecular Diagnostics has submitted the SF-59 form with documents to support the \$57 million damage claimed:

SF-59 Form: [https://www.dropbox.com/s/g94774ielt0e6ok/Lee-CDC SF-95.pdf?dl=0](https://www.dropbox.com/s/g94774ielt0e6ok/Lee-CDC%20SF-95.pdf?dl=0)

Complaint: <https://www.dropbox.com/s/fju5gdz5rbolet1/Lee%20-%20CDC%20Complaint%207-19-17%20%20%285%29.pdf?dl=0>

Source for all related documents: www.change.org/p/the-us-senate-calling-for-a-congressional-investigation-of-the-cdc-idsa-and-aldf/u/20864023

Another skin manifestation of Lyme disease

Ed. note: Panniculitis is a group of diseases whose hallmark is inflammation of subcutaneous adipose tissue (the fatty layer under the skin - panniculus adiposus). Symptoms include tender skin nodules, and systemic signs such as weight loss and fatigue.

Septolobular Panniculitis in Disseminated Lyme Borreliosis

Lyme disease classically evolves through clinical manifestations according to the stage of illness. Because many of the systemic symptoms are nonspecific, and because serology may yield false negative results, cutaneous findings merit even greater importance to diagnosis. The prototypical skin lesion, erythema migrans (EM), occurs early and is the only independently diagnostic clinical feature according to the guidelines of the Infectious Disease Society of America. EM itself has protean guises, being, at times, vesicular, indurated, necrotic, purpuric, solid, or targetoid, but it is not the sole Borrelia-associated skin lesion. Acrodermatitis chronica atrophicans and borrelial lymphocytoma cutis are other well-known skin manifestations. A rare cutaneous manifestation that is increasingly reported in Lyme patients is panniculitis, which develops after dissemination of the spirochete. We present such a case in a patient who was initially treated for cellulitis as well as neck and radicular leg pain, thereby expanding the cutaneous spectrum of Lyme disease. Dittmer et al. DOI: 10.1111/cup.13100



Monkeys showed persistence of Lyme disease bacteria after antibiotic treatment

Variable manifestations, diverse seroreactivity and post-treatment persistence in non-human primates exposed to *Borrelia burgdorferi* by tick feeding.

The efficacy and accepted regimen of antibiotic treatment for Lyme disease has been a point of significant contention among physicians and patients. While experimental studies in animals have offered evidence of post-treatment persistence of *Borrelia burgdorferi*, variations in methodology, detection methods and limitations of the models have led to some uncertainty with respect to translation of these results to human infection. With all stages of clinical Lyme disease having previously been described in nonhuman primates, this animal model was selected in order to most closely mimic human infection and response to treatment. Rhesus macaques were inoculated with *B. burgdorferi* by tick bite and a portion were treated with recommended doses of doxycycline for 28 days at four months post-inoculation. Signs of infection, clinical pathology, and antibody responses to a set of five antigens were monitored throughout the ~1.2 year study

Persistence of *B. burgdorferi* was evaluated using xenodiagnosis, bioassays and mice, multiple methods of molecular detection, and others. Results demonstrated host -dependent signs of infection and variation in antibody responses. The researchers observed evidence of persistent, intact, metabolically-active *B. burgdorferi* after antibiotic treatment of disseminated infection and showed that persistence may not be reflected by maintenance of specific antibody production by the host. Embers et al. PLoS One 2017. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0189071>

Suspected Alzheimer's turns out to be unusual case of Lyme disease

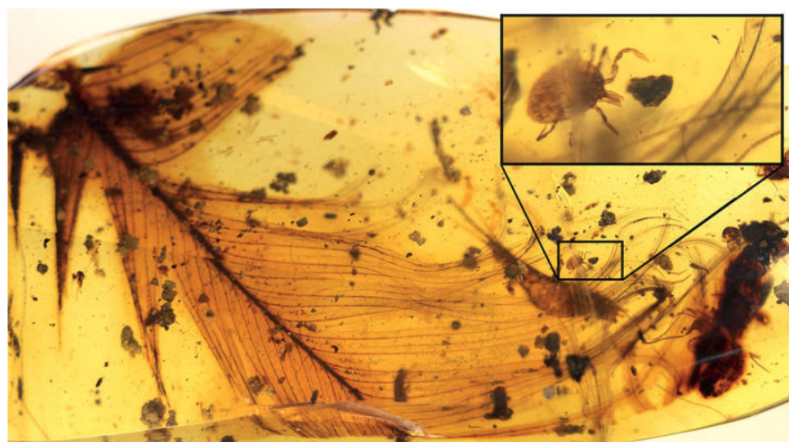
Neuroborreliosis and acute encephalopathy: The use of CXCL13 as a biomarker in CNS manifestations of Lyme borreliosis

The authors report the case of an 80-year-old patient with acute onset confusion initially suspected to reflect delirium in incipient Alzheimer's disease. Cerebrospinal fluid tests revealed an unusually severe form of neuroborreliosis, which resolved following antibiotic treatment. This was mirrored in the measurement of CXCL13, which is suggested as a complementary biomarker. Clinical implications for screening, differential diagnosis and treatment are discussed. Karrasch M, et al. *Ticks and Tick-borne Diseases*, online first, 2017 Dec 11. <https://doi.org/10.1016/j.ttbdis.2017.12.008>

99 million-year-old amber showing that ticks fed on blood from feathered dinosaurs

Ticks parasitized feathered dinosaurs as revealed by Cretaceous amber assemblages

Ticks are currently among the most prevalent blood-feeding ectoparasites, but their feeding habits and hosts in deep time have long remained



A tick preserved in amber clutching a dinosaur feather

E. Peñalver et al., *Nature Communications*, DOI:10.1038/s41467-017-01550-z, 2017

speculative. Here, we report direct and indirect evidence in 99 million-year-old Cretaceous amber showing that hard ticks and ticks of the extinct new family Deinocrotonidae fed on blood from feathered dinosaurs, non-avian or avian excluding crown-group birds. A †*Cornupalpatus burmanicus* hard tick is entangled in a pennaceous feather. Two deinocrotonids described as *Deinocroton draculi* gen. et sp. nov. have specialised setae from dermestid beetle larvae (hastisetae) attached to their bodies, likely indicating cohabitation in a feathered dinosaur nest. A third conspecific specimen is blood-engorged, its anatomical features suggesting that deinocrotonids fed rapidly to engorgement and had multiple gonotrophic cycles. These findings provide insight into early tick evolution and ecology, and shed light on poorly known arthropod–vertebrate interactions and potential disease transmission during the Mesozoic. Peñalver et al. *Nature Communications* 8, Article #: 1924 (2017) <https://www.nature.com/articles/s41467-017-01550-z>

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www.insectshield.com

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<https://www.insectshield.com/IS-Your-Own-Clothes-P338.aspx>

TIC-NC is grateful for the financial contributions of Insect Shield International, LLC.



Tick-Borne Infections Council of North Carolina is a non-profit 501(c)3 organization formed to improve the recognition, treatment, control, and understanding of tick-borne diseases in North Carolina. We are all-volunteer and appreciate donations.

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Any contact information is provided for you to learn about tick borne illnesses and related issues. Our organization is not responsible for the content of other material or for actions as a result of opinions or information expressed which may appear from time to time.

It is the responsibility of you as an individual to evaluate the usefulness, completeness or accuracy of any information you read and to seek the services of a competent medical professional of your choosing if you need medical care.

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