

# 2021 Year in Review

**Congressman Gottheimer: Lyme Press Conference on Federal Legislation – 6/10/21, West Milford, NJ**

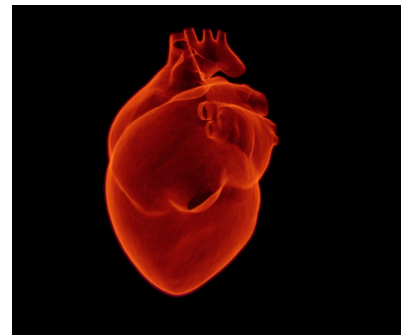
Photo Credits: LDA file photos; Doreen Edwards, Tick Squad

ngg\_shortcode\_0\_placeholder

---

## Emergency Meeting Planned After Rise in Myocarditis Following Covid Vaccine

Increased cases of myocarditis and pericarditis have been reported in the United States after mRNA COVID-19 vaccination (Pfizer-BioNTech and Moderna) since April 2021, particularly in adolescents and young adults. These rates for ages 16-24 following a second dose are above what is expected. Myocarditis or pericarditis has now been verified in 226 people ages 30 and younger who have received an mRNA COVID-19 vaccine and Federal Health Officials are investigating reports of approximately 250 more cases.



Due to this increase, the Advisory Committee on Immunization Practices (ACIP) is scheduled to hold an emergency meeting on June 18, 2021 to discuss myocarditis cases and the American Academy of Pediatrics (AAP) plans to closely monitor meeting. However, at this time, there is no recommended change to vaccination of adolescents 12 and older.

Cases have been reported predominantly in young males 16 years of age and older, with onset of symptoms typically manifesting within several days after mRNA COVID-19 vaccination. Symptoms have more often occurred after the second dose of vaccine than the first dose.

It is recommended by the CDC that clinicians consider myocarditis and pericarditis in patients who develop acute chest pain, shortness of breath or heart palpitations within a week after vaccination, and to report cases of myocarditis and/or pericarditis after COVID-19 vaccination to the Vaccine Adverse Event Reporting System. (VAERS).

Read full American Academy of Pediatrics article [here](#).

Read more LDA Articles on COVID vaccine [here](#).

---

## **Congressman Gottheimer: Lyme Press Conference on Fed. Leg.— LDA Pres. Speaks**



Rep. Josh Gottheimer & Pat Smith, LDA President at Press Conference, West Milford, NJ

Congressman Josh Gottheimer (NJ-5-D) held a press conference to discuss Lyme disease and three bi-partisan bills currently introduced into the House of Representatives. He spoke about the seriousness of the disease in NJ and in his district and of the need for funds to help with diagnostics and new treatments and help for the patients suffering from persistent symptoms.

LDA President Pat Smith was asked to speak at the press conference on June 10, 2021 in West Milford, NJ, and discussed her personal family involvement with Lyme and tick-borne disease and how the LDA has been active in Washington fighting for help for patients which includes the establishment of the HHS Tick-Borne Disease Working Group, where she served for four years, and the recent introduction of the Children Inflicted by Lyme Disabilities Act, CHILD Act 2021 (HR 3636), for which LDA initiated and helped in development of the language.

The CHILD Act 2021 was introduced in the house by Lyme Caucus Co-chair Congressman Christopher Smith (NJ-4-R) and co-sponsored by Congressman Gottheimer and Congressmen Henry Cuellar (TX-28-D), Bill Posey (FL-8-R), and Brian Fitzpatrick (PA-1-R). The purpose of the bill is "To amend the Individuals with Disabilities Education Act (IDEA) to recognize more clearly that Lyme disease can cause disabilities that affect the education of children and to enhance educational services and related services for children with Lyme disease and other tick-borne diseases and for other purposes." Children can have manifestations including cognitive impairment, mental confusion, memory loss, headaches, difficulty concentrating, speech difficulty, visual and hearing problems, dizziness, mood swings, outbursts, depression, sleep disturbance, OCD, and seizure activity, all of which affect their educational experience. **Read LDA article on the Bill**



Patients and family members & advocates with Pat Smith, LDA, at the Press Conference

Congressman Gottheimer also co-sponsored HR3637, introduced by Smith, authorizing HHS to be able to launch prize competitions for research. HHS and the Alexandra and Stephen Cohen Foundation have formed a public private partnership, LymeX, which will host competitions. The idea is based on the successful KidneyX program. The LDA is on the webinars group for LymeX working to develop more trust with government and more ways to implement strategies for new research.

Congressman Gottheimer also co-sponsored The Stamp Out Lyme Act introduced by Antonio Delgatto (NY-19-D) which would provide a stamp to benefit Lyme research. The bill has 11 co-sponsors including Smith. The LDA worked on earlier versions of this bill in a prior Congress.

“Lyme disease can be brutally debilitating, hard to detect and treat, and cause real long-term health issues. It’s a problem that we must try to solve,” **said Congressman Josh Gottheimer.** “The federal action I’m announcing today will boost investment for Lyme disease research, incentivize the development of new treatments, and amend federal law to accommodate the health impairments that can be caused by Lyme disease in children, so they can receive the specialized education and care they need.”



Pat Smith at Podium. Photo Credit: Doreen Edwards, Tick Squad

“It is imperative that we get help for the thousands of sick Lyme patients – 29% are children. We need Congress to act quickly to not only provide money but to ensure the monies are actually being used to help Lyme and tick-borne disease patients by providing cutting edge diagnostics and treatment therapies for the 20+% who remain sick after a short course of antibiotics. I thank Congressman Gottheimer and the House Lyme Disease Caucus for their continued efforts in this area,” **said Pat Smith, President, Lyme Disease Association Inc.**

Several Lyme patients and family members spoke about their struggle with Lyme disease. Advocate Dorreen Edwards from Tick Squad in Sussex County spoke on the need to provide more education for schools and for health care providers. LDA partnered with the Tick Squad in 2019 to present a Lyme conference at Sussex County Community College in 2019. **Read LDA article on Conference**

Terry Duffy, Commissioner, Board of County Commissioners, County of Passaic and Don Weise, New York – New Jersey Trail Conference, also spoke on the issues surrounding Lyme disease.

Watch video of entire press conference on facebook.

---

Read Press Release on Rep. Gottheimer's website: **Gottheimer Announces Federal Action to Combat the Uptick in Ticks & Lyme Disease in New Jersey**

Read and Watch video: **"Officials taking action to fight uptick in ticks and Lyme disease in New Jersey"** (abc7ny.com 6/10/21)

---

# IPM Pest Alert – Asian Longhorned Tick

North Central Integrated Pest Management Center (IPM) has issued a new pest alert focusing on the Asian longhorned tick (ALT), which includes details about the tick's life cycle, identification, and management options. Females can reproduce without mating with a male, causing a threat to livestock due to large-scale infestations on one animal leading to stress, blood loss and death. According to studies, ALT may spread disease such as Rocky Mountain spotted fever and other tick-borne illnesses, as they feed on multiple hosts throughout their lives. In it's native East Asia, ALT can transmit *Rickettsia japonica*, which causes Japanese spotted fever, and



severe fever with thrombocytopenia syndrome (SFTS) virus, among others.

ALT is invasive in Australia, New Zealand and the United States. ALT was found in New Jersey in 2017, and as of February 2021, it is found in 15 states in the U.S.

---

The Public Tick IPM Working Group produced this pest alert with support from the IPM Institute and the USDA National Institute of Food and Agriculture, Crop Protection and Pest Management Program through the North Central IPM Center

**[Click here for IPM Pest Alert – Asian Longhorned Tick](#)**

**[Click here for North Central IPM Newsletter Article](#)**

**[Click here for LDA website information on the Asian Longhorned tick](#)**

---

## **Gottheimer Announces Federal Action to Combat the Uptick in Ticks & Lyme Disease in NJ**

*NJ has four times the national average of Lyme disease cases*

West Milford, NJ, June 10, 2021



*Above: Gottheimer in West Milford today.*

**WEST MILFORD, NJ** – Today, June 10, 2021, U.S. Congressman Josh Gottheimer (NJ-5), a member of the Congressional Lyme Disease Caucus, announced bipartisan federal action to help protect families from Lyme disease and to find new treatments for tick-borne illnesses. Gottheimer was joined by environmental and health experts to highlight how North Jersey families can protect themselves from ticks and Lyme disease as they enjoy outdoor activities this summer.

New Jersey had four times the national average of Lyme disease cases in 2020.

While Lyme disease can be treated with antibiotics in many cases, it can also be difficult to diagnose due to its diverse manifestations and a lack of reliable testing options. Many of those infected do not realize their diagnosis until the symptoms have become severe. Current tests for Lyme disease often produce false negatives. There is currently no cure for Lyme disease.

**Today, Gottheimer announced that he is helping introduce and**



## push for the following bipartisan bills:

**The Children Inflicted by Lyme Disabilities Act** – a bipartisan bill to help ensure children who suffer from Lyme disease get the care and attention they need. The bill (H.R.3636) will amend the Individuals with Disabilities Education Act so that the phrase “child with a disability” includes a child who needs special education and related services due to a Lyme disease health impairment.

**Bipartisan legislation for competitions to find Lyme disease treatments** – This bipartisan bill (H.R. 3637) will authorize the Department of Health and Human Services (HHS) to launch prize competitions to drive innovation and accelerate the discovery of new methods to counter and treat Lyme disease.

**The Stamp Out Lyme Disease Act** – a bipartisan bill (H.R. 3491) to create a brand new postage stamp to supplement congressionally-appropriated research funding for Lyme and tick-borne disease treatments at the National Institutes of Health (NIH).

“Lyme disease can be brutally debilitating, hard to detect and treat, and cause real long-term health issues. It’s a problem that we must try to solve,” **said Congressman Josh Gottheimer**. “The federal action I’m announcing today will boost investment for Lyme disease research, incentivize the development of new treatments, and amend federal law to accommodate the health impairments that can be caused by Lyme disease in children, so they can receive the specialized education and care they need.”

“It is imperative that we get help for the thousands of sick Lyme patients – 29% are children. We need Congress to act quickly to not only provide money but to ensure the monies are actually being used to help Lyme and tick-borne disease patients by providing cutting edge diagnostics and treatment therapies for the 20+% who remain sick after a short course of

antibiotics. I thank Congressman Gottheimer and the House Lyme Disease Caucus for their continued efforts in this area,” **said Pat Smith, the President of Lyme Disease Association Inc.**

“The pandemic has proven that people need access to the outdoors to be mentally and physically healthy. We must be vigilant and check for ticks, but we can’t let Lyme disease keep us locked indoors. This legislation gives me hope that we’ll find a cure and finally stamp out Lyme disease, once and for all,” **said Don Weise, of the New York-New Jersey Trail Conference and the West Milford Environmental Commission.**

Gottheimer was joined at today’s announcement at the West Milford Wetlands Environmental Center by Passaic County Commissioner Terry Duffy, Lyme Disease Association President Pat Smith, President, New York-New Jersey Trail Conference Membership & Development Director and member of the West Milford Environmental Commission Don Weise, and local Lyme disease patients and advocates Doreen Edwards, Whitney Klein, and Gloria Kim.

*Watch the announcement here.*

*Below: Gottheimer meeting with local Lyme disease patients and advocates today.*



*Gottheimer's full remarks as prepared for delivery are below.*

There's been a lot of news of the 17-year cicadas emerging across the East Coast and Midwest. We've got them here in New Jersey, and NJ.com reported yesterday that the cicadas' invasion is at its peak. But, despite being incredibly loud and pervasive, these insects are pretty harmless. As we kick off the summer, the real, legitimate threat we have to face is ticks, and a disease they can spread: Lyme disease.

And as it's been reported, there's been a real uptick in ticks.

I'm here this morning to make sure that New Jersey families know how to watch out for ticks as they enjoy activities outdoors this summer, and to announce new federal legislation to help combat Lyme disease, which many ticks carry, and to support patients dealing with Lyme disease.

Lyme disease can be brutally debilitating, hard to detect and treat, and cause real long-term health issues. It's a problem that we must try to solve.

The federal action I'm announcing today will boost investment for Lyme disease research, incentivize the development of new treatments, and amend federal law to accommodate the health impairments that can be caused by Lyme disease in children, so they can receive the specialized education and care they need.

Here's what we know about ticks this summer, here in North Jersey:

Annually, there are around 476,000 cases of Lyme disease reported across the United States.

Here in Jersey, and especially in more rural, beautifully-wooded communities like West Milford, Lyme disease is a major and growing threat. According to data from 2020, an average of

36 cases per 100,000 members of our population are diagnosed in New Jersey every single year – more than four times the national average. Yes, we are a center for Lyme disease!

That means we have to be on the lookout for the culprit this summer: ticks.

Lyme disease is spread through the bite of infected ticks, which can attach to any part of the human body.

High-brush or wooded areas tend to harbor ticks, so families enjoying parks here in North Jersey this summer need to be careful. By using repellents, wearing proper clothing, and consistently checking yourself and your pets for ticks, and for a red circle on your skin, even after a tick bites and falls off, the risk of Lyme disease can be reduced.

While Lyme disease can be treated with antibiotics in many cases, it can also be difficult to diagnose because of its diverse manifestations and a lack of reliable testing options. Many of those infected do not realize their diagnosis until the symptoms have become severe. Even the tests we have for Lyme often produce false negatives several times before an accurate diagnosis. And, unfortunately, there is no cure right now.

From the Tick-Borne Disease Working Group, created by Congress, we know that 10 to 20 percent of Lyme disease patients will suffer from persistent symptoms, which can be chronic and disabling. And we have families here in North Jersey who have seen the impacts of this disease firsthand.

Joining us today are several New Jersey patients and families, like Doreen, who spent years waiting for the correct diagnosis; Gloria, who had to search extensively to find a specialist to treat her son when he was diagnosed; and Whitney, who has seen an unprecedented spike in Lyme disease in her family and community. My own sister-in-law has struggled with Lyme disease for more than a decade; one of my

wife's closest friends has faced debilitating years, too. It's a silent attacker – and it's time to fight back much more aggressively.

That's why, as a member of the Congressional Lyme Disease Caucus, I'm announcing my support for three key pieces of bipartisan legislation, so that we can better protect our families.

The bipartisan Children Inflicted by Lyme Disabilities Act will help ensure children who suffer from Lyme disease get the care and attention they need. That means – with this bill – for which I was one of the first sponsors with Republican Chris Smith, who represents south Jersey – if a child develops a mental disability or a health impairment because of their Lyme disease diagnosis, they can receive special education and services to help them learn and to manage the disease.

I'm also supporting bipartisan legislation to boost investment in preventing, diagnosing, and treating Lyme disease. Our bill, which I also helped introduce with Congressman Smith, who is an incredibly dedicated advocate in the fight against Lyme disease, will authorize the Department of Health and Human Services to create prize competitions to drive innovation and accelerate the discovery of new methods to counter and treat Lyme disease. It's my hope that, with New Jersey's leadership and innovation in the medical, pharmaceutical, and life sciences industries, we can play a key role in developing these new treatments – and maybe even a cure.

And finally, I'm announcing support for another key bipartisan initiative to boost investment in R&D for Lyme disease treatment. The Stamp Out Lyme Disease Act will create a brand new postage stamp to supplement congressionally-appropriated research funding for the National Institutes of Health (NIH) to research treatments for Lyme and tick-borne diseases.

That means, when you're out mailing a birthday card or sending a letter to your grandmother, you can help fund the research we need to finally find better treatments for this disease.

On these fronts, I'm proud to be working across the aisle. There is nothing partisan about a tick bite and Lyme disease.

This is not a left or right issue. This affects our families, and we need to do more.

It's my goal that families from across New Jersey and our entire region will come enjoy the outdoors here in the Garden State this summer – whether it's here at the West Milford Wetlands Environmental Center, at the beautiful Delaware Water Gap, or on New Jersey's 72 miles of the Appalachian Trail, which run right through this Congressional District. I want families to protect themselves from ticks and from the Lyme disease they may carry, all while enjoying the natural beauty we have to offer.

And I want our residents and families who've been affected by Lyme disease to know I stand with them – to push federal bipartisan action forward to boost investment in finding new treatments, and to make sure any child with any impairment or disability from this disease can get the educational services and care they need.

To make progress on this, we must work together at every level – in Congress, and right here at home. Only then will we be able to overcome Lyme disease and its impacts.

I have every faith – by working together, like we're coming together today, here in the greatest country in the world – that our best days will always be ahead of us.

God bless you and may God continue to bless the United States of America.

###

**Click here for press release on Rep. Gottheimer's website**

**Click here for LDA article on the press conference**

---

# **CFC 2021 Approves LDA as National Charity**

The Lyme Disease Association, Inc. LDA has been designated as a **national** charity included in the 2021 Combined Federal Campaign (CFC) Charity List. CFC is part of the Office of Personnel Management (OPM). Each year, federal employees are provided with lists of approved charities for their workplace giving through the CFC. The LDA has met the requirements and been a part of CFC for 16 years running. LDA's administrative and fundraising costs were determined to be only 4.3%, meaning 95.7 % went directly to programs.



The LDA's CFC 2021 identification for donors is #11424, and the Lyme Disease Association, Inc. will appear in the listing of National/International Independent Organizations, which is published in each local campaign charity list. See your federal employer for details. Check the CFC website at: <http://www.opm.gov/cfc/> for details about the Combined Federal Campaign.

Thanks to all those volunteers who have helped with our programs nationwide, and a special thanks to those who have been contributing through their federal workplace CFC to the Lyme Disease Association, Inc.

---

# Delayed CDC Lyme Final Lyme Case Numbers for 2019 Finally Released



**Lyme Disease Association (LDA) Announces CDC's 2019 Final Lyme Disease Reported Case Numbers:** The Centers for Disease Control & Prevention (CDC) has just released the 2019 final Lyme disease reported U.S. case numbers—34,945. CDC reported that cases were ~4% more than in 2018, and the geographic distribution of areas with a high incidence of Lyme appears to be expanding based on data reported to National Notifiable Disease Surveillance System (NNDSS). The number of counties with an incidence of  $\geq 10$  confirmed cases per 100,000 persons increased from 324 in 2008 to 432 in 2019.

**Reporting Delay Explained** Final Lyme disease case numbers are usually reported in the fall of the next year (for 2019, should have been reported in 2020). The CDC has responded to LDA inquiries over time that reporting was delayed due to the pandemic and thus to shortages of resources/personnel at many government levels, which was no surprise to anyone following the numbers' delay. CDC also had a note on the reporting page that "Due to the coronavirus disease 2019 (COVID-19) pandemic, data from some jurisdictions may be incomplete."



**Past Estimates of Underreporting** In the past, CDC has reported that only 10% of cases are actually reported– that translates into 349,450 actual new Lyme cases in the US in 2019. However, in 2021, the CDC announced that “A recently released estimate based on insurance records suggests that each year ~ 476,000 Americans are diagnosed & treated for Lyme disease(1,2). ” Prior Lyme estimates based on claims data had indicated “~300,000 people get Lyme disease each year.” It appears clear from the number of patients culled from insurance data as being diagnosed and treated annually for Lyme disease in the U.S. that cases are vastly under-reported.

1. Schwartz AM, Kugeler KJ, Nelson CA, et al. Use of Commercial Claims Data for Evaluating Trends in Lyme Disease Diagnoses, United States, 2010-2018. *Emerg Infect Dis.* 2021;27(2).
2. Kugeler KJ, Schwartz AM, Delorey M, et al. Estimating the frequency of Lyme disease diagnoses –United States, 2010-2018. *Emerg Infect Dis.* 2021;27(2).

**LDA NOTE:** The State of Hawaii does not require reporting of Lyme disease. The State of New York estimates the Lyme numbers in many counties and those numbers are not permitted to be entered into CDC reported case numbers. Massachusetts changed their reporting system and their numbers on paper have dramatically dropped in the past few years, moving them out of the top 15 states. To see more states that have changed reporting of Lyme disease over time see **LDA Lyme Cases Map Page**

**Top 15 States** The LDA has ranked the top 15 states based on the CDC total reported Lyme case numbers for 2019 below. This ranking should not be construed to mean that other states do not have reported Lyme cases. They do have reported cases, Click here for all states, but often patients cannot get diagnosed and/or treated in states that CDC considers “low incidence” states, because doctors in low incidence states

are often either afraid to diagnose Lyme or do not understand that surveillance criteria are not meant as diagnostic criteria. Read about Diagnosis by Geography

## LDA State Ranking by Reported CDC Lyme Cases

	State Ranking	Reported Cases	Actual Cases (10x = actual cases)
1	Pennsylvania	8998	89980
2	New York	4243	42430
3	New Jersey	3619	36190
4	Wisconsin	2178	21780
5	Maine	2167	21670
6	New Hampshire	1710	17100
7	Minnesota	1528	15280
8	Maryland	1417	14170
9	Connecticut	1233	12330
10	Virginia	1199	11990
11	Vermont	1064	10640
12	Rhode Island	971	9710
13	West Virginia	885	8850
14	Delaware	641	6410
15	Ohio	467	4670

---

# Columbia Clinical Trials Network Seeks Treatment Approaches From Public, Clinicians, & Others



**From Columbia Clinical Trials Network:** In recognition of a severe unmet need, the Steven and Alexandra Cohen Foundation's grant to Columbia University has established the first national **Columbia Clinical Trials Network for Lyme and other Tick-borne Diseases** [[www.lymectn.org](http://www.lymectn.org)]. The Research Network starts with a team of leading investigators, including Dr. Brian Fallon at Columbia University Irving Medical Center in New York City, Dr. John Aucott at Johns Hopkins University Medical Center in Baltimore Maryland, and Dr. Roberta DeBiasi at Children's National Hospital in Washington D.C.

Providing oversight to ensure that the highest-quality clinical trials are undertaken, the Clinical Trials Network will provide internal funding support for small pilot studies, assist investigators in protocol design and statistical research planning, establish and manage a national case registry, and create a data management system for multi-site clinical trials. The clinical trials network will be a powerful engine to drive large-scale clinical trials and potentially transformational early-stage research.

To generate as many ideas as possible and to hear directly from the front lines of clinical experience, Columbia CTNCC

invites public, community clinicians, and other stakeholders to submit their ideas on treatment approaches. These ideas may spark off development of a pilot study and be included in clinical trials conducted at one of the CTN nodes.

You may contribute to a groundbreaking research project in the field of Lyme and the tick-borne diseases.

The deadline for the first round of submissions for treatment research ideas from the general public is July 1, 2021. The submission period opened June 1.

To submit your suggestions for treatments, please go to [www.lymectn.org](http://www.lymectn.org) and submit on the "Treatment Research Idea Hub".

---

**From the LDA:** The Lyme Disease Association Inc (LDA) President Pat Smith, had this to say about the release, "This is a great opportunity for individuals to provide suggestions which might lead to research on a treatment which could lead to a cure or to a better life for many of our sickest Lyme/TBD patients. I hope those who have promising ideas will submit them to the Columbia CTNCC for consideration."

---

**Kid's Bill Intro'd to  
Congress/CDC Webinar/Guest  
Blogs/Autopsy to Detect  
Borrelia/Tick-Eating  
Robot/Lyme &  
Pregnancy/Nanobodies Block TB  
Infection/mRNA Vax in AIIRD  
Patients/Govt. Wants Your  
Input/Lyme Pathogenesis/Judge  
Orders Ivermectin/Babesia**

---

**James Occi (PhD Cand.) Guest  
Blog – Ticks**

**May Awareness LDA Guest Blogger**



Jim is a microbiologist and has conducted antibiotic discovery research for over 30 years in big pharma and academia. Jim is currently a supervisory microbiologist at the New Jersey Department of Health conducting viral (arboviruses and covid-19) surveillance for the state. He is starting a multi-partner plan to institute a state-wide tick surveillance and testing program for the state of New Jersey. Jim is also a PhD candidate at the Center for Vector Biology at Rutgers studying the ticks of New Jersey and the pathogens they carry. Jim expects to graduate in 2022.

## **“I’m Bad, I’m Nationwide.”**

by James Occi\*

Let’s discuss ticks around the country. Oh, and two things about the title. Ticks aren’t “bad”, they are just trying to perpetuate their own (just like any other organism). And ticks do not obey borders of sovereign nations or states.

There are over 850 species of tick in the world. Approximately 180 are soft ticks (argasid ticks) and 680 are hard ticks (ixodid ticks). Since you are reading this blog on the Lyme Disease Association website, you are well familiar with blacklegged ticks (*Ixodes scapularis* and west coast cousin, *I. pacificus*), American dog ticks (*Dermacentor variabilis*) and lone star ticks (*Amblyomma americanum*). We will now consider a couple lesser-known tick species and their

public health implications.

I will start with the Gulf Coast tick, *Amblyomma maculatum*. As the name implies, this tick is found primarily and historically in the southeastern US Gulf states. But its range is expanding westward and northward. In 2013, Delaware became the northern most state with established populations. There are rumors in the tick research community that *A. maculatum* has been spotted in New York. Migrating ground-feeding birds are the most likely means of range expansion. On appearance the adults are sometimes confused with the American dog tick, *Dermacentor variabilis*. To differentiate, the Gulf Coast tick has much longer mouthparts.

The adults feed on many different hosts such as livestock, deer as well as humans and their pets. The immatures will feed on rodents, other small mammals and birds. When fully fed and mated a female Gulf Coast tick can lay 10,000 eggs.

This species can tolerate xeric conditions which means it can survive in sunny areas with relatively low humidity. (Conditions that *Ixodes scapularis* would cringe at.) It will quest in the middle of the day in sunny, non-shaded areas. Whereas some ticks must climb down from their questing positions to rehydrate, *Amblyomma maculatum* can "hang out" all day.

This tick is tough as nails, but what's the news on the potential for pathogen transmission? *Amblyomma maculatum* is a known vector of *Rickettsia parkeri* which causes tidewater spotted fever sometimes known as American boutonniere fever. The good news is that published reports suggest the disease is not as severe as its close cousin, Rocky Mountain spotted fever. Another difference is that most *A. maculatum* bites resulting in *R. parkeri* transmission show an eschar or small scab at the punctum (bite mark).

In cattle and deer, the ears can be so infested it results in

a condition called "gotch ear". In dogs this tick can cause canine American hepatozoonosis caused by *Hepatozoon americanum*. The weird part? Dog contract this infection by eating Gulf Coast ticks infected with the oocysts of this protozoan and not by being bitten by the tick.

The second tick we will discuss is *Carios kelleyi*, the soft tick of bats in north and south America. Right off the bat (sorry) I will emphasize that bats are the victim here. These bats are the unfortunate host of these ticks and should be praised and protected for their ecological role in nature. As for the bat ticks, they have a radically different lifestyle than our more commonly encountered hard ticks. *Carios kelleyi* has four stages just like hard ticks: egg, larva, nymph and adult. That's where the similarity ends.

These soft ticks are classified as endophilic and nidicolous. That means they hide in the nest or roost of their hosts and are rarely found outdoors. How do they find a host if they are not hanging off a blade of grass like a blacklegged tick? They hunt based on the cues from their hosts. Remember, they are waiting in their hosts resting area so they don't have to "look" far. The most important cue is probably carbon dioxide. When the host migrates or leaves the roost for some time, these ticks will just wait in the cracks and crevices until the bats return. And they can wait for months, sometimes years (depending on species of soft tick), without feeding. When the bats return, they give off carbon dioxide and the ticks emerge looking for a blood meal. The other major difference between argasid and ixodid ticks is that they only feed for 30 minutes to an hour so. They do not attach to the host for extended feeding periods (except for argasid larvae) as ixodid ticks do. Another major difference is that argasid ticks can feed multiple times for each stage. Ixodid ticks feed only once for each stage. Argasid females also lay multiple egg batches but with fewer eggs than ixodid ticks, which lay one large batch and then die.



Is there a public health threat to humans? On a scale of 1 to 10, surely less than 1. I say this based on this ticks' lifestyle. Several conditions would need to be satisfied for a human to be a bite victim. There would need to be a bat-infestation (and I'm not talking one or two bats) in the home, the bat roost must have ticks and the bats were excluded or removed and the ticks are now looking for alternative blood sources. These ticks can carry *Rickettsia* (of the spotted fever group) and *Borrelia* (of the relapsing fever variety) but as far as I know, there has been only one documented case of someone testing positive for this relapsing fever *Borrelia* (*B. johnsonii*). The disease potential of these two pathogens has not been studied.

One final note on bats: They are under protected status. One needs to find a knowledgeable bat exclusion expert if there is a bat problem in a residence.

I have said it before and I will say it again: "Know your enemies". Learn their habits and their ways and you will be better prepared to prevent tick-borne diseases.

\*The information in this blog reflects my own opinion and not that of my employer or educational institution.