Cornell University
New York State
Integrated Pest Management Program

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Testimony for the New York State Task Force on Lyme and Tick-Borne Disease and The Senate Standing Committee on Health

Matt Frye, NYS IPM Program, Cornell University College of Agriculture and Life Sciences
29 August 2017 – Hearing Room A – Legislative Office Building – Albany, NY

Good morning, my name is Matt Frye and I am an entomologist with the New York State IPM Program at Cornell University. I am grateful for the opportunity to be here today, and would like to specifically thank Senator Sue Serino and Senator Kemp Hannon for the invitation to participate.

I'd like to start by painting a picture of the not-so-distant past. As recently as twenty years ago in many parts of New York State, children could spend spring through fall playing outdoors, running through fields of tall grass and walking through wooded forests. Lyme disease was something you heard about, but few people had it so it seemed quite rare.

Times have changed. Now, in packed rooms at evening forums, every hand is raised when asked, "have you had Lyme disease or know someone that does?" In the past several decades, Lyme and other tick-borne diseases have become epidemic in New York State and much of the Northeast. Ticks are being found in new places and in greater numbers than reported at any time in the past, and people are getting sick. We need solutions, and we need them now.

This may sound like a discouraging state of affairs; but there is hope. In the room today are subject experts that have dedicated their careers to studying ticks and tick-borne disease. At the other end of the room are policy makers and officials who have demonstrated a commitment to addressing this problem head-on. And so today, as we formulate solutions for a rapidly expanding problem, I would like to make the case that research, education and collaboration are essential to reducing the incidence of tick-borne disease for residents of New York State.

The organization that I represent, the New York State IPM Program, is a unit within the College of Agriculture and Life Sciences at Cornell University. The mission of our program is to help people manage pests in ways that minimize environmental, health, and economic risks, which we achieve through education and research. Our staff represents a diverse knowledge base with experts in integrated management of pests of agriculture that damage fruits, vegetables, ornamental crops, and livestock and field crops. The Community IPM Program addresses pests in non-agriculture settings such as bed bugs, rodents, geese, cockroaches and of course, ticks. I'd like to take a moment to identify the problem with ticks from the perspective of New York's land-grant university that serves the people of the state, and to identify opportunities to reduce the impact of ticks on New Yorkers. Please keep in mind that as an expert in pest management my comments are focused on addressing ticks.

The Problem

The incidence of tick-borne disease continues to increase, with new pathogens emerging as threats to the health of New Yorkers.

- Lyme disease is the most commonly reported vector-borne disease in the United States

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- Based on 2015 data, 95% of all Lyme disease cases are reported from 14 states, including New York
- Several counties in New York contribute to high incidence of Lyme disease
- Among those most affected by Lyme disease are children, especially boys, aged five to nine years old

Misinformation about ticks and tick-borne disease is abundant and dangerous for New Yorkers

- Not all ticks are the same: tick species differ in the pathogens they carry, the hosts they feed on and the environments in which they are found
- Lyme disease is not the only risk: ticks can carry other pathogens that are transmitted faster and result in different symptoms
- Some tick removal techniques (burning, suffocating, squeezing, etc.) may increase the risk of acquiring a tick-borne pathogen
- Ticks can be active any day of the year above freezing, not just in the spring and fall
- Some essential oil-based pesticides are exempt from registration by the US Environmental Protection Agency and manufacturers are thus not required to provide data on their effectiveness at killing ticks. Use of these products and some untested repellants can give a false sense of protection leading to increased risk of exposure.

Opportunities to Address the Tick Problem:

Basic and applied research on tick ecology, biology and management are necessary to provide solutions that reduce tick populations

- Numerous tools and techniques are available for tick management that directly target ticks, their hosts or their habitat. However, a review of the scientific literature provides no definitive method to reduce both the risk of encountering ticks **and** the incidence of tick-borne disease for New Yorkers. Research that identifies practical methods to address tick populations where people live, work, learn and play is needed.
- Ticks affect more than humans – our companion animals and livestock are also affected by ticks and tick-borne disease. In New York State, the Animal Health Diagnostic Center at Cornell University provides tick-testing for individuals and organizations, and conducts research related to tick-borne disease. Protecting animals from ticks requires unique approaches and represents an additional research need.

Collaboration among researchers, health workers and educators across New York State and the Northeast

- Ticks are a problem for most of the Northeast, and experts across the region have worked somewhat independently for decades, often competing with each other for funding. In 2016, the Centers for Disease Control and Prevention funded a Northeast Regional Center for Excellence in Vector-Borne Disease, which is housed at Cornell University. This Center promotes collaboration among experts to address three main goals:
    - Train a cadre of public health entomologists with the knowledge and skills required to rapidly detect, prevent and respond to vector-borne disease threats in the US
    - Build effective communities of practice via collaborations between academic communities and public health organizations at federal, state, and local levels for vector-borne disease surveillance, response and prevention

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- To conduct applied research to develop and validate effective vector-borne disease prevention and control tools and methods necessary to anticipate and respond to disease outbreaks

Through its collaborations, the Center has identified a number of priority projects that will address management of ticks with new and integrative control strategies. Unfortunately, none of the projects are funded at the level needed to make the rapid progress that is necessary because large grants are not often awarded for basic research questions.

*Targeted, effective messages that focus on changing behaviors, specifically the adoption of personal protective measures, **can** reduce the risk of encountering ticks and acquiring a tick-borne pathogen*

- To date, most efforts to educate the public about ticks and the risk of tick-borne disease have been passive. Brochures, websites, booths at community health fairs and even presentations all require an investment and interest to find and acquire the information. To get information to broader audiences, outreach efforts must identify and target specific interest groups (those most at risk), offer simple but meaningful messages, and aim to change behaviors for improved health and safety.
- The New York State IPM Program is grateful for opportunities to participate in public educational forums throughout the state, hosted by members of the Senate Task Force on Lyme and Tick-Borne Disease. These forums receive tremendous public interest and media attention that highlight the tick problem and create local awareness. Further, the IPM program would like to thank the Task Force for funding our proposal that will create a statewide educational campaign to better disseminate information to New Yorkers.
  - The campaign will utilize social marketing techniques to target at-risk individuals. Considering that children, especially boys aged five to nine years have the greatest incidence of Lyme disease, we plan to develop information for Boy Scouts and Girl Scouts that will apply in general to elementary age students.
  - Our campaign will utilize visual and hands-on materials that are engaging and help children to recognize ticks and learn how to conduct a tick check. Students will bring this information and awareness home, teaching the rest of the family about tick prevention. For example, tick tattoos will be given to children, hopefully providing an opportunity for parents to find life-sized "ticks" in areas where they typically attach: back of the knees, armpits, behind the ears, nape of the neck, etc. Poppy seed bagels with attached nymph ticks train children to recognize small life stages that are common in the spring. These and other items are already part of our educational outreach to schools, but additional resources are needed for large-scale production of materials used across the state.
  - In addition to an emphasis on children, our educational campaign will include a wallet-sized tick identification card and image-based task sheets with steps for individuals to follow that will reduce their exposure to ticks. Task sheets will be created for interest groups such as hikers, anglers, hunters, landscapers, and gardeners who are exposed to ticks. Image-based information communicates to a broader audience, including low literacy and non-English speakers, and messages will be disseminated on social media. Importantly, funds from the Senate Task Force can be used to print materials and make them freely available to wider audiences in New York.

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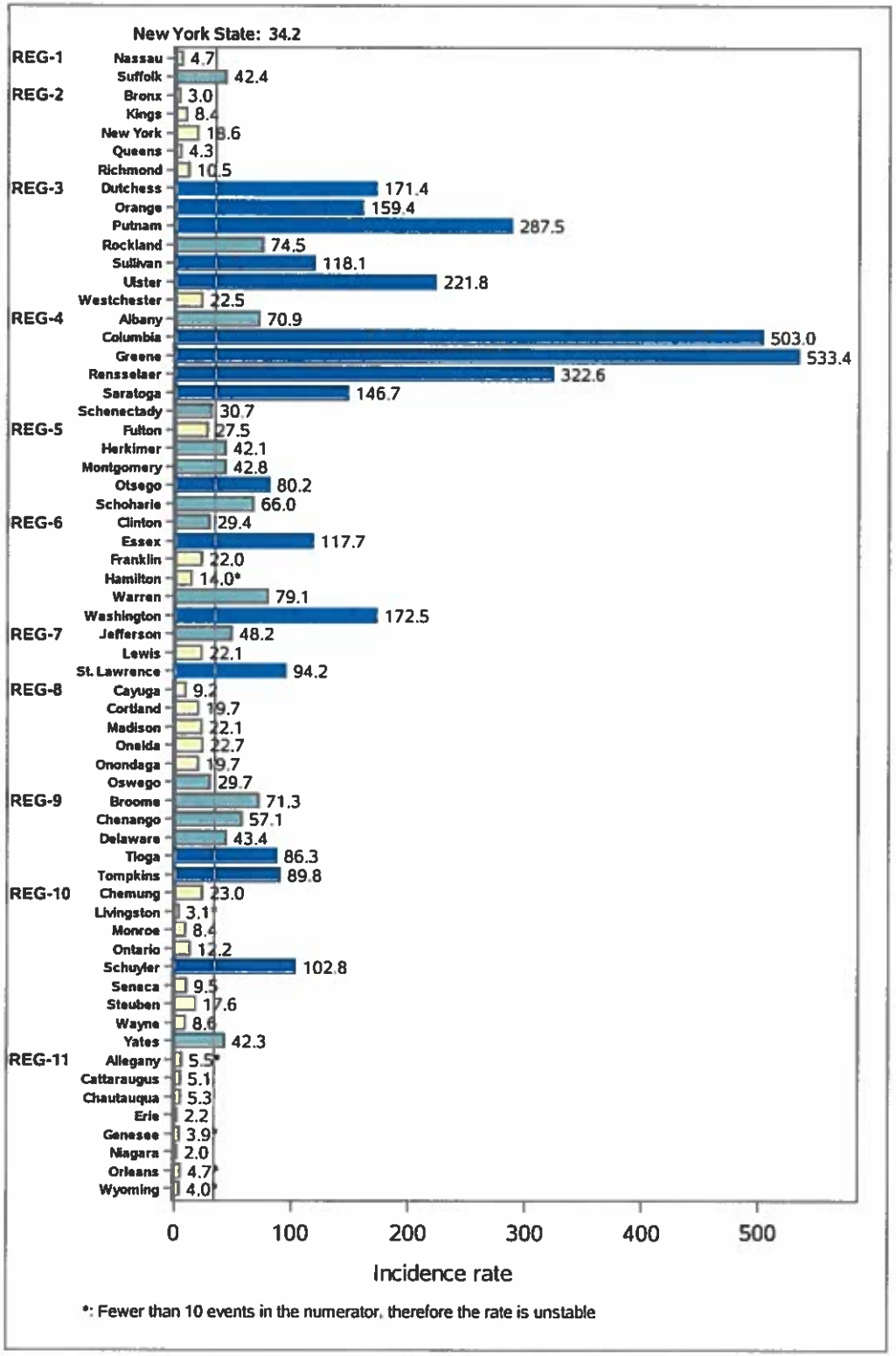
As an educator representing Cornell University, it is my job to provide accurate, evidence-based facts to inform the public about tick risks and prevention techniques. This important work that strives to protect the health of New Yorkers is dependent on rigorous scientific inquiry and research, which relies on funding. As we move forward in addressing this expanding problem, it is critical that funds are available for basic and applied research, as well as ongoing educational campaigns that raise awareness and result in behavior change of New Yorkers.

I am grateful for the opportunity to share these thoughts with you today, and for the ongoing support of the Senate Task Force on Lyme and Tick-Borne Disease. I am hopeful that science and policy will continue to work together to protect the health of New York residents and set an example for the rest of the Northeast.

Sincerely,

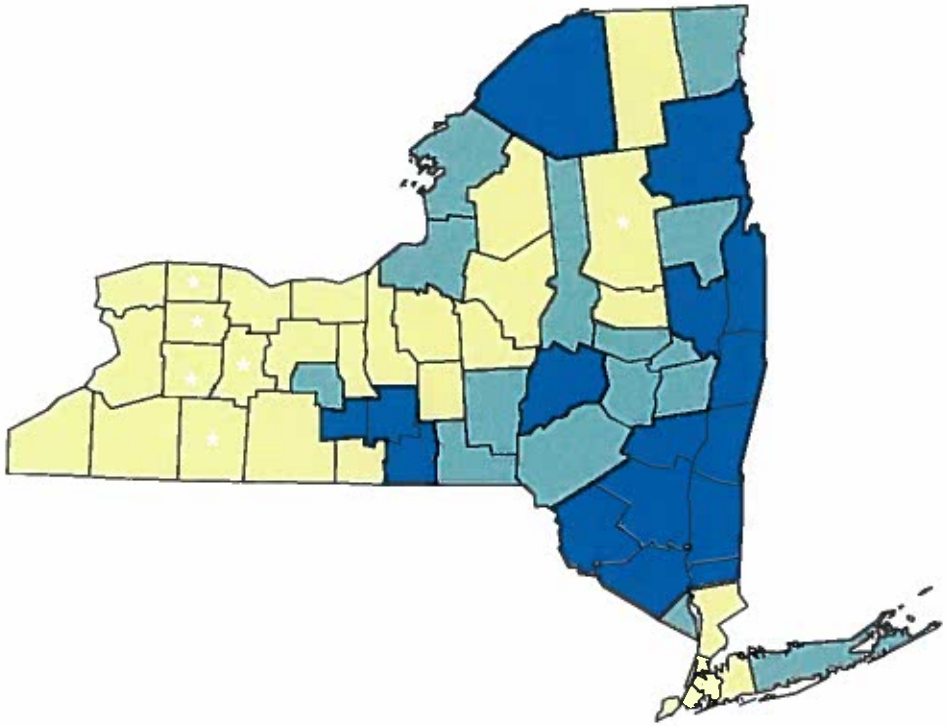
Matthew J. Frye

Matthew Frye, PhD
Extension Educator
NYS IPM Program
Cornell University



Lyme disease incidence per 100,000

2012-2014

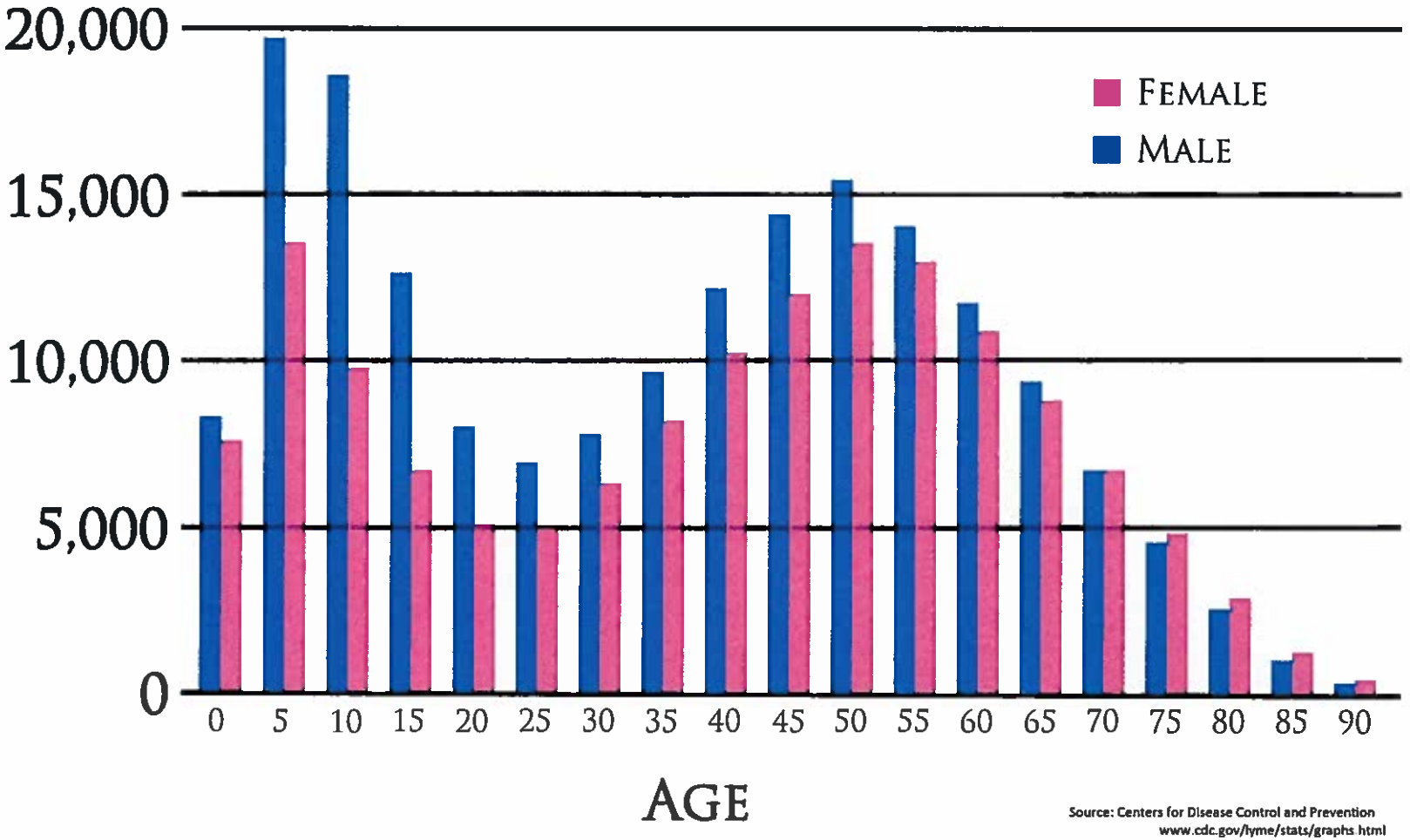


Incidence rate
Counties Are Shaded Based On Quartile Distribution
(* Fewer than 10 events in the numerator, therefore the rate is unstable)

- 0 - < 28.5 : Q1 & Q2
- 28.5 - < 80.2 : Q3
- 80.2 + : Q4

Source: 2012-2014 Bureau of Communicable Disease Control Data as of April, 2016

Confirmed Cases of Lyme Disease 2001 - 2015



Source: Centers for Disease Control and Prevention
www.cdc.gov/lyme/stats/graphs.html