Opening Statement of
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Joint hearing on the impacts of Lyme disease in the Commonwealth with a focus on providing an update on the Lyme Disease Task Force report

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Good morning. I'm Nicole Chinnici, Director of East Stroudsburg University's (ESU) Northeast Wildlife DNA Laboratory, currently the largest tick testing research facility in Pennsylvania.

The ESU DNA Laboratory was founded in 2005 and has focused on vector borne disease research, specifically Lyme disease and other tick borne diseases (TBDs). The Lab is equipped and capable of handling and processing thousands of tick tests each year. In addition to Lyme disease, the laboratory has capabilities to test for sixteen tick borne pathogens including Anaplasmosis, Babesiosis and Powassan virus. A centralized, real-time, database of tick testing results by County is available to the public on our website.

The DNA Laboratory has generated surveillance data on ticks and wildlife hosts across the Commonwealth since the start of the program. The laboratory is dedicated to providing research and educational resources on ticks and TBDs to our community and the Commonwealth. In collaboration with the Pennsylvania Department of Health and Pennsylvania Lyme Resource Network, we have conducted Lyme disease awareness and educational presentations to over fifty high risk groups in Pennsylvania since the signing of Act 83 in 2014.

Thank you, Chairwoman Baker, Chairwoman Brooks and Representative Brown, for inviting me here today. It is an honor for me, on behalf of East Stroudsburg University, to appear before this Committee. My background and training give me a particular interest in Act 83 and the recommendations provided by the PA Lyme disease Task Force. I have been employed at the East Stroudsburg University Wildlife DNA Laboratory for just over four years. During that time, I have conducted various TBD surveillance studies throughout the Commonwealth. In addition, I

have focused efforts on providing and optimizing tick testing diagnostic services to detect exposure and risk to pathogens following a tick bite.

Through educational workshops delivered across the Commonwealth, I have had the opportunity to interact with thousands of residents -- many of whom are concerned about participating in “outdoor activities” that were once enjoyable hobbies (hiking, hunting, fishing, farming, gardening, go outside, etc.) and now are considered “risky activities” due to the potential exposure to ticks.

I have witnessed the fear in the eyes of mothers, fathers, grandparents and children as they hear the number of diagnosed cases each year and the complications in successfully diagnosing and treating Lyme disease.

Lyme disease, the most common infectious disease in the United States, is a rapidly growing public health concern that needs immediate attention. The topic you are addressing today is more important for residents of the Commonwealth than any other state. Since 2011, Pennsylvania has been the leading state for the number of Lyme disease cases per year nationwide.

The appointed Lyme disease Task Force members developed fourteen recommendations in three important areas: surveillance, prevention, and education/awareness. To date, only two recommendations have been funded and implemented: PA Department of Health website update and the funding of educational awareness initiatives. A reduction in Lyme disease cases in PA will require a multifaceted approach using tick management, surveillance, and Lyme disease prevention and education.

Upon review of Act 83, and based on my expertise and extensive observations across Pennsylvania, the following four recommendations will have the greatest impact on slowing and reducing the number of Lyme disease cases in Pennsylvania per year.

1) Surveillance Recommendation 2 and 8 – Statewide Environmental Survey and Surveillance Data Website
2) Education and Awareness Recommendation 2 – Health Care Provider Prevention Education
3) Prevention Recommendation 1 – Protocol and Funding Strategy for Schools in High Risk Areas
4) Prevention Recommendation 2 – Park Staff Protocol

These recommendations also provide a biological approach to identifying the risk of exposure through surveillance, educating health care providers, and developing prevention protocols that address community concerns.

The impact of Lyme disease in the Commonwealth has increased significantly since Act 83 was signed in 2014. The number of confirmed cases in the Commonwealth in 2014 totaled 7,487. Since 2014, the number of confirmed cases increased to 9,048 in 2015 and 11,443 in 2016.[1] A study conducted by the Centers for Disease Control (CDC) evaluated the number of positive Lyme disease test results reported in 2008 by commercial laboratories compared to the number of reported cases to the CDC. Findings of the study showed there was a (10 fold) difference of reported cases to actual Lyme positive laboratory results.[2] This difference in under reported cases would conclude that Pennsylvania had approximately 70,487 cases in 2014 and 114,443 cases in 2016 illustrating a 61.6 percent increase of Lyme disease cases in three years. Pennsylvania is the leading state for the number of confirmed Lyme disease cases per year and contributes to a portion of approximately 38 percent of the total number of cases reported yearly in the United States.

1) *Act 83 surveillance recommendation #2 and #8: Statewide Environmental Survey and Surveillance Data Website.*

State funding to subsidize tick testing costs for the residents of the Commonwealth would provide the critical data necessary for a statewide surveillance survey on tick species, tick ecology and prevalence of TBDs. In addition, the tick test results would identify the exposure and risk of transmission of Lyme disease to patients. A positive test result defines exposure and the engorgement of the tick determines the risk of transmission. Physicians can utilize results to determine treatment for their patients within 72 hours of exposure, rather than risking severe complications by waiting weeks for less-accurate serological test results.

State funding for subsidized tick testing has been implemented by other states such as Massachusetts and Connecticut. Efforts by these states has led to slowing the increase of Lyme

[1] CDC – Cases by State – Lyme disease. (2016) Retrieved October 17, 2017, from https://www.cdc.gov/lyme/stats/tables.html.

[2] Hinckley, A.F., N. P. Connelly, J.I. Meek, B. J. Johnson, M. M. Kiperman, K. A. Feldman, J. L. White and P. S. Mead. 2014. Lyme Disease Testing by Large Commercial Laboratories in the United States. *Clinical Infectious Diseases* 59(5): 676-81.

disease cases per year.[1,3] Data generated allows for these state agencies to track the changes in Lyme disease prevalence and tick densities in real-time.

2) Education and Awareness Recommendation 2 – Health Care Provider Prevention Education

Education and awareness have been shown to be effective in slowing and reducing the number of Lyme disease cases.[4] Patients rely heavily on the expertise of their medical providers and physicians for accurate diagnosis and treatment of illnesses. The list of TBDs is expanding rapidly and human diagnostic tests are not available for all TBDs found within the Commonwealth. Furthermore, Lyme disease and co-infections are becoming more common making it very challenging for clinicians to diagnose and treat their patients. More importantly, there are no laboratory diagnostic tools that can confirm or exclude the diagnosis of Lyme disease.[5] This may lead to the dismissal of patients from their physicians without the proper treatment. If left untreated, Lyme disease can result in carditis, encephalitis and arthritis. In addition, patients may develop Post-Treatment Lyme disease Syndrome (PTLDS) which currently has no approved treatment.[6]

Implementing physician education and continuing education requirements on tick borne diseases will assist medical providers in identifying symptoms, diagnosing, treating and reporting TBDs. Furthermore, this training will enable medical providers to educate their patients and increase public awareness.

3) Prevention Recommendation 1 – Protocol and Funding Strategy for Schools in High Risk Areas

Reported cases of Lyme disease are most common in children ages 5-9 and especially boys.[7] Lyme disease complications are difficult to treat and may become chronic and debilitating. Developing and implementing education and prevention protocols for schools located in high-risk areas is necessary. A study evaluating the effectiveness of educational interventions to

[3] Stafford, K.S. Tick Management Handbook. The Connecticut Agricultural Experimentation Station, 2007.
[4] Clark. R.P., and L. T. Hu. 2008. Prevention of Lyme disease (and other tick borne infections). *Infectious Disease Clinical North America* 22(3): 381-94.
[5] Alessandro, M.D. A. Loy and E. Castagnoli. 2017. Management of Lyme disease in European Children: a Review for Practical Purpose. *Current Infectious Disease Reports* 19: 27.
[6] CDC – Post-Treatment Lyme disease Syndrome. (2017) Retrieved October 18, 2017, from https://www.cdc.gov/lyme/postlds/index.html
[7] CDC – Confirmed Lyme disease cases by age and sex – United States 2001-2015. (2016) Retrieved October 18, 2017, from https://www.cdc.gov/lyme/stats/graphs.html

reduce Lyme disease among children found that in-class educational programs improved the attitudes, knowledge and precautionary behavior among children. These programs included awareness, prevention and confidence in ability to perform preventative behaviors.[8] Act 83 funding for the PA Lyme Resource Network supports the development and implementation of educational presentations for at-risk schools.

4) Prevention Recommendation 2 – Park Staff Protocol

The Pennsylvania Department of Conservation and Natural Resources (DCNR) directly operates and oversees 113 of the 121 state parks covering 300,000 acres of lands.[9] It is estimated that these state parks have approximately 36 million visitors each year. In an effort to raise awareness of the prevalence of ticks, trail signs from the CDC for preventing tick bites should be posted at the entrance to all state parks. In addition, CDC resources are also available for hikers, campers, and visitors.

In conclusion, based on my expertise and extensive observations across Pennsylvania, the recommendations provided have the greatest impact on slowing and reducing the number of Lyme disease cases in Pennsylvania. With your support, together, we can make Lyme disease a preventable disease across the Commonwealth. I thank you for the opportunity to speak today on behalf of East Stroudsburg University of Pennsylvania and the Commonwealth.

[8] Shaddock, N.A., M. J. Zibo, E. Nar done, A. Demarrias, C. K. Iannaccone and J. Cui. 2016. A School-Based Intervention to Increase Lyme Disease Preventive Measures Among Elementary School-Aged Children. *Vector-borne and Zoonotic Disease* 16(8): 507-15.

[9] DCNR – Pennsylvania State Parks. (2017). Retrieved October 18, 2017, from http://www.dcnr.pa.gov/StateParks/Pages/default.aspx