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BEFORE THE
SENATE SPECIAL COMMITTEE ON AGING

Thank you Senator Collins for the opportunity to speak before the Special Committee on Aging in regard to the increasing challenges associated with combatting tick-borne disease here in Maine. As the Pest Management Specialist for University of Maine Cooperative Extension and a State Senator in the Maine Legislature, I have had the unique opportunity to experience these challenges from both the political and scientific perspectives, but today I will speak from my University perspective.

Tick populations have undergone extensive range expansion over the past 50 years, particularly here in the Northeast. Multiple factors, including reforestation, changes in climate, and increased abundance of wildlife hosts such as rodents and white-tailed deer have contributed to this surge. Maine is a heavily forested state with a largely rural population that spans four degrees of latitude and maintains a robust wildlife population. As such, we have witnessed a dramatic increase in the number of ticks, their geographic distribution, and the subsequent incidence of tick-borne disease.

This increase in tick-borne diseases has rapidly become a significant public health issue in Maine and throughout much of the United States. The incidence and distribution of these pathogens continues to increase, often resulting in severe health issues for those affected. In addition to the public health threats associated with tick-borne disease, societal and economic costs can have significant impacts. Of the roughly 13 tick-borne diseases identified in the United States, five have been found in Maine, including Lyme disease, anaplasmosis, babesiosis, Borrelia miyamotoi disease, and Powassan encephalitis. The primary vector of these pathogens, the deer tick or black-legged tick, has greatly increased in both population size and geographic range within the state. Furthermore, Maine faces significant threats related to invasive tick species including the lone star tick and Asian long-horned tick, both of which can have serious impacts on the health of humans, wildlife, and domestic animals.

Combatting these threats is an immense challenge that relies heavily on an integrated approach that includes investment in new medical treatments, diagnostics, and vaccines, as well as research into monitoring tick populations, reducing tick and host habitat, managing ticks and their wildlife hosts, and widespread educational outreach. Maine has been fortunate to have a relatively long history of research and outreach on tick-related issues thanks to a collaborative network of private and public institutions. The Maine Medical Center Research Institute has been conducting research on ticks and vector-borne disease since the late 1980’s and has emerged as a leader in the field. Maine CDC has taken a proactive role, combining epidemiology with widespread public outreach efforts to help minimize the spread of tick-borne disease. Many states have stopped counting cases of Lyme disease due to the high burden placed on state health departments and have instead begun estimating cases. These estimates can vary in their accuracy,

thus affecting the regional and national rates of disease. Maine CDC is still counting individual cases, but as the burden continues to increase and funding remains limited, a transition to an estimation system is likely.

At the University of Maine, significant research is underway both in the School of Biology and Cooperative Extension. A primary goal of UMaine Extension is to explore ways to minimize the occurrence and spread of ticks and tick-borne disease in Maine. Understanding the shifts in tick population size and geographic range is critical in evaluating risk and targeting management strategies. UMaine Extension currently monitors tick populations through a public tick identification program and tick-borne disease screening program. Through these programs, Maine residents can send tick samples to the lab for identification and to test whether the ticks are carrying the pathogens that cause Lyme disease, anaplasmosis, and babesiosis. Additional pathogens are scheduled to be added to the testing program in 2020. A small scale active surveillance program is also ongoing, in which ticks are actively monitored through field survey methods. Additional active monitoring of small mammal hosts is also ongoing. The information generated from these programs will allow us to track the distribution of ticks and tick-borne disease in Maine and to identify priority areas for targeting prevention and management strategies.

The University of Maine School of Biology and Ecology is currently investigating multiple avenues related to the ecology of tick-borne disease, including the environmental conditions that enhance disease transmission, the impacts of climate change and human land-use patterns on ticks, as well as the risks related to tick-borne disease in Acadia National Park and its potential effects on the tourism industry.

The public demands and political will to fight Lyme disease and other tick-borne illnesses are strong in Maine, however, as with many rural states, the funding to wage such a battle is limited. Nonetheless, the people of Maine prioritized this battle in 2014 when voters approved a bond referendum to create a new University of Maine Cooperative Extension Diagnostic and Research Laboratory. Following several years of intense planning and construction, the new lab opened in June of 2018. This high-containment facility brings together research on animals, plants, and arthropods within one biosecure setting and has greatly enhanced the University's diagnostic capacities. The construction of this facility has also broadened the University's collaborative efforts, facilitating collaborations between UMaine, Maine CDC, and Maine Medical Center.

Through the work being done at UMaine Extension, the University of Maine School of Biology and Ecology, Maine Medical Center, and Maine CDC, the state has a solid infrastructure in place to tackle the issues surrounding tick-borne disease. Historically, however, funding for tick-related research and particularly outreach and education has been a relatively low priority. The TICK Act will inject a much-needed investment into research and education and allow us to leverage existing infrastructure to fund novel approaches to monitoring and managing ticks and tick-borne disease.

Thank you again Senator Collins for the opportunity to speak today and I welcome any questions.