ENTOMOLOGICAL SOCIETY OF AMERICA
SHARING INSECT SCIENCE GLOBALLY

June 26, 2020

The Honorable Lamar Alexander
Chairman, Senate Committee on Health, Education, Labor, and Pensions
United States Senate
455 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Alexander:

Please accept the following comments submitted on behalf of the Entomological Society of America (ESA) in response to your recently released white paper, *Preparing for the Next Pandemic*. ESA is the largest organization in the world serving the professional and scientific needs of entomologists and individuals in related disciplines. Founded in 1889, ESA has more than 7,000 members affiliated with educational institutions, science agencies, private industry, and government.

The threat of vector-borne disease (VBD) is one of the most pressing public health issues facing our country and a major priority for ESA. VBD includes well-known illnesses such as Lyme disease, West Nile virus, and Zika virus, as well as less familiar diseases like the Eastern equine encephalitis (EEE) virus that erupted in many communities in late 2019. Between 2004 and 2016, reported human disease cases in the U.S. resulting from bites from disease-carrying arthropods—primarily ticks and mosquitoes—tripled, according to the U.S. Centers for Disease Control and Prevention (CDC). Meanwhile, nine new pathogens spread by ticks and mosquitoes were discovered or introduced in that same timeframe. Beyond their impact on human populations, disease vectors pose significant risks to livestock and companion animals. The underlying causes and potential solutions for these trends are varying and complex, and merit strong, sustained attention and support from the federal government.

The emergence and rapid spread of COVID-19 demonstrates that threats to public health, including diseases carried by vectors like mosquitoes and ticks, are escalating in scale and severity. While COVID-19 is not a disease known to be transmissible by arthropods, like COVID-19, the spread of VBD is closely tied to increases in the speed and frequency of global travel. Furthermore, we know that VBD is exacerbated by climate change, as the ranges of insects and ticks that transmit disease expand in response to a warming climate. This is particularly concerning, as many VBD have high mortality rates and no effective vaccines or treatments.

The ongoing COVID-19 crisis has shown how a lack of preparedness has compromised our efforts to protect public health, and our nation must ready itself now to respond to future pandemic-level threats posed by infectious diseases, including VBD. To ensure that these public health challenges can be met, Congress must address pressing needs in disease surveillance, public health capabilities, and federal cross-agency coordination. Given the expertise of ESA's membership, the society is best positioned to provide feedback in these areas as they relate to VBD.

Disease Surveillance: Expand Ability to Detect, Identify, Model, and Track Emerging Infectious Diseases

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What appropriate role can innovative technologies play to improve public health surveillance?

ESA strongly believes that tracking and addressing the threat of emerging infectious diseases—especially VBD—should be a national priority, and that greater federal investment is required to support the development of innovative tools and strategies for combatting vector-borne diseases. Specifically, support for new vector-borne disease research is needed to understand the global factors fostering emerging, resurgent, and new diseases; develop scientifically-based models to track and predict the spread of vectors and disease; examine the biology and ecology of disease vectors; and test new methods of prevention, control, and treatment. ESA supports expanding research in the following specific areas related to tick-borne disease:

- Increased Ecological Surveillance and Systems Assessment. Temporal-spatial assessment of tick-host-landscape systems should be a priority and include evaluations of VBD risk and integrative tick management strategies at the local level, followed by actions to suppress tick-encounter rates and prevent disease. ESA supports a sustained investment in passive and active tick surveillance programs that are readily translatable to both policy makers and the public; additionally, more public resources are needed to prevent introduction of exotic ticks at ports of entry and to build risk-mapping and habitat-assessment tools capable of providing accurate determinations of entomological risk at multiple geographic scales and in diverse ecosystems.
- Creating and Promoting Markets for Tick Research Innovation. Translating tick-control technologies and promising new inventions into consumer products requires collaboration across government, industry, and research universities. Joint programs that foster dynamic partnerships between federal government, university researchers, and industry are needed to move patents off the shelf and into the field. An example may be expansion of the current Small Business Innovative Research (SBIR) program to move beyond Phase 3 research and development funding to include a Phase 4 government purchasing phase.
- Education and Citizen Engagement. While effective tick control and tick-bite prevention products and strategies exist, surveys consistently indicate inadequate use by people at risk. ESA believes new and improved systems are needed to deliver tailored messages, understand barriers to adopting prevention measures, and engage individuals on tick-borne disease prevention. Improved science translation is a critical skill set for both current and next-generation tick researchers, and greatly expanding the funding for tick-borne disease prevention expertise within cooperative extension programs and for local- to national-scale civic outreach holds great promise for increasing citizen engagement and empowerment.

Public Health Capabilities – Improve State and Local Capacity to Respond
How should the federal government ensure agencies like CDC maintain an appropriate mission focus on infectious diseases in the periods between emergencies to strengthen readiness to respond when a new threat arises?

ESA believes that robust, sustained funding for programs across CDC is crucial in developing and maintaining readiness to respond to emerging infectious diseases, no matter their origin or vector. As the nation's leading health protection agency, CDC is charged with conducting scientific research and providing health information to prevent and respond to infectious diseases and other global health threats of any kind, and so must be fully funded across all mission areas. Within the core infectious

diseases budget of CDC, the Division of Vector-Borne Diseases (DVBD) aims to protect the nation from viruses, bacteria, and parasites transmitted primarily by mosquitoes, ticks, and fleas, and is thus a key component of the overall federal response to VBD. DVBD's mission is carried out by a staff of experts in several scientific disciplines, including entomology, who coordinate with state and local health departments to respond to specific health situations.

Unfortunately, these front-line state, county, and city health departments are subject to dramatic fluctuations in funding through state and local government budgets as well as CDC's Epidemiology and Laboratory Capacity (ELC) program funding. Last year, CDC was only able to fund one-third of the grants requested by the states to address vector-borne disease prevention, surveillance, and management. This makes sustainable employment of highly qualified and trained entomologists and epidemiologists, who play a critical role in the vector surveillance and management, challenging. To ensure that public health challenges can be effectively met, public health and vector-control professionals must be consistently equipped with the resources and capacity necessary for the prevention, treatment, and control of vector-borne diseases. Full funding for the ELC program can help to accomplish this goal.

ESA has advocated for and applauded the passage of several pieces of legislation in the past year that would strengthen the ability of CDC and the federal government more broadly to respond to VBD and other emerging infectious diseases, including the *Kay Hagan TICK Act* and the *Pandemic and All Hazards Preparedness and Advancing Innovation Act,* specifically the provisions adapted from the *Strengthening Mosquito Abatement for Safety and Health Programs (SMASH Act)*. The *Kay Hagan TICK Act* is especially important in bolstering the U.S.'s ability to respond to VBD, as it establishes an Office of Oversight and Coordination for Vector-Borne Disease within the Department of Health and Human Services to promote interagency coordination; authorizes the development of a national plan for responding to VBD; reauthorizes the CDC Regional Centers of Excellence in Vector-Borne Disease for five years; and authorizes a cooperative agreement through CDC to support state health department efforts to improve surveillance, diagnosis, and education for VBD. All of these advancements will allow those in entomological professions to better track, control, and reduce the spread of VBD in the United States. Ensuring that these activities are fully funded is a key priority for ESA.

Who Is on the Flagpole? – Improve Coordination of Federal Agencies During a Public Health Emergency

How can federal departments and agencies more effectively work together to respond to public health emergencies?

To ensure that the U.S. is appropriately prepared for future threats, a comprehensive federal strategy for multi-agency investment in emerging infectious diseases—especially VBD—is required. ESA has advocated for the development of a national strategy aimed at minimizing the detrimental effects of diseases carried by ticks, and an analogous strategy could be applied to mosquito-borne diseases as well as VBD more broadly. For maximum impact, such a national strategy should be implemented across federal health, agriculture, and environmental agencies. ESA's priorities for this strategy, as outlined in the society's Position Statement on Tick-Borne Disease, are highlighted below:

- Broadly expand basic knowledge of tick biology. Exceptional recent advances in a broad range of scientific arenas now provide the opportunity for a much deeper understanding of ticks,

tick/host relationships, and the microbial agents they transmit. Increased investment in research will open avenues for discovery of novel approaches for tick suppression, integrated tick management strategies, and reducing risk of tickborne pathogen exposure.

- Greatly enhance ecological surveillance. Knowing where ticks are at local and regional scales can engage citizens and lead to tick-prevention actions as well as enable policy makers and city and county health officials to efficiently allocate scarce public resources for tick and disease mitigation.
- Promote citizen engagement and education. Such effort, channeled through cooperative extension programs and other civic-outreach avenues, should focus on understanding barriers to public adoption of prevention measures and increasing the personal relevance of prevention messages, with the goal of establishing a broad-based health education strategy for minimizing tick encounters.
- Train the next generation of scientists and specialists. Development of research, taxonomic, and vector-management workforce capacity will increase readiness and ensure continuity of tick expertise for public protection from ticks in the future.
- Encourage commercializing and marketing of promising discoveries from tick and VBD science. ESA strongly encourages development of government-industry-university partnerships structured to provide financial incentive for businesses to invest their capital in advanced product development, licensing, and marketing of products that will be profitable for industry as well as protect public and animal health.
- Seek greater investment in U.S.-international partnerships. Collaboration is critical to deal with high-priority accidental introductions like the Asian longhorned tick, an invasive arthropod rapidly expanding its geographic range domestically since first being identified in New Jersey in 2017.

Thank you again for the opportunity to comment on this crucial public health issue. If you have any questions or if ESA can be of assistance on future legislative matters, please do not hesitate to reach out to ESA's Director of Strategic Initiatives, Erin Cadwalader, at ECadwalader@entsoc.org.

Sincerely,

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