Haemaphysalis longicornis: a tick of considerable importance, now established in North America

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Dear Editor:

Haemaphysalis longicornis, or the “Asian longhorned tick” (ALHT), is native to eastern Asia and was introduced into Australia, New Zealand, and several Pacific islands (Hoogstraal et al., 1968). Large numbers were collected from sheep, people, and vegetation on a ranch in Hunterdon County, New Jersey (NJ), in October 2017 (Rainey et al., 2018). ALHTs successfully overwintered at this locality, and during 2018, ALHTs were collected from vegetation, domestic animals, wildlife, and people in eight additional states, two of which border Canada (New York and Pennsylvania) (Promed Posting, 2018). Based on retrospective examination of tick collections, populations could have been present in West Virginia since 2010 (Ives et al., 2018).

The life history/biology of ALHTs promotes its continued range expansion. ALHT are three-host ticks with larvae, nymphs, and adults feeding on separate individuals and hosts, including rodents, ungulates, lagomorphs, carnivores, and people (Barker & Walker, 2014). ALHTs also feed on birds and domestic animals, which may enhance dispersion within the United States and possibly into Canada. Once introduced into suitable habitats, ALHT populations can

build rapidly, partly because the strain introduced into the US is parthenogenic (Rainey et al., 2018), meaning females reproduce asexually. Preliminary analyses of the potential geographic range in North America, based upon habitat suitability and the environmental requirements of *H. longicornis* in New Zealand (Heath, 2016), indicate a moderate potential for ALHTs to establish in parts of Quebec, Ontario, and Manitoba (Magori, 2018). Although these early models are imperfect, they serve as a warning that parts of Canada likely meet the minimum criteria to support establishment of ALHT populations.

Establishment of ALHT populations in Canada may have public health implications because this species is a known or suspected vector of human pathogens, including *Rickettsia japonica* (the agent of Oriental spotted fever), severe fever with thrombocytopenia syndrome virus, and Russian spring-summer encephalitis virus (Rainey et al., 2018). This tick has also been implicated in red meat allergy (Chinuki et al., 2016). To date, pathogens have not been detected in ALHTs collected in the US. It is unknown whether this tick can transmit endemic tick-associated pathogens, such as *Anaplasma*, *Borrelia*, and *Babesia* species, and Powassan virus; however, the broad host range of this tick could facilitate acquisition of endemic pathogens and transmission to people (Rainey et al., 2018; Ives et al., 2018).

Haemaphysalis longicornis is readily distinguished from species known to bite people in Canada, including the American dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*D. andersoni*), and blacklegged tick (*Ixodes scapularis*) (Lindquist et al., 2016). ALHTs, particularly the larval and nymphal stages, are similar to two endemic *Haemaphysalis* species in Canada, but they are readily differentiated by experienced entomologists using appropriate keys (Barker & Walker, 2014; Lindquist et al., 2016). Molecular methods can also be used to confirm species identity (Rainey et al., 2018).

The purpose of this letter is to increase awareness in the medical community about ALHTs in order to improve

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the chances of early detection of this species should an incursion into Canada occur. Endemic *Haemaphysalis* species will typically occur on rabbits or birds and rarely on other hosts, so the presence of *Haemaphysalis* ticks on people should raise suspicion. To facilitate accurate tick identification, please contact your local public health authorities or one of the authors if you detect ticks on patients that are atypical or that you suspect may be ALHTs.

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