The Asian Longhorned Tick (*Haemaphysalis longicornis* Neumann, 1901)

A new tick species, *Haemaphysalis longicornis*, was recently reported in temperate North America; it appears to have originated from eastern Asia, Japan, New Zealand, or Australia, and has become established in the United States, primarily in the Mid-Atlantic region. This tick was detected in high numbers on sheep and their owner in New Jersey, in November, 2017 (Rainey et al 2018), but was originally detected in West Virginia on white-tailed deer in 2010 (Ives et al. 2018). In 2018, several ticks were reported from counties located in Arkansas, Connecticut, Maryland, New Jersey, New York, North Carolina, Pennsylvania, Virginia, and West Virginia (see attached map and ProMed Mail references). *Haemaphysalis longicornis* has been given several common names, including the cattle tick, the scrub tick, the bush tick, the Australian-Northeast Asian haemaphysalid, and, most recently, the Asian longhorned tick; it earned that common name from the extensions on each side of its mouthparts, like the horns on longhorned cattle. It is an unusual tick in that, even though it is a three-host tick (i.e., larvae, nymphs, and adults feed on separate host individuals), it can reach high numbers quickly. It does so partly because the type present in the U.S.A. is parthenogenetic, meaning that the females do not have to mate to produce offspring. Each engorged female is capable of producing thousands of eggs. As a result, an entire population of ticks may emerge as the result of a single undetected (and very fortunate) larval tick.

Exsanguination and Disease Agents

The longhorned tick represents a double threat to livestock and wildlife: 1) it can infest animals in such high numbers as to weaken them and threaten exsanguination and death (Hoogstraal et al. 1968); 2) it is also a known or suspected vector of pathogenic protists, bacteria, and viruses. It has been implicated in the transmission of *Theileria orientalis*, the agent of cattle theileriosis. *Anaplasma*, *Ehrlichia*, and *Borrelia* spp. bacteria have also been detected in field populations of this tick in Asia. The longhorned tick is also a known or suspected vector of human pathogens, including *Rickettsia japonica*, the agent of Oriental spotted fever; Severe Fever with Thrombocytopenia Syndrome (SFTS) virus; and Russian spring-summer encephalitis (RSSE) virus (Rainey et al 2018). It has also been implicated in red meat allergy in Japan (Chinuki et al. 2016). Fortunately, no pathogen has as yet been detected in Asian longhorned ticks in the US; however, it is not known whether they can become infected and transmit any of the resident tick-borne pathogens currently found in North America. This tick has a broad host range, which makes it potentially dangerous in this respect, especially considering that it has become established on an entirely new continent.

Hosts and Seasonal Abundance

All active life stages of *H. longicornis* feed upon medium and large-sized mammals (and usually in high numbers); larvae and nymphs also infest a variety of ground-dwelling birds. In temperate regions, this species may be active in some form (or active life stage) from late winter through the fall seasons. In general, nymphs are most likely to be active during late winter-early spring after they overwinter, larvae during late summer and fall (as seen in New Jersey in 2017), and adults in early summer. However, this activity pattern may be affected by relative humidity, temperature, and day length.
Can this tick become established in Canada?

This tick species is established in temperate regions of eastern Asia, New Zealand, Australia, and now the United States. Parts of eastern Canada are temperate and are along major flyways for migratory birds from the Mid-Atlantic states; thus, there is potential for incursion of this species and possible establishment. With the recent discoveries in New York and Pennsylvania, it is now present in states adjacent to the Canadian border. This tick species is also difficult to eradicate once established, so we must be vigilant and watch for it. Veterinarians, wildlife biologists, and others conducting active or passive tick surveillance should be on the lookout for this possible intruder in Canada, especially considering its close resemblance to two species of tick that are endemic to Canada. Both *Haemaphysalis leporispalustris* (the rabbit tick) and *Haemaphysalis chordeilis* (the bird tick) can be found on a wide variety of hosts, including wild mammals, birds, and domestic animals; however, unlike the Asian longhorned tick, they do not occur in high numbers.

Identification

Unfed (i.e., flat) adult female *Haemaphysalis* ticks are completely medium (caramel-coloured) brown in colour, unlike the larger American dog tick and Rocky Mountain wood tick, which are a darker (chocolate-coloured) brown with white or ivory-coloured ornamentation on their backs. Although identification of *Haemaphysalis* species is usually straightforward for adults, larvae (which have 6 legs) and nymphs (8 legs) are very small and require specialized equipment and expertise to identify. If you suspect any ticks of being *Haemaphysalis*, please contact one of the authors listed below, who can help coordinate their prompt identification, and, if available, eventual testing for pathogens. Ticks may be submitted in 70% ethanol or isopropanol (rubbing alcohol), following the same procedure as those sent for Lyme disease testing – please see the information at the link below.


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