

Implications for New Zealand of potentially invasive ticks sympatric with *Haemaphysalis longicornis* Neumann, 1901 (Acari: Ixodidae)

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Abstract

The ixodid tick *Haemaphysalis longicornis* Neumann, a broadly western Pacific species, is the only economically important tick that has successfully invaded New Zealand. Species sympatric with it could also pose a risk to New Zealand as potential invaders because they share bioclimatic and host preferences with *H. longicornis*. At least 15 of the 45 species of Ixodidae and one Argasidae discussed here as sympatric with *H. longicornis*, and which most closely match its bioecological characteristics, pose the highest risk. These include: *Amblyomma brevifoliatum*, *Dermacentor reticulatus*, *D. silvarum*, *Haemaphysalis hystricis*, *H. papuana*, *Ixodes acutitarsus*, *I. cornuatus*, *I. holocyclus*, *I. nipponensis*, *I. ovatus*, *I. persulcatus*, *I. ricinus*, *I. tasmani*, *Rhipicephalus haemaphysaloides* and *R. sanguineus*. The principal countries of origin of these species are Japan, China and Australia, and in each case humans could be an unwitting vehicle of entry. Sympatry and shared biological preferences are not necessarily indicative of potential invasiveness, but serve as indicators of the need for heightened surveillance.

Key words: *Haemaphysalis longicornis*, sympatric ticks, invasive organisms, biosecurity, New Zealand

Introduction

Invasive organisms have always been a biological reality, whether self-introduced or through deliberate or accidental human activity. In more recent decades, and especially as movement of people and goods around the planet has become easier and more frequent, there has been a growing awareness of the ease with which exotic organisms can arrive at the borders of countries. This only becomes a problem should the organisms penetrate the border and become established, and especially if they threaten the health and productivity of humans and their agricultural systems. The evidence for a rise in vector-borne diseases is strong (Vorou *et al.* 2007, Beugnet & Marié 2009) and can be the result of the establishment of a new, invasive arthropod vector or an increase in the range of an autochthonous vector because of climatic change. Other factors, such as the introduction of plants that provide ecological niches, can also be influential (Mack & Smith 2011).

Prominent among the organisms that are being moved around the planet are ticks, which are competent vectors of a variety of serious infectious diseases. Although not as speciose as mosquitoes, ticks are preeminent in the range of debilitating diseases for which they act as vectors (Labuda & Nuttall 2004, Parola *et al.* 2005, Eisen 2008, Nicholson *et al.* 2009).

A number of countries have become aware in recent years of the presence of ticks that had not been part of their fauna in the past. For instance, The Netherlands appears to have acquired a population of *Dermacentor reticulatus* (Fabricius) only in the last 20–30 years (Matjila *et al.* 2005), the tick possibly having entered on some of the many dogs imported from southern Europe every year. In addition it is thought that the occurrence of both *Babesia canis* (Piana & Galli-Valerio) and