# Wild Tiger Health Centre Information Sheet

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## Disease threat: Borrelia burgdorferi

***Hazard description***: Lyme Disease or Lyme Borreliosis is an emerging tick-borne complex multi-systemic disorder, caused by *Borrelia burgdorferi* sensu lato (sl) complex (Ytrehus & Vikoren 2012). Tick vectors are *Ixodes* spp.

***Host species:*** *Ixodes* ticks, where present will feed on any mammal, bird or reptile, but only some species acquire infection. True reservoir hosts include birds, rodents (e.g. squirrels), insectivores and lagomorphs. The role of deer species is much debated – their role may simply be as tick amplification hosts. Infection has been reported in other wildlife species including wild carnivores, but they are presently not considered true reservoir hosts (Ytrehus & Vikoren 2012). There is some evidence for a contributory epidemiological role of red foxes (Dumitrache et al. 2015).

***Pathogenesis:*** Clinical disease, 'Lyme disease', is best described in humans. An effective immune response may result in the complete absence of clinical signs, or mild signs only. In the absence of a successful immune response, once systemic, *Borrelia* migrate from the bloodstream e.g. to joints. Clinical signs reported from humans may include a rash at the site of the tick bite, fever, arthritis, and neurological signs. Disease has been reported in domestic dogs (Krupka & Straubinger 2010). Clinical disease, 'Lyme disease', is mostly described in humans, but also reported in domestic species including dogs, horses, cattle and sheep, but few reports in wild species. Disseminated infection has been reported in a red fox in Japan, with internal pathological lesions in liver, eye and kidney lesions attributed to the infection (Isogai et al. 1994).
Felids may be infected as a consequence of tick bites, but it is assumed that it is unlikely to cause disease (based on lack of reports).

***Diagnosis***: Serology as evidence of exposure. PCR.

***Vaccination:*** None.

***Free-ranging tiger occurrence:*** No reports found.

***Distribution:*** Likely endemic across the distribution range of *Ixodes* species of ticks, i.e. incorporating range states in the Russian Far East and China.

***Assumptions***: Wild felids relatively resistant to disease.

***Limitations***: None.