

TICKBORNE DISEASES

Detection of *Anaplasma phagocytophilum* in *Dermacentor reticulatus* ticks

IN Europe, cases of Lyme borreliosis, tickborne encephalitis and granulocytic anaplasmosis have increased in human beings, domestic animals and wildlife, expanding their geographical ranges to much of Scandinavia and eastern Europe.

Proposed explanations include improved surveillance and diagnosis, changes in human behaviour, climate change, and increasing numbers of reservoir hosts and vectors (Heyman and others 2010). With respect to reservoirs of *Anaplasma phagocytophilum*, the causative agent of granulocytic anaplasmosis, the red deer (*Cervus elaphus*) is included in the list of European reservoirs, with roe deer (*Capreolus capreolus*), bank voles (*Myodes* species) and wood mice (*Apodemus* species). This letter describes a new possible vector species.

The disease monitoring activities of our WILDSCREEN network (Linden and others 2011) include collection of ticks from wild species and testing them for infectious agents. In the autumn of 2010, as well as the usual *Ixodes ricinus* ticks, we unexpectedly found 35 ticks morphologically compatible with *Dermacentor reticulatus* on an adult male red deer. The species was confirmed by sequencing the amplicon retrieved from a PCR targeting the *Dermacentor*-specific ITS2 genomic segment (Dobec and others 2009), thus confirming recent findings showing that *D. reticulatus* occurs at far more sites than were previously known in northern Europe (Dautel and others 2006). Moreover, a PCR targeting the *A. phagocytophilum*-specific major surface protein-2 (MSP2)-encoding gene (Massung and Slater 2003) yielded five positive *D. reticulatus* ticks; the DNA sequence of the PCR showed 96.8 per cent homology with the reference sequence.

Vectors of *A. phagocytophilum* have always been considered to be ticks in the *I. ricinus* subgroup of hard ticks, including the sheep tick (*I. ricinus*) in Europe, the taiga tick (*Ixodes persulcatus*) in Asia, the deer tick (*Ixodes scapularis*) in eastern North America and the western black-legged tick (*Ixodes pacificus*) in western North America (Brown and others

2005). According to our results, *D. reticulatus* ticks in general, or at least some *D. reticulatus* isolates, should now be included in the list of putative vectors. It remains to be seen whether the presence of *A. phagocytophilum* DNA results in effective transmission capacity by *D. reticulatus*, and whether *A. phagocytophilum* variants isolated from *D. reticulatus* display a pathotype similar to that of variants transmitted by *I. ricinus* ticks.

M. Wirtgen, A. Nahayo, A. Linden, Network of Wildlife Diseases, Department of Infectious and Parasitic Diseases,
M. Garigliany, D. Desmecht, Department of Pathology,
Faculty of Veterinary Medicine, University of Liège, B43a, Boulevard de Colonster 20, 4000 Liège, Belgium

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