

Vector-Borne Diseases: Impact of Climate Change on Vectors and Rodent Reservoirs
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A study of the sylvatic rodent reservoir for *Bartonella* spp. in NE Poland: prevalence and the diversity of infection

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Bartonella spp., are vector-borne bacteria associated with numerous emerging infections in humans and animals. Human specific *Bartonella* species are responsible for diseases like Carrion's disease, cat scratch disease, endocarditis and neuroretinitis. A wide range of animals, including wild rodents, plays role as a reservoir host for these pathogens. Additionally, these intraerythrocytic parasites are easily transmitted by vectors among certain populations of hosts and this results in the significant genetic diversity of *Bartonella*. The purpose of these longitudinal environmental studies was to investigate the prevalence of bacteremia and the diversity of *Bartonella* isolated from wild rodents trapped during three years (2004-2006) in the Mazury Lakes District, near Mikołajki (53°47.745'N, 21°39.640'E), north-eastern Poland. DNAs were obtained from the blood of four species of rodents (*Apodemus flavicollis*, *Myodes glareolus*, *Microtus arvalis* and *Microtus oeconomus*). Using PCR *Bartonella* spp. DNA was detected in 313 of 1022 (30.6%) rodents, particularly 31% of 583 *M. glareolus*, 42% of 161 *A. flavicollis*, 33% of 152 *M. arvalis* and 11% of 126 *M. oeconomus*. Based on sequence analyses of the *Bartonella* citrate synthase gene (*gltA*), the amplicons were divided into six genogroups. The level of sequence homology between the genogroups varied from 88% to 99%. Importantly, a few of studied isolates were identical (100% homology) to *B. grahamii*, a species associated with human illness. The prevalence and bacteremia of *Bartonella* spp. in rodents are likely to be affected by climate change. This is significantly related to a combination of milder winters and extended autumns (temperatures of 4-9°C), thus influencing the springtime development of vectors for *Bartonella*, predominantly the tick *Ixodes ricinus*.

