

Disease-carrying colonizers on the move: Predicting the spread of ticks across Canada

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Researchers are watching as ticks that carry Lyme disease colonize Canada, but their research aims to predict the communities most likely to be hit by this sickness. "Our findings will help community groups and government agencies to alert the Canadians who may be at risk of picking up Lyme disease – those of us who like to visit the outdoors in spring and summer, when nymphal ticks are active but difficult to spot because of their size," said lead author Patrick Leighton of the University of Montreal's Faculty of Veterinary Medicine. Nymphal ticks are ticks that have not yet reached full maturity. "Identifying where the ticks are setting up home helps pinpoint where Lyme disease risk will occur before people start getting the disease".

Changes in temperature are one of the most important factors that have contributed to the spreading of tick populations across Canada since 1990. As average temperatures continue to increase over the coming decades, the area where ticks may live and reproduce will continue to reach further north. Lyme-transmitting ticks were virtually unknown in Canada in 1990, but today they may be found in areas where 18% of the country's population lives. This figure will rise to 80% in eastern [Canada](#) by 2020, according to the researchers' findings.

The parasites travel long-distance from the United States to settle new areas by attaching themselves to migratory birds, and once they have arrived, they colonize local areas by feeding on deer and small animals such as mice, squirrels and chipmunks.

The researchers' prediction model was partially built on citizen participation and it was confirmed by research that was literally undertaken in the field. Pet owners bring ticks to their family veterinarians, who are then able to provide data to public health officials regarding where the parasites were found.

Other studies have also been contributing to understanding the information in the database. "The data paint a useful picture of where and when ticks have begun colonizing different regions, identifying geographic hotspots," Leighton explained. "We visited field sites in these areas and very simply dragged blankets along the ground. Sure enough, we found significant tick populations in these areas." The findings were also confirmed by inspecting wild animals likely to carry the ticks.

Ticks themselves do not cause Lyme disease, but can pass on the infection when they bite. Lyme disease is treated with antibiotics and its symptoms include circular rashes and flu-like symptoms. Left untreated, it can have serious consequences but, say the researchers, people who visit the outdoors can protect themselves by wearing appropriate clothing or applying DEET-based insect repellents.

"This model provides us with an idea of where [Lyme disease](#) is likely to spread in the future, because the [ticks](#) eventually start to carry the bug that causes Lyme," Leighton said. "In the future it will be useful to build a model that reveals how quickly the disease will spread amongst these new tick populations."

The findings were published in the British Ecological Society's *Journal of Applied Ecology* on 6 March 2012.

Provided by Wiley

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